

# Final Report

## Pathways to Higher Pay

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*This research was commissioned by the Australian Government Department of Education, Employment and Workplace Relations (DEEWR) under the Social Policy Research Services Agreement (2005–09) with the Melbourne Institute of Applied Economic and Social Research. The views expressed in this report are those of the authors alone and do not represent those of DEWR.*

May 2008



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## **Executive Summary**

Data from the first five waves of the HILDA survey for the period 2001 to 2005 are used to:

- assess the incidence of low-paid employees and their different labour market experiences over the sample period;
- describe the characteristics of the low paid and their different labour market experiences over time;
- assess the relative importance of the transition paths from low paid to higher paid; and
- describe the distinguishing characteristics of the initial low paid who stay in low pay, move to higher pay, move into non-employment, and churn across the different labour states.

The HILDA survey provides detailed longitudinal data for about 6000 employees for the five-year period. All employees aged between 21 and 64 who in one or more of the years received a wage or salary are included in the sample. Five labour states are considered: low paid (hourly wage rate less than two-thirds of the median pay and close to the federal minimum wage), medium paid (two-thirds to median pay), high paid (median and above), self-employed, and not employed (unemployed plus not in the labour force). Characteristics of employees considered include: gender, age, education, family type, type of employment (including full-time, part-time and casual), job turnover, work experience, occupation and industry.

Results for the incidence and characteristics of the low paid are similar to those reported in preceding studies. At any one year, between 11 and 13 per cent of employees are low paid. The low paid are more highly represented among: females; the less educated; the young; those in casual employment; those in the agriculture, forestry and fishing, retail trade and accommodation, and cafés and restaurant industries; those in elementary occupations; and sole parents.

There is considerable movement from year to year between the different labour states. Only 71 per cent remain in the same labour state from one year to the next, and only 61 per cent remain in the same job after four years. Of those in low pay in year one, one year later about 50 per cent have moved to higher pay, 36 per cent remain in low pay and 12 per cent are not employed. After four years, 57 per cent of the low paid have moved to higher pay. There also is downward movement from high paid to low paid, as well as to not employed.

There are some observable differences in the characteristics of the initial low paid who follow different transition paths, but in most cases the magnitude of effect is not large. Gender has little effect on staying in low paid, but females are more likely to move to not employed, and this is particularly so for sole parents; males are more likely to move to higher pay. Employees in their twenties and thirties are more likely to escape low paid, while the older employees are more likely to move to not employed. Those initially low paid and with limited education are more likely to stay low paid and to become not employed than are the better educated. Relative to those in permanent employment, those on fixed-term appointments are less likely to continue as low paid, but they also are more likely to move to not employed and self employed.

When we consider not just the transition between the different labour states from one year to the next, but the path over four years a similar picture emerges. About 30 per cent of the low paid follow the disadvantaged paths of persistent low pay, unsuccessful escapes, and movement to not employed over the next three years. About 35 per cent move to sustained higher pay, and about 25 per cent churn across the different labour states.

A multinomial logit model analysis was undertaken to assess the characteristics of those initially low paid who are more likely to follow disadvantaged paths (of persistent low paid, not in employment and churning through low paid) versus those finding a pathway to higher-paid employment. Gender appears to have no significant effect on labour market transitions once allowance is made for other variables. No significant differences were found between those aged in their twenties and thirties. Relative to this broad younger group, the older cohort who are initially low paid are much more likely to move to higher-paid work and especially to not employed. Both education and work experience have the expected positive influence on movement to better employment paths, however the quantitative effect is relatively small. A tenured contract has a significant but quantitatively small positive effect on the transition to higher paid, and a negative but small effect on the movement to not employed. Changing your employer and (or) your type of contract is associated with improved outcome probabilities, but by no more than 10 per cent. For the lower paid observed in any one year, their workforce experience in the previous year has a significant and a quantitatively large effect on their future labour market experience; those previously on a high wage are less likely to be low paid in the future and they are more likely to return to high pay; and those who were unemployed are more likely to be in sustained low paid or shift to not employed.

## 1. Introduction

The key objective of this report is to explore the incidence of low-paid employment, the characteristics of low-paid workers and the wage transitions (pathways) of low-paid workers to higher pay.

Low-paid employment has been of concern to policy makers in recent years, in particular after changes to a more enterprise-based and less centralized industrial relations system from around 1990. The main concern is not so much with the prevalence of low-paid employment, but with its persistence. If low-paid jobs are used as a stepping stone from non employment to higher paid jobs, the distributional and equity implications of low-paid employment in a lifetime earnings context are much less an equity concern. In this case, low-paid employment may be seen as a positive factor for improving living standards over time compared with the alternative of a higher unemployment rate. However, if low-paid workers are likely to become trapped in low-paid jobs and become the ‘working poor’, low-paid employment becomes an important equity issue for policy makers. A challenge is to minimise the incidence of sustained low-paid employment and more importantly to assist individuals to progress from low-paid employment to higher paid jobs.

This paper builds on a limited Australian literature on the dynamics of low-paid employment, and in particular Buddelmeyer et al. (2007), McGuinness and Freebairn (2007) and Dunlop (2000). These papers found that at the aggregate level up to a half of low-paid employees move onto higher wages in the future, presumably as the result of acquiring skills and human capital from on-the-job training and experience. This paper extends the analysis by looking in more detail at different patterns of labour market state transitions for the low paid over a four year period from 2001 to 2005, and it seeks to assess the characteristics of low-paid employees who followed different transition paths. These transition paths include sustained low-paid employment, escape to a higher paying job, movement out of the workforce, and churning from one state to another. Characteristics thought to influence the transition pathways and which are investigated in this paper include: gender, age, education, family type, type of employment, job turnover, and industry. The aim is to identify the factors associated with individuals who have successfully progressed to higher paid jobs and to inform public policy about possible ways of assisting workers to escape from ‘working poor’ situations. Importantly, the analysis identifies the characteristics of individuals who are more likely to be in disadvantaged labour market transition patterns.

The analysis in this paper has two features. First, it does not restrict the sample to those who were employees in all years, as has been done in most of the literature. As shown in the descriptive analysis in this paper, considerable movements or transitions among wage and salary employment are to self-employment, unemployment and to out of the workforce. Restricting samples to only the employees present in all observed years ignores a large proportion of the low wage population and important labour market transition patterns. Second, labour mobility between different labour states, including those defined by level of the wage rate, is not only in one direction. While a notable proportion of employees move from higher pay to low pay, there are movements in the opposite direction, there are movements to non-employment, and many churn across the different states. Investigating the transition patterns over several years, and in this study over five years instead of the changes from one year to the next gives a more complete picture on workers' labour market dynamics.

The arrangement of this paper is as follows. Section 2 describes the data and the definition of low paid. Section 3 gives an overview of the incidence of low-pay employment. The focus of this paper is on the dynamics of low-pay employment; it is necessary to provide an overview of the incidence of low-pay employment and of the characteristics of low-paid employees to facilitate the understanding of the dynamic analysis. The descriptive analysis of the dynamics of labour market transitions is presented in Section 4, followed by a multivariate analysis of pathways to high pay in Section 5.

## **2. Data**

### ***2.1 HILDA Survey***

The data used for this paper come from the first five waves of the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Survey began in 2001 with a large national sample of Australian households occupying private dwellings.<sup>1</sup> The survey involved interviews with all household members over the age of 15 years. In the first wave, 7683 households representing 66 percent of all in-scope households were interviewed and this generated a sample of 15127 persons who were eligible for interviews, of whom 13969 were successfully interviewed. Almost all of the Wave 1 interviews were conducted during the period between 24 August 2001 and 21 December 2001.

The members of that initial sample of households form the basis of the panel and are followed up in each subsequent wave, with interviews being approximately one year apart.

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<sup>1</sup> For a detailed description of the HILDA survey see Watson and Wooden (2002).

There are three ways in which new respondents are added to the sample. First, some non-respondents in the first wave are successfully interviewed in later waves. Second, interviews are sought in later waves with household members who turn 15 years of age. Third, people are added to the sample as a result of ‘split-offs’ from original households. If for example a young person leaves home to set up their own household, all members of the new household aged 15 and over become part of the target group.

In terms of key information for this paper (earnings and working hours) HILDA data have a very similar weekly earnings distribution compared with ABS labour force surveys, but slightly fatter tails in the hours distribution. Buddelmeyer (2007) presents a detailed comparison of different measures of the labour market between the ABS and HILDA data sets.

## ***2.2 Definition of low pay and sample selection***

The low pay threshold is defined as two-thirds of the median hourly wage. This definition follows the threshold used in the previous reports (Buddelmeyer et al. 2007) and it is widely used in the international literature (Eadley, 1998; Stewart & Swaffield, 1999). We then classified individuals into three categories: (1) low pay (hourly wage less than two-thirds of the median), (2) medium pay (two-thirds of the median to the median) (3) high pay (median and above).

In the calculation of the median wage, only individuals with market wages are included in the analysis. Those who are self-employed (including employees of their own business, unpaid family workers and the self-employed) or those who have missing wages data are excluded. Individuals aged below 21 are also excluded, as their minimum wage rates may be different from the adult rate. We include full-time students aged 21 and over because their wages are proper market wages. For casual employees, the market wage received is divided by 1.2 on the assumption that casual employees receive a 20 per cent loading<sup>2</sup> to compensate for forgone leave entitlements.

The threshold used to define each pay category in each wave is provided in Table 2.1. The threshold of two-thirds of the median wage used to define low pay in this project is very close to the federal minimum wage. For the case of casual employees, the thresholds are also converted into an original wage (that is, the market wage before making a 20 per cent discount). The

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<sup>2</sup> The adjusted casual employees’ wages equal their reported wages divided by 1.2, which is equivalent to a 16.7% discount of their market wages. We describe the adjustment as a 20% discount, reflecting the size of the estimated loading, rather than a 16.7% discount through out the paper.

difference of the low pay threshold between the measures with and without the casual discount is \$2.60 per hour in 2005.

