

Final Report

Human Capital and the Patterns of Employment and Welfare Receipt

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Executive Summary

Background:

- The project aims to establish the role of core human capital attributes in terms of determining labour market outcomes, in particular in terms of the employability of workers who are also likely to be welfare recipients. As welfare recipients are often in and out of employment, but typically belong to the lower segments of the income distribution, the project will concentrate on the lower end of the job market.
- The main focus of the project is on welfare recipients, but the analysis is done for the complete working population for two reasons. First, to allow for comparisons to be made, and second because previous research using HILDA has revealed that a sizeable proportion of the working population moves in and out of welfare on a regular basis. For the correct comparisons to be made, the analysis was extended to include all those who worked at any time between the years 2001 and 2006.
- The project attempted to incorporate measures of skill shortages to determine employability in a manner that encompassed measures of demand for labour, but suitable data could not be obtained. Hence, the measures of employability used here are the conventional human capital measures.
- The project introduced a number of measures of health in the list of human capital measures that have proved to be of considerable empirical significance, especially for the group of welfare recipients.

Econometric models:

- Two econometric models were introduced and estimated: A multinomial logit to examine the unordered choices between different combinations of employment and welfare receipt status, and a competing risks duration model to examine the changes in the observed patterns of employment and welfare receipt.
- A multinomial logit model with four possible employment-welfare alternatives was estimated in order to establish the relationship between human capital and the following welfare receipt patterns:
 - Not-Employed and receiving Welfare;
 - Employed and receiving Welfare;

- Not-Employed and not receiving Welfare;
- Employed and not receiving Welfare.
- Mean marginal effects (MMEs) were calculated for each alternative.

Multivariate estimation results – effects on incidence:

- Four main categories of explanatory variables were introduced in the estimation: (i) Qualifications; (ii) Work Experience; (iii) Health; (iv) Individual and Family characteristics. The strongest results were found for Qualifications and Health.
- Qualifications are very strongly related with employment-welfare outcomes. In the case of not-Employed and receiving Welfare more qualifications are associated with lower probabilities. In the case of Employed and not receiving Welfare exactly the opposite holds.
- Work Experience showed a quadratic relationship. As work experience increases the probability of being Employed and not receiving Welfare increases and the probabilities of all other alternatives decrease; but this relationship only holds up to a level of work experience, beyond which the relationship is reversed.
- All Health measures confirm that worse health is strongly and positively associated with being not-Employed and receiving Welfare and that better health is strongly and positively associated with being Employed and not receiving Welfare.
- Family status and children in the family are found to influence employment-welfare outcomes, but not as strongly as do qualifications and health.
- Work attitudes show a weak but statistically significant positive (negative) association with the probability of being Employed and not receiving Welfare (not-Employed and receiving Welfare). The question of whether attitudes towards work change with changes in employment status could not be answered because of data limitations.

Multivariate estimation results – effects on transitions:

- A competing risks duration model was introduced to examine the over time changes in the observed patterns of employment and welfare receipt.

- Mobility between the four combinations of employment and welfare receipt is estimated using a set of four competing-risks models, one for each initial state. Each estimation has three potential competing exits. The logistic model is used, as it lends itself to a flexible but econometrically simple type of estimation. Mean marginal effects are calculated and presented.
- The same core categories of explanatory human capital variables were used: work experience, education/qualifications and health. Given that we have four separate samples to estimate and that each estimation produces four sets of coefficients, there are many more useful results than the ones that are summarised here.
- Work experience has a U-shape (quadratic) effect on all transitions in the way human capital theory predicts: it facilitates movements into the employment and welfare state for those who are not in employment, and reinforces the employment stability of those who are in employment.
- Education and qualifications have a positive effect on movements into employment and welfare and stability of employment and welfare, but the effects are not linear. Those with the lowest levels of education appear to be the most vulnerable, especially when it comes to retaining employment without welfare support.
- Health is confirmed to be a major factor regarding the movements into employment and welfare and the stability of employment and welfare. Again the effects are not linear. There appear to be few differences between those who report excellent, very good and good health (the majority of respondents). Fair and poor health appears to be very strongly associated with all negative labour market movements. Poor health stops people from getting jobs as much as it stops them from retaining the ones they have.

Further results:

- Long-term health conditions and work-limiting disabilities were also used instead of self-reported health, only to confirm the robustness of the results and the measures utilised in the analysis.

- Family status and children in the family are found to influence movements into employment and welfare and the stability of employment and welfare, but not as strongly as qualifications and health.
- Job search behaviours were modelled and estimated. A large number of activities were found to be highly correlated with returning to employment. However, this result is subject to self-selection into the activities and cannot be trusted without further analysis that the data at hand do not allow.
- Mutual obligation requirements and activities were found to have little effect in the probability of returning to employment.
- Marginal attachment to the labour market was estimated to have a positive but small additional impact on the probability of returning to employment.

1. Introduction

The objective of this project is to investigate the empirical relationship between human capital, employment status and welfare receipt status of working-age Australians. It is based on the Household, Income and Labour Dynamics in Australia (HILDA) survey. The project utilises the information on individuals over time, contained in the HILDA survey, to investigate patterns of human capital, employment and welfare receipt. In addition to traditional measures of human capital, such as education and work experience, this project examines the role of health, a form of human capital that is increasingly recognised as an important factor affecting labour market activity and outcomes. In particular, the report addresses the employability and resulting employment choices of income support recipients. The policy focus of this project is on the dynamics of employment and the welfare receipt patterns of low-income workers and (or) welfare recipients. To describe the dynamics of patterns of employment and welfare receipt, and to examine the role of human capital in these dynamics, the project investigates the whole working age population and seeks to identify pertinent differences between the sub-group of income support recipients and the rest of the working population.