**Table 2.1 Low pay threshold by waves**

	Wave 1 (2001)	Wave 2 (2002)	Wave 3 (2003)	Wave 4 (2004)	Wave 5 (2005)
	<u>Hourly Measure (\$ per hour)</u>				
2/3 Median	11.1	11.4	11.9	12.3	13.2
2/3 Median-casual	13.3	13.7	14.3	14.8	15.8
Median	16.6	17.2	17.8	18.5	19.7
Median-casual	19.9	20.6	21.4	22.2	23.7
Federal minimum wage	10.9	11.4	11.8	12.3	12.8
	<u>Weekly Measure (\$ per 38 hours a week)</u>				
2/3 Median	422	433	452	467	502
2/3 Median-casual	505	521	543	562	600
Median	631	654	676	703	749
Median-casual	756	783	813	844	901
Federal minimum wage	413	431	448	467	484

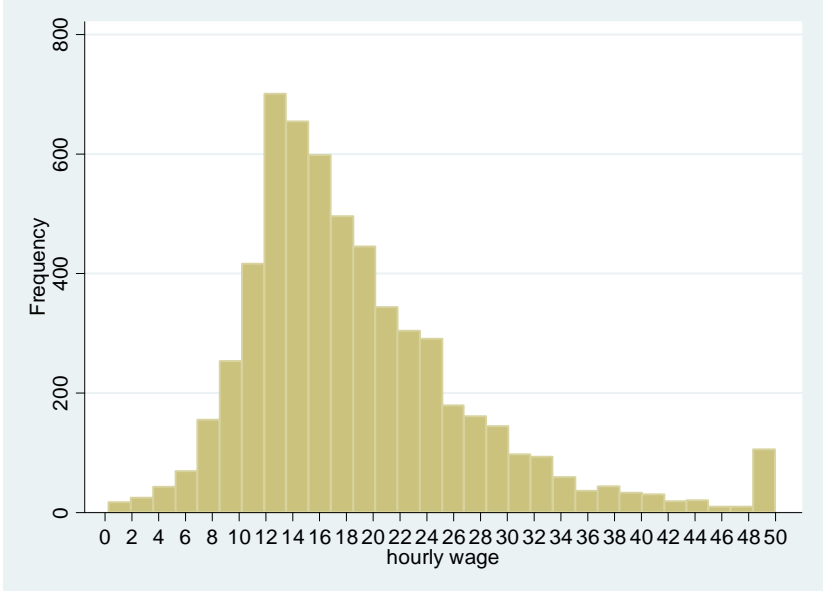
Note: All the thresholds are expressed in nominal terms. Since the research is concerned with the relativity of individuals' wages in a given year, it does not need to account for price differences between years due to inflation. 2/3 Median-casual = 2/3 Median  $\times$  1.2 which is the low pay threshold expressed as casual employees' original pay (before the 20% casual discounts). The same rules applied to Median-casual.

Figure 1 shows the distribution of all employees in the HILDA survey for Wave 1, 2001, by hourly wage rate. The distributions of wages in other waves are similar to that for Wave 1 and therefore only Wave 1 figures are presented for illustrative purposes. The largest spike is around 12 dollars per hour, just above the federal minimum wage. However, the spike around the minimum wage is not as large as is found in some countries such as the United States. There are considerable numbers of individuals whose wages fall below the federal minimum wage. A large proportion of these employees are casual workers whose wages are calculated assuming their original pay had a 20 per cent loading for their foregone leave entitlement, while the federal minimum wage applies to their original wage only.

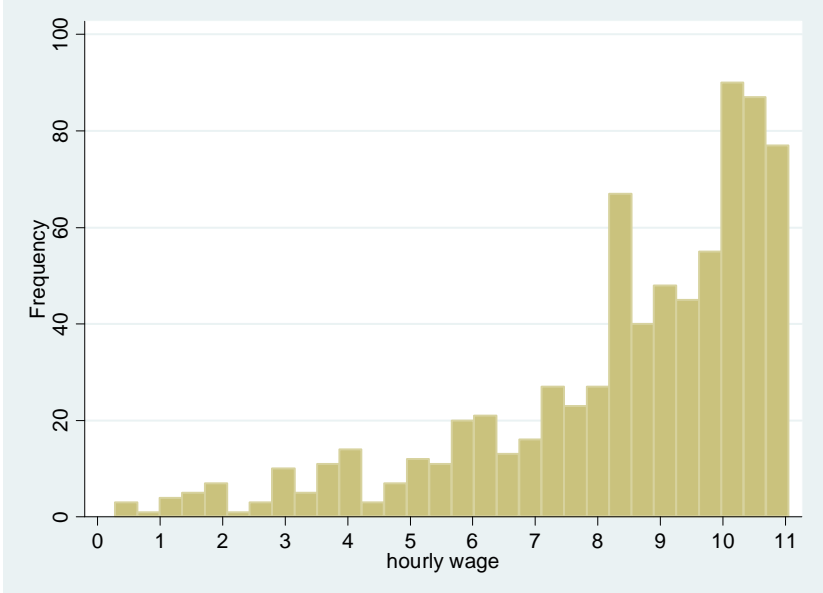
Figure 2 shows in more detail the distribution of the low paid, that is those receiving less than two-thirds of the median hourly wage rate of \$11.10. There are some individuals with unreasonably low wages which suggest the presence of measurement errors. In this paper, those individuals with very low wages are not excluded (as is done in some of the literature) for a number of reasons. First, measurement error may exist in the entire wage distribution. Excluding individuals with very low wages will only bias the analysis. Second, the choice of cut-off point would be arbitrary, as there is no clear theory to support the choice. Some individuals such as non-English speaking immigrants or other disadvantaged workers may be paid well below minimum wages. Third and most importantly, the analysis in this paper focuses on categorical

information (low-paid and not-low-paid) and this therefore reduces the impact of measurement errors on the analysis. Those individuals with reported extremely low wages are likely to be paid less than two-thirds of the median wage even without measurement errors. Therefore, to exclude them would under-represent the low-paid population.

**Figure 1: Distribution of hourly wages of all employees (Wave 1)**



**Figure 2: Distribution of hourly wages of employees (Wave 1)**



In the analysis of the incidence of low pay, we use a cross-sectional sample of individuals aged 21 to 64 and cross-sectional weights are applied. In terms of longitudinal analysis of low paid transitions, a further restriction of a balanced panel throughout the observation window is applied. The length of the observation window varies from table to table. Detailed notes

regarding the sample selection of each table are included at the bottom of each table. Since our analysis is concerned with the movement between labour market states, including non-employment, the restriction of working age is necessary.

### 3. Incidence of Low-paid Employment

Table 3.1 provides the percentage breakdown of pay categories within the population of employees and within the entire population in the dataset. The share of each pay category remains quite stable across all waves except 2004, regardless of whether it is with respect to employees only or the entire population. The percentage of low pay is approximately 12 per cent of employees and 7 per cent of the entire population. The figures are slightly higher in the initial year and lower in later years. In 2004, the proportion of employees who are low-paid is more than 1 percentage point lower than other years. This difference remains unexplained as in our further data analysis no significant differences were found in terms of average characteristics between samples in Wave 4 and other waves.

**Table 3.1 Incidence of low paid by year**

	2001 (Wave 1)	2002 (Wave 2)	2003 (Wave 3)	2004 (Wave 4)	2005 (Wave 5)
	<i>Per cent of employees</i>				
Low paid (<2/3 median)	13.0	12.4	12.4	10.9	12.1
Medium paid (2/3 to median)	37.0	37.7	37.6	39.1	37.3
High paid (above median)	50.0	49.9	50.0	50.1	50.6
Total	100.0	100.0	100.0	100.0	100.0
Number of Employees	6023	5695	5699	5567	5839
	<i>Per cent of population</i>				
Employees					
Low paid(<2/3 median)	7.4	7.1	7.3	6.4	7.3
Medium (2/3 to median)	21.1	21.6	22.3	23.1	22.3
High (above median)	28.4	28.6	29.6	29.6	30.3
Self-employed	14.0	13.5	13.0	13.4	13.3
Unemployed	4.1	3.8	3.3	2.8	3.2
Not in the labour force	25.0	25.4	24.5	24.7	23.6
Total	100.0	100.0	100.0	100.0	100.0
Number of Observations	10495	9711	9434	9110	9326

Notes: 1. Self-employed includes business owners, employees of own business and family workers.

2. Due to employees with missing wages, there are some discrepancies between the proportions of employees in the different panels in the table.

Since the distribution of individuals in each pay category did not vary significantly over the five waves (or between 2001 and 2005), the following analysis of the incidence of low-paid and their individual characteristics are reported based on averages across the five waves of data.

An advantage of the larger sample is that it may reduce the impact of measurement error, and especially so if the distribution of measurement errors is close to random.

Table 3.2 shows the distribution of low-, medium- and high-pay employees categorized by type of employment, namely casual versus non-casual and full time versus part time. The majority of low-paid employees are casual workers, consisting of 38.9 per cent low paid being part-time casual and only 13.2 per cent full-time casual employees. By contrast, the vast majority of high-paid employees are non-casual full-time workers. Approximately half of the female low-paid employees are casual part-time workers while 52.4 per cent of male low-paid employees are non-casual full-time workers. Casual employment is more prevalent among females. The proportion of casual employees decreases as wages increase, irrespective of gender.

**Table 3.2 Distribution of employee type by pay categories and by gender** (*% of employees in each employment type category*)

	Male			Female			Total		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
Non-casual full-time	52.4	75.1	91.5	26.2	48.5	62.9	38.0	60.8	80.2
Non-casual part-time	5.6	4.3	3.1	13.4	26.5	26.9	9.9	16.2	12.5
Casual full-time	17.2	11.1	2.3	9.9	4.3	1.1	13.2	7.5	1.8
Casual part-time	24.8	9.5	3.1	50.5	20.7	9.1	38.9	15.5	5.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of observations	1963	4911	9214	2158	5889	6778	4121	10800	15992

In general, the rates of self-employment and unemployment fell slightly over the five-year period, and the labour force participation rate was higher in 2005. However, the variations across the five waves are not large for all statistics. Employees (excluding the self-employed) account for 57 per cent of the population in this age group in 2001, and 60 per cent of the population in 2005. This suggests that the majority of the increase in employment between 2001 and 2005 was due to an increase in the number of employees, rather than in the number of self-employed people.

Table 3.3 provides data on categories of employees and the self employed classified by gender and employment type for the three pay categories. A higher proportion of females are in the lower end of the pay categories relative to males. This is the case for all employment types except non-casual part-time employees. There are very few male workers with non-casual part-time employment, as full-time employment is still a social norm for men. The higher proportion of low-paid employment may reflect the selection into part-time employment. Interestingly,

nearly 84 per cent of non-casual part-time female workers earn higher than the median wage, suggesting that the selection into part-time employment for females is not highly correlated with productivity.

A large number of the self-employed persons did not supply any wage information. Of those who did, nearly 30 per cent are in the low-paid category. These are most likely small business owners, own account workers or family helpers. However, self-employed persons' wages are more prone to being distorted due to the tax implication of profit and salary incomes. Even though the real proportion of self employed with low pay may not be as high as 30 per cent, it is not reasonable to assume that self-employed persons are all in high pay.

**Table 3.3 Distribution of pay categories by employment type and gender** (*% of employees by pay level by employment type category*)

	Low (<2/3 Med)	Medium (2/3~Med)	High (>=Med)	Total	Number of obs.
<u>Male:</u>					
Non-casual full-time employees	6.5	30.1	63.4	100.0	11908
Non-casual part-time employees	15.2	38.0	46.8	100.0	550
Casual employees	30.3	47.9	21.8	100.0	2024
Casual (without 20% discount)	16.6	44.3	39.1	100.0	2024
Full-time students (employed)	27.2	40.8	32.0	100.0	616
Self-employed	28.2	23.2	48.6	100.0	4436
<u>Female</u>					
Non-casual full-time employees	7.3	40.7	52.0	100.0	7249
Non-casual part-time employees	7.8	8.5	83.7	100.0	3567
Casual employees	36.2	45.5	18.3	100.0	3411
Casual (without 20% discount)	20.7	44.8	34.5	100.0	3411
Full-time students (employed)	32.9	34.0	33.1	100.0	757
Self-employed	29.5	19.9	50.6	100.0	2428
<u>Total</u>					
Non-casual full-time employees	6.8	33.9	59.3	100.0	19157
Non-casual part-time employees	8.9	44.9	46.2	100.0	4117
Casual employees	33.8	46.5	19.7	100.0	5435
Casual (without 20% discount)	19.0	44.6	36.4	100.0	5435
Full-time students (employed)	30.0	37.5	32.5	100.0	1373
Self-employed	28.7	22.2	49.1	100.0	6864

Note: the number of observations for self-employed is smaller than in Table 3.1 due to missing wage information.

The distribution of employees by level of pay by detailed demographic and job attributes is provided in Table 3.4. The first set of three columns show the distribution of employees by gender, age, and education by level of pay. For example, for those with education in the degree category, 6.3 per cent receive low pay, 19.3 per cent medium pay and 74 per cent high pay (with

the sum of the three equal to 100 per cent). The second set of three columns allocates all employees within the broad category to each pay level and sub-category. For example, there are five sub-categories of education (degree, certificate through to less than year 10) and 1.7 per cent have a degree and are low paid, 3.5 per cent have a certificate and are low paid, and 6.5 per cent have Year 10-11 and a high wage (with a total of 100 per cent for the education category and pay levels). The purpose of providing this comparative set of statistics is so that the relative size and importance of each sub-group can be garnered. Most of the patterns that emerge from this table are unsurprising: a higher proportion of females, less educated workers, those aged 21-24, working in the agriculture, retail and accommodation industries, and working in elementary occupations are paid less. In many cases where a high proportion of a particular category of employees are low paid, they represent a small share of the total number employed. An extreme case is that while 30.5 per cent of full-time students work in low pay jobs, they represent less than 1 per cent of the employee population.

In terms of family characteristics, the incidence of low-paid is higher for sole parents who are employees than for other family types. This is not surprising as sole parents, on average, have lower education and form a higher proportion of part-time casual employees. A small proportion of managers and professionals are low-paid, possibly due to measurement errors and high numbers of unpaid working hours. In the HILDA survey, usual working hours which we use in the calculation of wages may include both paid and unpaid working hours. It is common for managers and professionals to report unusually high working hours.

**Table 3.4 Distributions of low and medium and high pay by personal and job characteristics**

	% of employees in sub-groups			% of all employees		
	Low	Medium	High	Low	Medium	High
<b>Gender</b>						
Male	10.2	33.0	56.8	5.5	17.6	30.3
Female	14.3	43.2	42.5	6.7	20.2	19.7
<b>Age</b>						
21-24	23.6	51.0	25.4	2.7	5.7	2.9
25-29	13.2	41.3	45.5	1.8	5.7	6.3
30-44	9.9	35.2	54.9	4.2	14.8	23.0
45-54	9.7	34.3	56.0	2.3	8.1	13.2
55-64	12.8	36.6	50.6	1.2	3.4	4.7
<b>Education</b>						
Degree+	6.3	19.3	74.4	1.7	5.1	19.6
Certificate	10.7	39.5	49.8	3.5	13.0	16.3
High school (completed)	15.8	45.6	38.6	2.6	7.4	6.3
Year 10-11	16.5	49.7	33.8	3.2	9.6	6.5
Less than Year 10	23.0	51.3	25.7	1.2	2.6	1.4
<b>Currently studying</b>						
Full-time student	30.5	37.9	31.6	0.9	1.2	1.1
Part-time student	11.6	34.7	53.7	1.0	3.3	5.1
Not studying	11.5	38.1	50.4	10.1	33.3	44.0
<b>Family type</b>						
Single	11.8	38.5	49.7	1.8	5.9	7.6
Sole parent	16.8	45.2	38.0	1.1	3.1	2.6
Couples without dependents	10.7	36.8	52.5	3.8	13.0	18.5
Couples with dependents	9.1	33.6	57.3	3.9	14.3	24.4
<b>Employment contract type</b>						
Casual	33.8	46.5	19.7	6.3	8.7	3.7
Fixed term	8.7	32.8	58.5	0.8	3.0	5.3
Permanent	6.9	36.1	57.0	5.0	26.0	41.2
<b>Industry</b>						
Agriculture, forestry and fishing	38.8	40.0	21.2	0.8	0.8	0.4
Manufacturing	10.0	39.0	51.0	1.4	5.3	6.9
Retail trade	20.8	60.7	18.5	2.3	6.6	2.0
Accommodation, cafes & restaurants	28.6	51.9	19.5	1.3	2.4	0.9
Property and business services	12.1	32.1	55.8	1.2	3.3	5.7
Health and Community Services	12.0	36.9	51.1	1.5	4.7	6.5
Cultural, Recreational & Personal services	17.2	36.7	46.1	1.0	2.2	2.8
<b>Occupation</b>						
Managers, administrators & Professionals	4.2	16.0	79.8	1.2	4.5	22.5
Associate professionals	8.5	32.9	58.6	1.0	4.0	7.1
Tradespersons & related	10.9	38.9	50.2	1.2	4.2	5.4
Advanced clerical & service workers	8.3	42.7	49.0	0.3	1.7	2.0
Intermediate clerical, sales & service wkrs	15.1	51.4	33.5	2.9	9.8	6.4
Intermediate production & transport wkrs	13.9	49.7	36.4	1.3	4.5	3.3
Elementary clerical, sales & service wkrs	22.0	56.6	21.4	1.8	4.7	1.8
Labourers & related workers	29.2	51.4	19.4	2.4	4.4	1.6

## 4. Dynamics of Low-paid Employment

In this section, the dynamics of employment and pay status are analysed. We assess the percentage of people of workforce age moving each year, or over two, three and four years between the states of employee-low paid, employee-medium paid, employee-high paid, self employed, and not employed, with the later including unemployed and not in the labour force.

Table 4.1 shows the transition between the five labour market states in 1 to 4 years' observation windows. For example, in Panel A, of those low paid in year  $t$ , by the next year  $t+1$  36.1 per cent still were in low paid employment, 36.4 per cent had moved to medium paid and 11.3 per cent to high paid, 4.2 per cent had become self-employed and 12.0 per cent had moved into not employed. Of individuals who are initially low-paid, nearly 50 per cent progress to higher pay categories one year after. The percentage increases to 57 per cent if we broaden the observation windows to 4 years. It is very important to note that the initial year here refers to the initial observation not the first year that individuals take low-paid jobs. We do not know how long, if at all, survey participants were in low-paid employment before the initial observation year.

Table 4.1 also shows that persistence in remaining in the same labour market state from one wave to the next (shown by the diagonal terms) is actually weakest for those in low paid (36.1%). The strongest persistence is for those who are self-employed, not employed, and in the high end of the pay category. As the window of observation is expanded, there is a definite weakening of any persistence effects. In particular, each successive widening of the observation window is associated with a higher proportion of low paid progressing into medium and high paid (the only exception being the last panel where there is a decrease of 2 per cent of initially low paid people who progressed to medium pay within 4 years, relative to the 3-year window, but this is more than offset by the 3 per cent increase in those who progressed to high paid from low paid). The table also suggests some degree of volatility of individuals' wages over time. The direction of transition is not monotonic. For example, 9.3 per cent of medium-paid workers become low-paid one year later, and 2 per cent of high-paid workers shifted to low pay.

For individuals who are not employed in the initial year, the proportion who shift into low-paid jobs increases as the observation window is widened, and the rate of increase in the proportion shifting into medium- and high-paid jobs increases even more dramatically. For example, 3.8 per cent of not-employed persons were in low-paid job one year after and 7.3 per cent were in a medium-paid job. As we broaden the observation window to 4 years, the

proportion of initially non-employed persons in low- and medium-paid jobs at the end of the fourth year is 5.1 per cent and 13.4 per cent, respectively. The rate of increment from 7.1 to 13.4 per cent is higher than 3.8 to 5.1 per cent. These transitions indicate that there are some not employed persons who initially take low-paid jobs as stepping stones to higher paid jobs.

**Table 4.1 Transitions between labour market states as a proportion of group in initial state** (Percentage of persons in the initial state  $i$  in year  $t$  moving to state  $j$  in year  $t+1$  for Panel A, in year  $t+2$  for Panel B, in year  $t+3$  for Panel C, and year  $t+4$  for Panel D, where the states  $i, j$  are low paid, medium paid, high paid, self employed and not employed (either unemployed or not in the workforce))

<i>Initial state(time t)</i>	Employed			Self-Employed	Not Employed	Total
	Low Paid	Medium Paid	High Paid			
<i>Panel A: Destination as of time t+1</i>						
Low paid	<b>36.1</b>	36.4	11.3	4.2	12.0	100.0
Medium paid	9.3	<b>58.5</b>	21.8	2.5	7.9	100.0
High paid	2.0	14.3	<b>76.6</b>	2.9	4.2	100.0
Self Employed	2.5	3.3	5.7	<b>81.8</b>	6.7	100.0
Not Employed	3.8	7.3	4.4	3.4	<b>81.1</b>	100.0
<i>Panel B: Destination as of time t+2</i>						
Low paid	<b>29.4</b>	38.0	12.9	5.1	14.7	100.0
Medium paid	8.9	<b>53.8</b>	25.0	3.7	8.6	100.0
High paid	1.8	14.5	<b>74.1</b>	4.3	5.3	100.0
Self Employed	2.8	4.6	7.4	<b>76.7</b>	8.6	100.0
Not Employed	4.7	9.9	5.1	4.3	<b>76.0</b>	100.0
<i>Panel C: Destination as of time t+3</i>						
Low paid	<b>23.9</b>	39.9	16.3	5.3	14.5	100.0
Medium paid	8.1	<b>51.5</b>	24.6	4.8	11.0	100.0
High paid	2.3	14.1	<b>72.0</b>	5.5	6.1	100.0
Self Employed	3.1	5.0	8.8	<b>74.0</b>	9.1	100.0
Not Employed	5.4	11.6	6.8	5.1	<b>71.2</b>	100.0
<i>Panel D: Destination as of time t+4</i>						
Low paid	<b>22.9</b>	38.1	19.2	4.0	15.8	100.0
Medium paid	9.7	<b>47.3</b>	24.5	5.4	13.1	100.0
High paid	1.9	15.4	<b>69.1</b>	5.9	7.6	100.0
Self Employed	3.2	4.7	9.7	<b>72.3</b>	10.1	100.0
Not Employed	5.1	13.4	8.6	5.4	<b>67.6</b>	100.0

Note: Panel A is constructed using average of movements between Wave 1 and 2, Wave 2 and 3, Wave 3 and 4 and Wave 4 and 5. Panel B is the average of movements between Wave 1 and 3, Wave 2 and 4, and Wave 3 and 5. Longitudinal weights are applied in calculations. Similar rules apply to other panels.

Table 4.2 gives an alternative description of the relative importance of each transition in terms of the population. Each transition percentage is presented as share of the population, and in so doing it takes into account the uneven size of each labour market state. For example, in Panel A for the one-year transition, 2.6 per cent of the population start in and stay in low-paid employment, 2.6 per cent start in low-paid employment and move to medium-paid employment

by the next year. The sum of numbers along the diagonal represent the total proportion of the population which remains in the same labour market state at the end of the observation window (71 per cent for one year and 61 per cent for 4 years). The proportion of people who shift from medium-paid to low-paid is not much lower than the proportion of people who shift from low-paid to medium-paid (for example, 2.1 per cent versus 2.6 per cent for the one year observation window). For individuals who were low paid, apart from those who were already low-paid in the previous year, a larger proportion of entrants to the low paid group shifted from the medium paid than from the not employed (1% out of 6.6% in the previous year of Panel A). The numbers change slightly as the observation window is expanded, but the magnitude of change is small.

**Table 4.2 Transitions between labour market states as a proportion of the population**

*(Percentage of the population who start in state  $i$  in year  $t$  and move to state  $j$  in a future year, where the states  $i, j$  are low paid, medium paid, high paid, self employed and not employed (either unemployed or not in the workforce))*

<i>Initial state (time <math>t</math>)</i>	Employed			Self-	Not	Total
	Low	Medium	High	Employed	Employed	
<i>Panel A: Destination as of time <math>t+1</math></i>						
Low paid	<b>2.6</b>	2.6	0.8	0.3	0.9	7.2
Medium paid	2.1	<b>13.2</b>	4.9	0.6	1.8	22.6
High paid	0.6	4.3	<b>23.1</b>	0.9	1.3	30.2
Self Employed	0.3	0.5	0.8	<b>11.2</b>	0.9	13.7
Not Employed	1.0	1.9	1.2	0.9	<b>21.3</b>	26.3
Total	6.6	22.5	30.8	13.9	26.2	100.0
<i>Panel B: Destination as of time <math>t+2</math></i>						
Low paid	<b>2.2</b>	2.8	1.0	0.4	1.1	7.5
Medium paid	2.0	<b>11.9</b>	5.6	0.8	1.9	22.2
High paid	0.6	4.4	<b>22.6</b>	1.3	1.6	30.5
Self Employed	0.4	0.6	1.0	<b>10.5</b>	1.2	13.7
Not Employed	1.2	2.6	1.3	1.1	<b>19.9</b>	26.1
Total	6.4	22.3	31.5	14.1	25.7	100.0
<i>Panel C: Destination as of time <math>t+3</math></i>						
Low paid	<b>1.8</b>	3.0	1.2	0.4	1.1	7.5
Medium paid	1.8	<b>11.4</b>	5.4	1.1	2.4	22.1
High paid	0.7	4.4	<b>22.2</b>	1.7	1.9	30.9
Self Employed	0.4	0.7	1.2	<b>10.0</b>	1.2	13.5
Not Employed	1.4	3.0	1.8	1.3	<b>18.5</b>	26.0
Total	6.1	22.5	31.8	14.5	25.1	100.0
<i>Panel D: Destination as of time <math>t+4</math></i>						
Low paid	<b>1.7</b>	2.9	1.5	0.3	1.2	7.6
Medium paid	2.1	<b>10.2</b>	5.3	1.2	2.8	21.6
High paid	0.6	4.9	<b>21.8</b>	1.9	2.4	31.6
Self Employed	0.4	0.6	1.3	<b>9.9</b>	1.4	13.6
Not Employed	1.3	3.4	2.2	1.4	<b>17.3</b>	25.6
Total	6.1	22.0	32.1	14.7	25.1	100.0

Note: Panel A is constructed using averages of movements between Wave 1 and 2, Wave 2 and 3, Wave 3 and 4 and Wave 4 and 5. Panel B is the average of movements between Wave 1 and 3, Wave 2 and 4, and Wave 3 and 5. Longitudinal weights are applied in calculations. Similar rules apply to other panels.

A simplified picture of the effects of personal, initial job and industry characteristics on the transition probabilities for low paid employees is shown in Table 4.3. The table reports data for the three-year transition period, with the comparable averages being Panel C of Tables 4.1 and 4.2. An average is taken of two sets of transitions: Wave 1 of HILDA to Wave 4, and Wave 2 to Wave 5. The reasons for choosing an average for the two sets of transitions instead of, for example, the four-year transition between Wave 1 and Wave 5 is to minimize measurement errors. There is no theoretical reason to expect that the relationship between individuals' characteristics and low-paid transitions would differ much when comparing three-year and four-year observation periods. The benefit of reducing measurement error is higher than the cost of shortening the observation window by one year. Moreover, One or two-year observation windows are too short as it takes time to accumulate human capital to gain higher wages. Thus, it is reasonable to investigate three-year medium term transitions. To read Table 4.3 if we take the characteristic gender, of the males starting in low pay, in three years time 24 per cent remain in low pay, 41.1 per cent move to medium pay; and the comparable percentage transitions for females are 22.2 per cent remain in low pay and 39.5 per cent move to medium pay.

The effects of personal, initial job and industry characteristics on the transition probabilities provided in Table 4.3 are in line with those in Table 3.3. There are no significant gender differences in the persistence of low-paid, but a higher proportion of women move to non-employment and a higher proportion of men move to high pay. Younger workers have a lower probability of remaining in low-paid jobs even though the overall incidence of low pay is higher among them. This is as an expected result, since human capital theory predicts that individuals invest more when they are young, and that wage profiles are steeper for young people. Individuals with a low education level are more likely to remain in low-paid jobs or to move to not employed. Interestingly, those with a low education are more likely to move to the self-employed state.

Full-time students have a much higher probability of moving to high-paid jobs, but part-time students do not. However, part-time students have a lower probability of remaining low-paid when compared with low-paid workers not currently studying. The persistence of low-paid status does not differ much across family types. However, sole parents do have a much lower probability of progressing to a high wage and they have a higher probability of exiting from employment. Individuals with permanent jobs are less likely to be low paid (Table 3.3) but once they are low paid, it is not more difficult for them to move onto a higher paid job. Nevertheless,

they are much more likely to remain in jobs than casual workers and fixed-term contract workers.

**Table 4.3 The transitions of the initially low paid to different labour market states by personal, initial job and industry characteristics** (*Percentage probability of moving from low-paid employment to the different labour market states*)

	Destination in Year t+3					Total	No. of Obs.
	Low	Medium	High	OTHER EMP	NOT EMP		
<b>Gender</b>							
Male	24.0	41.1	19.8	5.0	10.1	100.0	370
Female	22.2	39.5	11.7	5.9	20.7	100.0	489
<b>Age</b>							
21-24	16.5	48.6	25.6	4.1	5.2	100.0	115
25-29	19.4	48.5	14.4	4.2	13.5	100.0	131
30-44	22.8	43.0	14.4	5.8	14.0	100.0	359
45-54	26.0	32.3	13.1	5.9	22.7	100.0	177
55-64	32.1	19.9	9.9	6.8	31.3	100.0	77
<b>Education</b>							
Degree+	10.6	37.9	37.9	4.0	9.6	100.0	111
Certificate	19.3	44.9	15.7	4.7	15.4	100.0	269
secondary school (completed)	19.5	44.1	12.8	5.5	18.1	100.0	165
Year 10-11	32.8	34.6	9.2	6.2	17.2	100.0	230
Under year 10	30.6	36.3	5.2	7.9	20.0	100.0	85
<b>Currently studying</b>							
Full-time student	16.9	43.5	33.6	2.8	3.2	100.0	51
Part-time student	16.1	44.4	14.2	6.2	19.1	100.0	69
Not studying	24.0	39.6	14.0	5.6	16.8	100.0	739
<b>Family type</b>							
Single	21.9	39.4	14.9	7.8	16.0	100.0	108
Sole parent	21.3	35.8	5.2	8.4	29.3	100.0	88
Couples without dependents	21.0	37.4	13.1	6.7	21.8	100.0	224
Couples with dependents	22.3	42.4	16.9	4.9	13.5	100.0	301
<b>Employment contract type</b>							
Casual	23.0	37.5	13.3	6.1	20.1	100.0	469
Fixed term	13.8	47.0	12.9	6.8	19.5	100.0	58
Permanent	24.7	43.1	18.1	4.3	9.8	100.0	329
<b>Industry</b>							
Agriculture, forestry and fishing	33.8	32.8	10.2	9.4	13.8	100.0	53
Manufacturing	21.9	41.5	15.6	0.9	20.1	100.0	89
Retail trade	21.7	48.1	9.3	3.7	17.2	100.0	169
Accommodation, cafes & restaurants	26.8	42.0	5.0	9.3	16.9	100.0	88
Property and business services	19.2	35.8	20.0	10.0	15.0	100.0	79
Health and Community Services	24.7	36.7	18.4	4.5	15.7	100.0	101
Cultural, Recreational & Personal services	24.7	48.6	7.3	3.4	16.0	100.0	75

Note: All characteristics are defined using values in the initial year.

As for the effects of the initial industry of low-paid employment on the transition probabilities, the results in Table 4.3 are not much different to those of Table 3.3. Low-paid employees in the agriculture, forestry and fishing, and accommodation, cafes and restaurants industries have a higher probability of remaining in low-paid employment than is the case for the other industries. However, the differences in the persistence of low-paid employment are not as dramatic as the incidence of low paid, partly due to individuals' mobility across industries.

The analysis so far has focused on the transitions between a starting year and an end year as the observation window. We now consider in more detail the transition paths through different labour states over several years in which individuals may move. The following assessment is restricted to those initially low paid in Wave 2. We follow their labour market status through Waves 3, 4 and 5. To simplify the analysis, we combine the medium and high paid labour states as a single higher pay labour category. As a result, there are only four different labour market states in each wave. Over the four years and with four possible labour states each year there are 64 possible transition paths. These different paths are further grouped into nine categories as shown in Table 4.4. Details of the transition paths in each category are listed in Appendix table A1.

The transition patterns for three different samples of low-paid employees in Wave 2, 2002, are presented in Table 4.4. The first sample reported in the first column of data in the table consists of all individuals who were low paid (LP) in Wave 2. The second sample reported in the second column includes those who are not low-paid (NLP) in Wave 1 but were low paid (LP) in Wave 2. We further restrict the sample in the third column to those who are not employed (NEMP) in Wave 1 and who gain a low-paid job in Wave 2. Each column shows the percentage of the sample following the different four-year transition path categories. For example, in the first column, of those low paid in Wave 2, 9.4 per cent followed the persistently low paid path LLLL, and 4.4 per cent took the exit to high paid-1 path LLLH.

The distributions of the proportion of the initial low paid moving to the different categories of labour states over the next three years are not very different across the three samples. Individuals who are in the three most disadvantaged paths— persistently low paid, unsuccessful escapes, and exit to non-employment, account for 30.5 per cent of low paid employees in 2002. The most common path is exit to high pay 2, which is defined as being in higher pay for at least two of the next three years (or waves). Further investigation shows that if an individual has two consecutive year of higher pay (i.e., greater than two-thirds of the median wage), the probability of falling back to low-paid is only 0.1.

If we restrict the sample to those who have just become low paid in Wave 2 (they can be high paid, not employed or self-employed in Wave 1), namely the second column of data in Table 4.4, the proportion of these people trapped in low-paid jobs is smaller than for the total sample of the first column, and a slightly larger proportion move to higher paid in both Wave 3 and 4 (i.e. exit to high pay 2 and churn to high paid 2). In addition, a slightly lower proportion of those in sample 2 are unsuccessful escapees relative to the entire sample. Furthermore, there are some differences between individuals with different starting points and who move to low paid in Wave 2. A higher proportion of those who started as not low paid exited to high pay quicker and stayed in high pay for longer, whereas the trend is the opposite for those who started as not employed. A substantially larger proportion of those who started as not employed exited to non employed relative to the entire sample, and relative to those who started as not low paid. For those who moved from not employed in Wave 1 to low paid in Wave 2 (the last column of Table 4.4), the proportion that remain low paid in all of the four subsequent waves is even lower. However, this group also has a much higher proportion who exit to non employment, and this path accounts for a quarter of the sample. They are also less likely to move to high paid 2 category. This may be driven by individual heterogeneity, because the statistics suggest that individuals who had been out of work are more likely to continue to be still out of work.

Further analyses of the different individual, initial employment, industry and other characteristics associated with different transition pattern are presented in Section 5.

**Table 4.4: Transition patterns between time t and t+3 for different samples of initially low paid** (For each sample, the percentage in the specified initial state taking the particular transition path)

	Full sample Wave 2 = LP	Wave 1 = NLP Wave 2 = LP	Wave 1 = NEMP, Wave 2 = LP
Persistently low paid (LLLL)	9.4	4.9	4.1
Exit to high paid-1 (LLLH)	4.4	3.8	4.1
Exit to high paid-2 (LLHH or LHHH)	34.1	37.2	28.8
Churn to high paid-1 (LXXH)	9.6	9.7	13.7
Churn to high paid-2 (LXHH)	2.6	3.5	5.5
Unsuccessful escapes (LXHL or LHXL or LHLN)	10.3	9.7	4.1
Exit to other employment	4.0	4.2	2.7
Exit to non employment	10.8	11.1	24.7
Other churners	15.0	16.0	12.3
Number of observations	428	288	73

Note: 1. LP: low paid, NLP: not low paid, including all states except low paid. NEMP: not employed  
2. L refers to low paid, H represent medium and high paid and N denotes not employed. X refers to either not employed or other employment. Details of transition pattern classification rules are presented in Appendix table A1.

## 5. Pathways to Higher Pay

### *5.1 Descriptive analysis*

In this section, the analysis evaluates the association between individuals' characteristics and different pay pathways for those who were initially low paid. Table 5.1 examines the association between job characteristics and the changes in pay state between two consecutive waves or years. Job characteristics are described as changes in industry, occupation, job, contract type, part-time and full-time, and finished study. Both industry and occupation are classified using the one digit level code. Pay state transitions are the pay level options of low pay (L) and higher pay (H), with L being less than two-thirds of the median wage and H being pay above two-thirds of the median wage. Each observation unit is defined as two consecutive waves for which an individual is an employee in both waves. Therefore, an individual can have up to four observations if they are an employee in all five waves.

The statistics are presented as the average percentage of individuals with the particular job characteristic across all observation units. Then, for example, for those who remain in low paid for two consecutive years (LL), 26.3 per cent have changed industry and 30.8 per cent have changed occupation. It is a puzzle that the proportion of individuals who changed industry is higher than those who changed employer in all pathways. Even though it is possible that an employer has businesses in different industries, the incidence of changing industry without changing employer seems surprisingly high. Since the measure of 'change industry' is identified by individuals through an open-ended response to the job characteristic question in two different years, it is possible that individuals' answers differ slightly over the two years, even though they are in the same job and therefore were coded into two different industries. Thus, the proportion of individuals changing industry is likely to be overestimated. However, it is not possible to estimate the magnitude of overestimation, therefore the level of these sets of statistics needs to be read with caution. Notwithstanding this, if the measurement error is random across the different pathways, the relative level of the statistic can be compared.

A transition over consecutive years from low to higher pay (that is LH in Table 5.1) is associated with relatively high incidences of changing industry, job, contract type and finishing studies. While changes in occupation are important in moving from low to higher pay, changes in occupation also are associated with a reverse move from higher pay to low pay. In fact, a slightly higher proportion of those who moved from higher paid to low paid from one year to the next changed occupation, when compared with those who made the reverse transition. Of

those who changed contract type, moving from casual to non-casual was more likely to be associated with pay progression, whereas employees moving from non-casual to casual were associated with pay downgrades. Changes in part-time and full-time status have had a relatively small effect on the pay transitions when compared with the changes in industry, occupation, job and contract type characteristics. Individuals whose wages progress from low to high are equally likely to have changed working hours compared with those who downgraded from high to low, irrespective of changing from part-time to full-time or from full-time to part-time. Those who changed pay categories have a higher incidence of changing working hours.

For the individuals who started with low pay employment (LL and LH), those who moved to higher pay (LH) were more likely to have changed industry, occupation, employer and contract type and to have moved between FT and PT. The only exception is that a lower proportion of the LH group moved from non-casual to casual employment than the LL group. The largest difference between the two groups (LL and LH) is the likelihood of changing employer and moving from casual to non-casual employment. This suggests that changing employer and contract type are important pathways to higher pay. However, it is possible that those who are able to change employer and contract type are those individuals with higher human capital, as the characteristics of individuals are not controlled for the analysis.

**Table 5.1 Association of changes in job characteristics with different pay pathways over consecutive waves** (*Percentage of employees following each particular pathway*)

Industry Characteristic	Pay Pathways			
	LL	LH	HL	HH
Changed industry	26.3	32.8	28.8	20.2
Changed occupation	30.8	33.9	35.4	24.5
Changed employer	16.9	27.9	25.0	12.3
Finished study	7.6	10.1	8.7	6.6
Changed contract type	21.6	32.3	27.7	16.6
Casual to non-casual	10.1	21.5	7.0	4.4
Non-casual to casual	6.5	4.4	13.9	3.1
Permanent to fixed term	2.0	2.8	3.4	4.2
Fixed term to permanent	3.0	3.7	3.4	4.9
Changed between FT and PT	12.5	17.4	18.0	7.5
FT to PT	5.2	6.4	6.9	3.5
PT to FT	7.3	11.1	11.0	4.0
Total number of observations	736	1039	852	15085

Note: H denotes higher pay which includes medium pay and high pay. LL denotes low pay to low pay, LH low pay to higher pay, HL higher pay to low pay, and HH higher pay to higher pay.

Table 5.2 provides a summary of individual characteristics and work history by transition paths for employees who were low paid in Wave 2 (or in 2002). The four-year transition paths

for Waves 2 through 5 of the HILDA data are as described in Table 4.4. Due to the small sample size, those who are not low-paid employees in the last wave but went through different paths are grouped together. That is, exit to high paid-1 in Table 4.4 is combined with the churn to high paid-1 category as the LXXH, or churn to higher pay category. For the same small sample reason, exit to high paid-2 is combined with churn to high paid-2 as the LXHH, or permanent exit to high pay category. Those who move straight from low-paid to self-employed (exit to other employment) are combined with the other churning groups. The decision is made based on the similarity of individuals' characteristics between these groups.<sup>3</sup> Characteristics are provided for gender, age, education, family type, work experience, employment changes, and pay status in the first wave.

The table explores the characteristics of individuals in each transition path. Consider first the influence of age on the realized transition path for initial low-paid employees. For example, for those who are persistently in low pay, 17.5 per cent are aged 21-29 and the other three age groups, 30-44, 45-54, and 55-64 account for 40 per cent, 22.5 per cent and 20 per cent of this persistently low-paid group respectively. When reading the table, it is important to keep in mind that these numbers do not mean that 30-44 year olds are more likely to be persistently in low pay than are those 45-54 years old, because of the uneven size of the populations across the four age categories. In fact, comparing the different transition paths across the age groups, a higher proportion of the 30-34 age group exit to high pay than stay in the persistently low-paid group. The proportion of those 55 years old and above who remain persistently low paid is higher than for the younger employees who initially are low paid. This is not surprising, as this mature age group in general is on the flat or downward sloping part of their age-wage profile. If individuals are still in low-paid jobs at this age, it is relatively harder for them to exit, but not impossible as 4.5 per cent and 10 per cent of the transiting from low paid to the high paid groups (exit to permanent high paid and churn to high paid) are older workers. As expected, the representation of those aged in their 20s is higher in the transition path groups who progress to higher pay. However, a considerable proportion (27 per cent) of unsuccessful escapees is young workers. This observation indicates that policies to assist young workers to stay in high pay, once they move, may be as important as assisting low paid young workers to move to high paid initially.

Second, consider the gender composition in each transition path group. Relative to men, women are over-represented in all the transition pathway groups shown in Table 5.2 except for

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<sup>3</sup> The LR test is used to test whether two outcome categories can be combined in a multinomial logit model with reduced number of characteristics. Due to the small sample size, it is necessary to reduce the number of variables included in the multinomial logit estimation. Sensitivity tests of the inclusion of different variables were performed. The test statistics are available from the authors by request.

those who are persistently in low paid. The differences range from a moderate 8 per cent for exiting to high paid for 2 years, to 47 per cent for exiting to non-employment, with the gender gap for other categories also being quite notable at around 30 per cent. By contrast, of those who are persistently in low paid, there were 10 per cent more men than women. These results can be rationalised in terms of the tendency for low paying jobs and non-employment to be substitutes for each other to a greater extent for females than for males. The massive over-representation of women in the group of exit to non-employment already accounts for most that would otherwise be persistently low paid.

When considering the influence of family types on the transition probabilities, sole parents account for relatively larger proportions of those with disadvantaged pathways (persistently low, exit to non-employment and unsuccessful escapes) than the proportion who exit to high paid. Singles are the opposite, with a relatively low probability of following a disadvantaged pathway and a higher probability of escaping to higher paid employment. It is somewhat surprising that a large proportion (46.7 per cent) of the exit to non-employment group is couples with dependents, much larger than their shares of other transition paths. There is no obvious reason. However, it is not clear whether family status *per se* contributes to the determination of wage progression patterns, as sole parents are more likely to have lower education and singles are in general younger. It is possible that the observed correlations are driven by other, or third, characteristics.

In terms of education, the effects on transition paths are much as expected, in the sense that greater human capital enhances the probability of escaping an initial period of low pay to higher pay. Completing a certificate or tertiary education is associated with higher incidences of transiting out of low paid at some point during the observation window. In contrast, those who finish only Year 10 or 11 are over-represented in the group of persistently low paid.

Turning to work experience indicators, the accumulation of human capital after formal education is proxied by the proportion of time since full-time education spent in paid work, unemployment and the number of years in the current job and current occupation. Those who did not successfully escape low pay and those who exited to non-employment spent a smaller proportion of their life in paid work. This seems to concur with the notion that the lack of work experience is a barrier to good labour market outcomes. Yet, for those who are persistently low paid, the differences between the proportions of time spent working relative to those who ended up in high paid were only 2-3 per cent, or between 1-2 years in a period of 40 years and more. In terms of tenure in job and occupations, those who are persistently in low paid are actually

associated with the longest tenure in both job and occupation amongst all the transition patterns. This tends to suggest that specific jobs and occupations are more conducive to low pay and that there is a group of people who fail to move out of such jobs.

**Table 5.2: Characteristics of individuals with different transition patterns over four waves** (Percentage share of members of particular labour transition pattern with each particular characteristic)

	Labour State Transition Pattern						Full Sample
	Persistent low LLLL	Permanent exit to high LXHH	Churn to High LXXH	Churn to Low LXXL	Exit to non-EMP	Other churners	
<b>Gender</b>							
Male	55.0	45.9	35.0	34.1	26.7	34.0	40.2
Female	45.0	54.1	65.0	65.9	73.3	66.0	60.8
<b>Age</b>							
21-29	17.5	27.4	21.7	27.3	8.9	24.0	23.0
30-44	40.0	48.4	50.0	40.9	40.0	44.0	45.5
45-54	22.5	19.8	18.3	29.6	28.9	24.0	22.5
55-64	20.0	4.5	10.0	2.3	22.2	8.0	9.0
<b>Family type</b>							
Single	10.0	11.5	23.3	6.8	15.6	16.0	13.6
Sole parent	12.5	8.9	8.3	11.4	15.6	12.0	10.6
Couples w/o dependents	25.0	26.8	20.0	27.3	17.8	28.0	24.8
Couples with dependents	25.0	36.9	36.7	36.4	46.7	38.0	36.9
<b>Education</b>							
Certificate /Degree+	22.5	49.0	51.7	38.6	40.0	38.0	43.2
High school (completed)	12.5	16.6	20.0	25.0	22.2	18.0	18.4
Year 10-11	47.5	24.2	26.7	27.3	26.7	30.0	28.3
Under year 10	17.5	10.2	1.7	9.1	11.1	14.0	10.1
<b>Work experiences</b>							
Proportion worked	77.3	80.9	79.1	70.2	66.5	81.4	77.5
Proportion unemployed	9.6	4.8	5.6	5.8	7.4	4.7	5.8
Tenure in current job	8.0	3.6	3.5	3.1	2.6	3.7	3.9
Tenure in current occupation	10.0	5.9	6.6	6.6	3.8	5.6	6.3
<b>Changes</b>							
Ever changed industry	47.5	46.5	56.7	56.8	15.6	48.0	46.0
Ever changed occupation	47.5	59.2	51.7	56.8	15.6	58.0	51.5
Ever changed employer	17.5	51.6	60.0	38.6	20.0	84.0	48.5
Ever changed contract type	32.5	59.9	43.3	50.0	4.4	38.0	44.4
Ever been studying	15.0	26.1	40.0	15.9	15.6	18.0	23.7
<b>Low paid status t-1</b>							
Low paid	68.4	25.6	36.2	38.1	32.6	30.0	34.1
Medium paid	7.9	33.3	29.3	45.2	16.3	30.0	29.2
High paid	10.5	20.5	8.6	4.8	4.7	6.0	12.4
Self employed	5.3	4.5	3.5	4.8	4.7	16.0	5.9
Not employed	7.9	16.0	22.4	7.1	41.9	18.0	18.4
Numbers of observations	40	157	60	44	45	50	396

Sample: low pay in Wave 2.

It is clear that a larger proportion of those who exited to high pay for longer had either changed occupation or studied when compared to those who only recently entered high pay, relative to the persistently low paid and those who did not successfully escape low pay. Again, this seems to support the arguments that the level of pay is attached to particular jobs and that the accumulation of human capital is rewarded. In terms of changing industry, the reverse is true though the margin of difference is much lower when compared with the proportion that change occupation and undertake study. This may suggest that specific human capital is embodied in employees in some industries, and that employees are reluctant to leave the industry. Then, voluntary career changes mostly occur through occupational changes within the same industry.

For the influence of the preceding period pay category on the transition pathway group in Table 5.2, we find over-representation of those who were low paid in the preceding wave in the unsuccessful transition groups. Over two-thirds of the persistently low paid group were low-paid in the preceding wave. Those medium or high paid in the preceding wave are more likely to permanently exit to high pay. Those recently not employed comprise 41 per cent of those individuals who exit to the non-employment group. These results indicate the strong influence of individual heterogeneity. Those who have ever receive medium or high pay, in general, have a higher ability and therefore are more likely to become high-paid permanently.

The bivariate cross tabulations are so far not able to identify spurious correlations. We employed multivariate analyses in the next sub-section to further investigate the extent of causation (rather than correlation) between each covariate and wage transition patterns, while keeping other covariates constant to isolate the independent effect of each individual and family characteristic.

## ***5.2 Multivariate analysis- model specification of multinomial logit***

The descriptive analysis of Section 5.1 is largely in the form of bivariate comparisons between different characteristics and workforce transition paths. In some cases apparent high associations or correlations may reflect not the two variables being compared, but rather the effects of a third set of variables. For example, the observed high correlation between females and the persistent low paid transition group may be more the result of the over-representation of females in casual employment rather than gender *per se*. The advantage of a multivariate statistical model is to isolate the independent influence of particular variables while holding the effects of other variables constant. The extended multivariate analysis also enables us to assess

the significance and the magnitude of effect of different individual, employment and other characteristics on the probability of an employee following different labour market transition pathways.

The dependent variable pay categories that we seek to model have five distinct categories with no natural ordering. An appropriate technique for modelling such a variable is a multinomial logit. The multinomial logit model is identified by normalising the parameters  $\beta$  to zero for one outcome (the base category), and is described by the system of equations:

$$\begin{aligned} \Pr(y = 1) &= \frac{1}{1 + \sum_{j=2}^J e^{X\beta_j}} \\ \Pr(y = m) &= \frac{e^{X\beta_m}}{1 + \sum_{j=2}^J e^{X\beta_j}}, \quad m = 2, \dots, J \end{aligned} \quad (1)$$

where  $y$  is the outcome of interest (with  $J$  distinct values, and equal to one for the base category),  $X$  is a vector of explanatory variables and  $\beta_j$  is the coefficient vector for outcome  $J$ .

Coefficient estimates are not readily interpretable for logit models, and the effects of individual explanatory variables on the outcome variable depend on the values of the explanatory variables at which they are evaluated. Consequently, rather than report coefficient estimates here, ‘mean marginal effects’ of the explanatory variables are reported.<sup>4</sup>

The marginal effect of continuous explanatory variable  $x_k$  on the probability outcome  $m$  occurs for a person with characteristics  $\mathbf{x}^i$  is given by:

$$ME_{m,k}^i \frac{\partial \Pr(y = m | \mathbf{x}^i)}{\partial x_k^i} = \Pr(y = m | \mathbf{x}^i) \left[ \beta_{k,m|J} - \sum_{j=1}^J \beta_{k,j|J} \Pr(y = j | \mathbf{x}^i) \right] \quad (2)$$

while the *mean* marginal effect is given by:

$$MME_{m,k} = (1/n) \sum_{i=1}^n ME_{m,k}^i \quad (3)$$

where  $MME_{m,k}$  is the mean marginal effect of variable  $x_k$  on the predicted probability  $\Pr(y = m | x)$ , and the summation is over the  $n$  individuals in the sample. This is, as the name suggests, the mean marginal effect of the explanatory variable on the predicted probability a

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<sup>4</sup> Coefficients estimates are in fact reported in the Appendix.

person is in category  $m$ , evaluated over all individuals in the sample, and holding all other explanatory variables constant at their actual values. Its interpretation is ‘the average effect on the probability of outcome  $m$  per unit increase in  $x_k$ ’.

For a binary explanatory variable, the marginal effect of explanatory variable  $x_k$  on the probability outcome  $m$  occurs for a person with characteristics  $\mathbf{x}^i$  is given by:

$$ME_{m,k}^i = \Pr(y = m | \mathbf{x}_{-k}^i, x_k = 1) - \Pr(y = m | \mathbf{x}_{-k}^i, x_k = 0) \quad (4)$$

where  $\mathbf{x}_{-k}^i$  represents the vector of characteristics of person  $i$  for all variables other than  $x_k$ . The *mean* marginal effect is as defined by Equation (3).<sup>5</sup> This is obtained by changing the explanatory variable  $x_k$  from zero to one for every individual, holding all other explanatory variables at their actual values, and calculating the mean change in the predicted probability.

However, an important issue that arises for the binary variables used in this study is that there are a number of ‘groups’ of binary variables, which implies that a slight modification to Equation (4) may be appropriate. For example, we use three dummy variables for age (with ‘aged 21-29’ the omitted dummy). Calculation of the marginal effect of changing an age dummy from zero to one is not entirely sensible if we do not account for the implications of this change for the other age dummies. For instance, if the 55-64 age dummy is equal to one, then all other age dummies should be zero, since a person cannot simultaneously be in two age groups. We resolve this issue by comparing the predicted probability when all dummy variables in the group are zero (the ‘base’ case) with the predicted probability when only the variable of interest in the group is set equal to one. For example, for the age dummies, the marginal effect for the 55-64 age dummy is obtained by first calculating the predicted probability of the outcome when all age dummies are zero and then calculating the predicted probability when only the 55-64 age dummy equals one. This gives the effect of changing a person’s age from 21-29 (the omitted dummy) to 55-64.

The correspondingly modified version of Equation (4) is:

$$ME_{m,k}^i = \Pr(y = m | \mathbf{x}_o^i, \mathbf{x}_g = 0, x_k = 1) - \Pr(y = m | \mathbf{x}_o^i, \mathbf{x}_g = 0, x_k = 0) \quad (4')$$

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<sup>5</sup> *Marginal* effect is actually a misnomer for binary variables, since equation (4) gives the effect of a discrete change in the binary variable from 0 to 1. However, for expositional convenience, we persist with using the term ‘marginal’ to describe the effect captured by (4).

where  $\mathbf{x}_o^i$  comprises a vector of characteristics of person  $i$  for all variables other than those in the group of dummy variables to which variable  $x_k$  belongs, and  $\mathbf{x}_g$  is the vector of other dummy variables in the group to which  $x_k$  belongs.<sup>6</sup>

Note that the mean marginal effect of a variable sums to zero across the  $J$  possible outcome categories, i.e.  $\sum_{j=1}^J MME_{j,k} = 0$ . This implies that the MME can be inferred for one category if the MMEs are known for all other categories. However, all outcome categories are reported, since the standard errors for the omitted outcome cannot be inferred from the other outcomes.<sup>7</sup>

Multinomial logit models allow flexibility in terms of the nature of the effects of characteristics on outcomes when compared with alternatives such as the ordered probit model. However, it is necessary to invoke the ‘Independence of Irrelevant Alternatives’ (IIA) assumption. This requires that the probability of one outcome relative to another be insensitive to the existence of another possible outcome.<sup>8</sup>

### ***5.3 Multivariate analysis- estimation results***

Table 5.3 and Table 5.4 show the mean marginal effects of different characteristics on the labour market transition pathways of individuals who are low paid in Wave 2. Table 5.3 includes only individuals’ initial characteristics for gender, age, education, workforce experience, and labour market state in Wave 1 as explanatory variables. To this set of characteristics, Table 5.4 adds an extra two variables for whether there has been a change in employer and (or) a change of contract type. Due to the small sample size, only a limited number of explanatory variables can be included to allow sufficient degrees of freedom. As a result, the education variables were grouped into two categories. The variables for ‘ever being in study’ and ‘ever changing industry’ were found to have insignificant coefficients, and they have

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<sup>6</sup> Groups of dummy variables have been clearly indicated in both the discussion of the variables and presentation of the results.

<sup>7</sup> Studies in which qualitative dependent variable models are estimated commonly report marginal effects evaluated at *mean values* of the explanatory variables. A problem with this approach is that no one is actually at the mean when we have binary explanatory variables and, furthermore, marginal effects can vary substantially, and in a non-linear fashion, with characteristics. Mean marginal effects are therefore more likely to produce representative estimates of the effects of characteristics. Another common approach for multinomial logit models is to present ‘odds ratios’, which give the effect of the explanatory variable on the likelihood of the outcome relative to the likelihood of the base outcome. While invariant with respect to the values of other characteristics, this is not necessarily informative with respect to the likelihood (probability) of the outcome. For example, an increase in an explanatory variable could increase the probability of both the outcome of interest and the base outcome. Also, large changes in the odds ratio could translate into small changes in probability, or vice versa.

<sup>8</sup> See Long and Freese (2001) for further discussion of the IIA assumption.

been excluded in the reported equations. The family type variables were excluded because in the sample they were highly correlated with the gender, age, education and work experience variables. Once those human capital variables are controlled for, there is no theoretical reason to anticipate a strong association with the excluded family type characteristic variables and the transition pathways. Family type variables are therefore left out to reduce the number of explanatory variables.

The estimates in Tables 5.3 and 5.4 are the mean marginal effect for each characteristic affecting the probability of a particular labour path relative to a base comparison. For example, in Table 5.3 for the sustained low pay pathway (LLLL) and the effect of gender, the first row term says the probability of being persistently low paid is 5.3 percentage points lower for women compared with their male counterparts, all other characteristics being constant; the term in brackets is the standard error of the estimate. For continuous variables, such as the proportion of time worked and tenure in current occupation, the mean marginal effects are interpreted as the changes in the probability of being in each outcome category due to a one unit change of the explanatory variable. The proportion of time unemployed (or worked) ranges between 0 and 1, so a one unit change represents changes between the two extreme cases of no unemployment experience and being unemployed all the time. An important feature of the mean marginal effect estimates is that their sum across different outcome categories is zero. That is, if the variable contributes to an increase in probability of being in outcome category  $i$ , it must be compensated for by a decrease in the probability of being in at least one of the other outcome categories.

Consider first the influence of gender on the time path of labour states for those initially low paid in Wave 2. Being female lowers the probability of being persistently low paid, and of a permanent exit to higher pay, however, these marginal effects are not statistically significant from zero. The relatively large standard errors may be due to the small sample size. Also, the magnitude of the estimated marginal effects of gender are smaller than for the age and labour state in the previous year's characteristics. Overall, the estimates indicate that gender plays no independent role in the transition pathways after the effects of other characteristics have been taken into account.

The estimates for the effect of age on the labour market pathway suggest that age is an important and a statistically significant characteristic. Those in the age group of 30-44 do not appear significantly different to those in their 20s. Those aged between 45 and 54 were about 17 percentage points more likely to be exiting to non-employment relative to those aged 21-29, and 13 percentage points less likely to be permanently exiting to high pay. This pattern is even more

pronounced for people in the oldest age group, who were 36 percentage points more likely to be exiting to non-employment. However, this is completely offset by their greater tendency to permanently exit to high pay (27 percentage points) or to fall into the group of unsuccessful escapes (8 percentage points).

In terms of education, having certificates or university degrees depresses the chance of being persistently low paid by a moderate 7 per cent relative to those that did not progress beyond secondary education. However, beyond this, it has no significant impact on individuals' chances of progressing out of low pay. One possible explanation is that education is a strong determinant of selection into low paid in the first instance. Once individuals are in low paid status the estimates suggest that education for some of these individuals will not affect their wage progression differently to than those with less education.

Apart from occupational tenure, the magnitude of marginal effects of work experience variables is quite substantial. Moving from a starting point of never been employed to working all the time reduces the probability of churning to low paid by 21 per cent but also increases the chance of other types of churning by 14 per cent. Conversely, moving from a start of never having been unemployed to being unemployed increases the possibility of being persistently low paid by 30 per cent. Similarly, one extra year of experience in their current occupation also results in a 0.7 percentage point higher probability of being persistently low paid, as well as reducing the chance of exiting to non-employment by 0.5 per cent. However, this does not mean that tenure in current occupation has an adverse effect on individuals' pay progression. It is possibly driven by individual heterogeneity. As shown in McGuinness and Freebairn (2007), higher tenure in current occupation results in lower incidence of being low paid. Those individuals who have had substantial experience in their current occupation but were still unable to progress into high paid jobs in Wave 2, and therefore selected into our sample, may have some specific unobserved characteristics such as attitude and effort preventing them from moving to higher-paid jobs. Similarly, unemployment experience has a strong effect on selection into low-paid employment, but it does not affect the transition pathways once selected into low paid.

The pay category in the previous year has a strong effect on the probability of making particular transitions. Relative to being low paid in the previous wave, being medium paid last wave decreases the chance of being in persistent low pay by 12 percentage points and increases the chance of permanently exiting to high pay by 15 percentage points. Being in high pay last wave only decreases the chance of being in persistent low pay by 8 percentage points relative to

being low paid in the previous wave, but it increases the chance of making a permanent exit to high paid by 33 percentage points. It also reduces the chance of unsuccessful escapes by a moderate 7 percentage points.

Self employment in the most recent wave increases the probability of going through other patterns of churning between different pay categories by 22 percentage points. Being unemployed in the previous wave decreases the chance of being in persistent low pay and being an unsuccessful escapee by 11 and 9 percentage points respectively.

Adding in two additional variables in Table 5.4 for changed contract type and for changed job does not affect the above results by much. However, the magnitude of the marginal effects for age dummies and work experience do change slightly but the directions of those effects remain the same. Those in the age group of 45-54 are now only different from those in their 20s in being 9 percentage points more likely to be exiting to non employment whereas before, the marginal effects show that they also had a lower tendency to permanently exit to high pay. Moving from a starting point of never been employed to working all the time increases the probability of permanently exiting to high pay by 20 percentage points and reduces the chance of churning to low paid by almost the same amount. A change of contract type reduces the chance of exiting to non-employment by 16 percentage points and being 'other churner' by 8 percentage points, while increasing the chance of permanent exit to high pay by almost 24 percentage points. Changing employers increases the chance of churning to high pay by a moderate 7 percentage points and to that of being 'other churners' by 19 percentage points, meanwhile reducing the chance of being persistently low paid by 11 percentage points and exiting to non-employment by 8 percentage points.

**Table 5.3 Multinomial logit model estimates of the mean marginal effects of characteristics on labour market paths**

Pathways	Persistent low LLLL	Permanent exit to high LXHH	Churn to High LXXH	Churn to Low LXXL	Exit to non-EMP	Other churners
<u>Gender (base case male)</u>						
Female	-0.053 (0.034)	-0.072 (0.055)	0.037 (0.042)	-0.020 (0.040)	0.051 (0.034)	0.056 (0.035)
<u>Age (base case Age 21-29)</u>						
Age- 30-44	-0.025 (0.039)	-0.047 (0.061)	0.030 (0.049)	-0.011 (0.043)	0.075 (0.064)	-0.023 (0.041)
Age- 45-54	-0.018 (0.046)	-0.134** (0.069)	-0.015 (0.062)	0.011 (0.052)	0.169** (0.095)	-0.014 (0.047)
Age- 55-64	0.030 (0.060)	-0.270** (0.069)	0.014 (0.081)	-0.083* (0.037)	0.358** (0.133)	-0.050 (0.055)
<u>Education (base case no qualification)</u>						
Education-Certificate /Degree+	-0.070** (0.027)	0.043 (0.048)	0.042 (0.039)	0.006 (0.033)	0.021 (0.034)	-0.041 (0.034)
<u>Work Experience (continuous)</u>						
Proportion worked	-0.085 (0.085)	0.177 (0.131)	0.087 (0.099)	-0.212** (0.071)	-0.105 (0.081)	0.138* (0.087)
Proportion unemployed	0.302* (0.145)	-0.293 (0.271)	0.054 (0.214)	0.022 (0.147)	-0.037 (0.154)	-0.049 (0.249)
Tenure in current occupation	0.007** (0.002)	-0.002 (0.004)	0.001 (0.003)	0.001 (0.003)	-0.005* (0.004)	-0.002 (0.003)
<u>Pay status in previous year (base case low paid)</u>						
Pay category last wave- medium paid	-0.125** (0.025)	0.147** (0.062)	-0.024 (0.040)	0.035 (0.038)	-0.044 (0.035)	0.011 (0.043)
Pay category last wave- high paid	-0.076** (0.026)	0.334** (0.075)	-0.066 (0.048)	-0.073* (0.038)	-0.059 (0.043)	-0.060 (0.048)
Pay category last wave- self employed	-0.046 (0.045)	-0.082 (0.102)	-0.081 (0.060)	-0.011 (0.072)	-0.002 (0.077)	0.222** (0.109)
Pay category last wave- not employed	-0.112** (0.026)	0.084 (0.079)	0.007 (0.054)	-0.094** (0.028)	0.072 (0.052)	0.043 (0.064)
Numbers of observations	40	157	60	44	45	50
Pseudo R square	0.0727					

\*\*significant at 5%

\*significant at 10%

**Table 5.4 Multinomial logit model estimates of mean marginal effects of characteristics on labour paths, with additional variables for changes in contract type and employer**

Pathways	Persistent low LLLL	Permanent exit to high LXHH	Churn to High LXXH	Churn to Low LXXL	Exit to non-EMP	Other churning
<u>Gender (base case male)</u>						
Female	-0.045 (0.033)	-0.073 (0.053)	0.035 (0.042)	-0.013 (0.039)	0.040 (0.031)	0.056 (0.035)
<u>Age (base case Age 21-29)</u>						
Age- 30-44	-0.026 (0.041)	-0.038 (0.060)	0.033 (0.050)	-0.013 (0.044)	0.059 (0.057)	-0.015 (0.037)
Age- 45-54	-0.032 (0.045)	-0.097 (0.070)	0.007 (0.066)	0.001 (0.052)	0.092* (0.083)	0.029 (0.054)
Age- 55-64	0.022 (0.064)	-0.223** (0.077)	0.068 (0.093)	-0.081 (0.044)	0.222** (0.118)	-0.007 (0.076)
<u>Education (base case no qualification)</u>						
Education- Certificate /Degree+	-0.078** (0.027)	0.051 (0.047)	0.046 (0.040)	0.006 (0.033)	0.015 (0.030)	-0.042 (0.034)
<u>Work experiences</u>						
Proportion worked	-0.074 (0.081)	0.202* (0.124)	0.070 (0.098)	-0.192** (0.071)	-0.105 (0.079)	0.098 (0.086)
Proportion unemployed	0.235* (0.136)	-0.269 (0.278)	0.084 (0.217)	0.020 (0.151)	-0.051 (0.119)	-0.020 (0.235)
Tenure in current occupation	0.006** (0.002)	-0.002 (0.003)	0.001 (0.003)	0.001 (0.003)	-0.005** (0.003)	-0.001 (0.003)
Ever changed employer	-0.109** (0.029)	-0.018 (0.049)	0.072* (0.038)	-0.052 (0.035)	-0.084** (0.031)	0.191** (0.038)
Ever changed contract type	-0.013 (0.029)	0.237** (0.051)	-0.024 (0.037)	0.035 (0.034)	-0.158** (0.027)	-0.077** (0.035)
<u>Pay status previous year (base case low paid)</u>						
Pay category last wave- medium paid	-0.121** (0.025)	0.141** (0.060)	-0.029 (0.041)	0.038 (0.038)	-0.037 (0.034)	0.009 (0.041)
Pay category last wave- high paid	-0.073** (0.026)	0.310** (0.077)	-0.064 (0.050)	-0.075* (0.038)	-0.058 (0.039)	-0.040 (0.057)
Pay category last wave- self employed	-0.006 (0.057)	-0.110 (0.090)	-0.092 (0.055)	-0.008 (0.077)	0.079 (0.107)	0.137* (0.096)
Pay category last wave- not employed	-0.100** (0.029)	0.075 (0.076)	0.005 (0.054)	-0.095** (0.028)	0.067 (0.046)	0.047 (0.059)
Numbers of observations	40	157	60	44	45	50
Pseudo R square	0.2650					

\*\*significant at 5%

\*significant at 10%

## 6. Conclusion

The purpose of this study is to investigate the dynamics of low-paid employment, in particular the transition pathways of initially low-paid employees. We also present the characteristics of low-paid employees and those in other labour market states to facilitate the understanding of these transition paths. The paper explores both transitions into and out of low-paid employment. Whereas the preceding literature has restricted the sample to those who are employees in all waves, our analyses show the movements between all labour market states, including out of employment (embracing unemployment and not in the labour force). Given that a considerable proportion (12 per cent) of low paid employees moved out of employment in the next year, ignoring transitions to the not employment state fails to provide a complete picture of labour market transitions.

Our findings indicate that mobility between the different labour market states is reasonably high. Only around one-third of low-paid employees remain low paid in the next year. On average, around 40 per cent of low-paid employees in any one year had medium or high-paid employment in the previous year, with 9% entering low pay from high pay and 32% entering from medium pay. Even though some of the movements may be attributable to measurement error, the mobility is still considerable. The movement between pay states is often associated with changing employers and contract type.

About 9 per cent of low-paid employees in 2002 remained low-paid in the next three consecutive years. This proportion fell by half once we restricted the sample to those who were not low-paid employees in the previous year (2001). This result implies the existence of state dependence to some extent. A small group of individuals may have difficulty of obtaining higher paid jobs.

Gender seems to play no role in determining transition pathways once we control for human capital variables. Younger adults are more likely to be in low-paid employment, but their pay progresses faster than does that of their older counterparts, suggesting that low-paid employment for many younger employees is likely to be temporary. Perhaps as important a policy concern as helping the low paid into a higher paid job is how to assist young workers to maintain their higher pay once obtained, as the statistics show a considerable proportion of younger low-paid workers are unsuccessful escapees. That is, many of those observed initially in low paid who then move to medium or even high pay, subsequently fall back to low pay later. Older workers are more likely to be persistently low paid, or move out of employment, as they

often invest relatively less in human capital and are in the flat or downward sloping section of their age-wage profile as predicted by human capital theory.

In terms of human capital, initial education, and work experience are strong predictors of low paid status but these characteristics are not important determinants of low-paid workers' subsequent transition pathways. The pathway of permanent exit to high paid (LXHH) is more likely to be associated with a change in contract type than other transition pathways. Changing employers, by contrast, is associated with a higher probability of being in churn to high paid (LXXH) and other churning groups. A possible explanation is that the adjustment cost of changing employers leads to slower progression into high-paid employment. However, changing employers does lower the probability of remaining persistently low paid by 11 percentage points.

Similar to the findings of Buddelmeyer et al. (2007), we observe state dependence. Those individuals who were low-paid previously were more likely to be persistently low-paid and less likely to permanently exit to high paid in the subsequent three waves than those who were medium and high paid in Wave 1 and newly become low paid in Wave 2. We estimate that those not employed previously and who newly obtained a low-paid job have a lower probability of persistent low pay than those with an extended history of low pay. These state dependence results indicate that there is a small group of individuals who are in low-paid employment for a long time and whose characteristics cannot be identified from the existing demographic and human capital variables.

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## Appendix

**Table A1 Classification of transition paths**

	4 waves patterns
Persistently low paid (LLLL)	LLLL
Exit to high paid 1 (LLLH)	LLLH
Exit to high paid 2 (LLHH or LHHH)	LLHH, LHHH
Churn to high paid 1 (LXXH)	All patterns start with L and end with H, including: LLOH, LLNH, LHLH, LHOH, LHNH, LOLH, LOOH, LNLH, LNOH, LNNH
Churn to high paid 2 (LXHH)	All patterns start with L and end with HH, including: LOHH, LNHH
Unsuccessful escapes (LXHL or LHXL or LHLN)	All patterns start with L and end with L or LN and have at least one H in between, including: LLHL, LHLL, LHLN, LHHL, LOHL, LNHL
Exit to other employment	All patterns move straight from L to O, including: LLLO, LLOO, LOOO
Exit to non employment	All patterns move straight from L to N and churning between L and N, including: LLLN, LLNN, LNNN, LNLL, LNLN, LNNL
Other churners	All other patterns not listed above, including: LLHO, LLHN, LLOL, LLON, LLNO, LHLO, LHHO, LHHN, LHOO, LHNO, LHNN, LOLL, LOLO, LOOL, LOON, LONN, LNHO, LNHN, LNOO

**Table A2: Transition patterns between time t and t+4**

	Sample: w1=low paid
Persistently low paid (LLLLL)	5.7
Exit to high paid 1 (LLLLH)	1.8
Exit to high paid 2 (LLLHH)	2.2
Exit to high paid 3 (LLHHH or LHHHH)	31.4
Churn to high paid 1 (LXXXH)	10.8
Churn to high paid 2 (LXXHH or LXHHH)	6.1
Unsuccessful escapes (LYYYL or LYyLN or LYLNN)	11.6
Exit to other employment	2.4
Exit to non employment	9.7
Churning between L and N	1.5
Other churners	16.9
Number of observations	456

Notes: 1. X refers to either not employed or other employment. Please see Appendix table 1 for details of transition pattern classification rules.

2. Y refers to either not employed or other employment or high paid. To be classified in this category, an individual needs to have at least one period which is high paid.

**Table A3 Classification of transition paths for 5 wave patterns**

	5 waves patterns
Persistently low paid (LLLLL)	LLLLL
Exit to high paid 1 (LLLLH)	LLLLH
Exit to high paid 2 (LLLHH)	LLLHH
Exit to high paid 3 (LLHHH or LHHHH)	LLHHH, LHHHH
Churn to high paid 1 (LXXXH)	All patterns start with L ; end with H
Churn to high paid 2 (LXXHH)	All patterns start with L ; end with HH
Unsuccessful escapes (LYYYL or LYyLN or LYLNN)	All patterns start with L ; end with L or LN or LNN; and have at least one H in between
Exit to other employment	All patterns move straight from L to O, including: LLLLLO, LLLLOO, LLOOOO, LOOOO
Exit to non employment	All patterns move straight from L to N, including: LLLLNN, LLLN, LLNN, LNNN
Churning between L and N	Not listed in the above and shift between L and N
Other churners	All other patterns not listed above

Note: Due to large numbers of different patterns, not all detailed patterns are listed.

**Table A4: Coefficient of Multinomial logit estimations without changes variables**

Pathways	LLLL		L...H		L...L		Exit to non-EMP		Other churners	
	Coef	Std	Coef	Sd	Coef	Std	Coef	Std	Coef	Std
Gender	-0.34	0.495	0.47	0.361	0.06	0.426	0.75	0.521	0.71	0.408
Age- 30-44	-1.37	0.849	-1.36	0.709	0.36	1.186	-2.89	0.916	-0.92	0.804
Age- 45-54	-1.55	0.757	-0.99	0.638	0.34	1.147	-2.03	0.738	-0.94	0.748
Age- 55-64	-1.46	0.774	-0.96	0.691	0.67	1.159	-1.54	0.769	-0.30	0.798
Education- Certificate /Degree+	-1.28	0.497	0.17	0.333	-0.11	0.384	-0.03	0.436	-0.44	0.373
Proportion worked	0.09	0.029	0.01	0.024	0.02	0.030	-0.05	0.038	-0.01	0.028
Proportion unemployed	-0.95	0.462	-0.93	0.338	-0.46	0.382	-3.57	0.786	-1.27	0.369
Tenure in current occupation	-1.65	0.544	0.49	0.346	-0.52	0.392	-1.17	0.523	1.91	0.473
Pay category last wave- medium paid	-2.79	0.717	-0.63	0.406	-0.13	0.422	-1.03	0.573	-0.28	0.450
Pay category last wave- high paid	-2.15	0.742	-1.29	0.579	-1.81	0.810	-1.80	0.866	-1.08	0.719
Pay category last wave- self employed	0.45	0.954	-0.49	0.880	0.34	0.893	1.56	1.063	1.16	0.684
Pay category last wave- not employed	-2.16	0.794	-0.15	0.491	-1.71	0.749	0.36	0.582	0.21	0.571
Constant	3.08	1.433	0.18	1.117	0.99	1.451	3.39	1.320	-1.54	1.309

**Table A5: Coefficient of Multinomial logit estimations with changes variables**

Pathways	LLLL		L...H		L...L		Exit to non-EMP		Other churners	
	Coef	Std	Coef	Sd	Coef	Std	Coef	Std	Coef	Std
Gender	-0.44	0.466	0.46	0.357	-0.02	0.422	0.77	0.473	0.66	0.386
Age- 30-44	-1.47	0.793	-1.24	0.695	0.22	1.167	-3.07	0.814	-0.66	0.752
Age- 45-54	-1.64	0.711	-0.88	0.626	0.25	1.127	-2.16	0.641	-0.70	0.704
Age- 55-64	-1.26	0.734	-0.89	0.677	0.75	1.144	-1.32	0.675	-0.33	0.748
Education- Certificate /Degree+	-1.06	0.469	0.16	0.327	-0.07	0.381	0.09	0.392	-0.45	0.352
Proportion worked	0.09	0.027	0.01	0.023	0.02	0.029	-0.04	0.035	-0.01	0.026
Proportion unemployed	-2.64	0.688	-0.58	0.399	-0.12	0.416	-0.91	0.529	-0.30	0.429
Tenure in current occupation	-2.10	0.723	-1.28	0.567	-1.75	0.803	-1.55	0.813	-1.30	0.687
Ever changed contract type	-0.49	0.905	-0.53	0.861	0.12	0.883	0.25	0.920	1.34	0.632
Ever changed job	-2.44	0.783	-0.19	0.482	-1.67	0.742	0.37	0.510	0.11	0.535
Pay category last wave- medium paid	1.91	1.321	-0.25	1.068	0.59	1.407	1.70	1.129	-1.11	1.165
Pay category last wave- high paid	-0.44	0.466	0.46	0.357	-0.02	0.422	0.77	0.473	0.66	0.386
Pay category last wave- self employed	-1.47	0.793	-1.24	0.695	0.22	1.167	-3.07	0.814	-0.66	0.752
Pay category last wave- not employed	-1.64	0.711	-0.88	0.626	0.25	1.127	-2.16	0.641	-0.70	0.704
Constant	-1.26	0.734	-0.89	0.677	0.75	1.144	-1.32	0.675	-0.33	0.748