This project extends and complements an earlier project undertaken by the Melbourne Institute (Mavromaras, Lee and Black, 2006) by examining in detail the patterns of employment and welfare receipt, and how human capital and individual and family characteristics may affect these patterns. A natural extension on previous work is that this project uses six waves of the HILDA survey (2001 to 2006). In addition, this project examines whether attitudes towards work and job search behaviour could play a role in the way individuals who are not employed may transit into employment, and whether job characteristics are important in sheltering employed individuals from employment loss. Attitudes towards work and job search behaviour have rarely been examined in earlier studies that use the HILDA survey.

This report is based exclusively on the HILDA survey as its data source. It was planned that this report would use DEEWR data on skills shortages and employability in order to incorporate in the analysis some measures of the demand for labour, but

we were not able to obtain appropriate data for this part of the project.¹ In order to cover the issues of employability the report has utilised a large number of complementary measures of human capital. It concentrated on the examination of their simultaneous and joint effect of different forms of human capital on the probability of being on welfare at any single point in time by utilising multinomial (unordered) regressions. It also concentrated on the probability of moving onto and out of welfare and (or) employment by utilising a competing risks duration model. The main result of the report is that aggregate labour market statistics conceal a particularly complex picture of employment and welfare receipt behaviour patterns where human capital in its different forms makes all the difference. The report found that by far the most dominant forms of human capital are education and health and that the way they influence labour market status and transitions in the labour market is a very complex one.

The report is structured as follows. Section 2 presents an overview of the human capital variables used in the analysis. Section 3 contains the descriptive analysis. Section 4 introduces an econometric model of employment status and welfare receipt status, presents the estimation results and discusses them. Section 5 introduces an econometric model of transitions between different combinations of employment and welfare receipt status, presents the estimation results and discusses them. Section 6 presents the conclusions of the report. As the report is based on extensive econometric analysis, a set of Appendices are included with detailed results for the interested reader.

¹ We do not provide a general description of the HILDA survey here, as this can be found in a number of Melbourne Institute publications. This report will focus on the data that directly relate to its principal aim and we leave the reader to obtain more detail on the general HILDA instruments elsewhere.

2. Definition of key variables

2.1. Employment status and welfare receipt status

The project examines the relationship between human capital and patterns of employment status and welfare receipt status among working age Australians. We define the working age population as males aged between 16 and 64 years (inclusive) and females between 16 and 61 years (inclusive). Welfare recipients are the focus of this project. However, as micro data reveal, individual welfare receipt status changes considerably with time; that is, recipients move onto and off welfare payments. To investigate the dynamic nature of welfare receipt status, we need to analyse the whole working age population.

Employment and welfare receipt are not mutually exclusive states for an individual to occupy at any given point in time. Welfare recipients can be employed (i.e. combine employment with welfare payments), while a not employed individual may also not receive welfare. This may happen for a number of reasons including the means-testing of welfare payments. In order to describe the position of an individual in terms of employment and welfare receipt accurately, we define the two dimensions of employment and welfare receipt separately. We then combine them into a joint definition of employment-welfare-receipt. Welfare receipt status is represented by a binary variable which indicates whether an individual receives welfare payments or not. This definition of welfare receipt status does not account for the extent to which an individual relies on welfare, an issue examined in detail by Mavromaras, Lee and Black (2006). An individual is defined as a welfare recipient if they receive any government benefits excluding family allowances, family tax benefits and pensions paid by the Department of Veteran Affairs (DVA) at the time of survey. The main benefit types included are unemployment related benefits, such as the Newstart Allowance, Mature Age Allowance and Youth Allowance, Disability Support Pension, Parenting Payments (both single and partnered), Sickness Allowance and Partner Allowance. Those who reported that they were receiving one of the benefits included but had also recorded a payment of zero dollars are treated as non recipients.

Employment status is categorised into employed full-time, employed part-time, unemployed and not in the labour force. Employment status is that at the time of the survey. We present descriptive statistics for all four employment states where this is

feasible, but when the number of observations becomes too small for meaningful statistical inference, we collapse the four employment states into two: employed (full or part time) and not-employed (seeking or not seeking work). All of the econometric analysis and some of the descriptive analysis use the binary definition of employment status.

Using two employment and two welfare receipt categories we obtain four combinations of employment-welfare receipt status:

- a) not employed and on welfare (denoted as not-employed-welfare),
- b) employed and on welfare (denoted as employed-welfare),
- c) not employed and not on welfare (denoted as not-employed-non-welfare), and
- d) employed and not on welfare (denoted as employed-non-welfare).

Using four employment and two welfare receipt categories we obtain eight combinations of employment-welfare receipt states:

- a) employed full time and on welfare (FT-employed-welfare),
- b) employed part-time and on welfare (PT-employed-welfare),
- c) unemployed and on welfare (unemployed-welfare),
- d) out of the labour force and on welfare (OLF-welfare),
- e) employed full-time and not on welfare (FT-employed-non-welfare),
- f) employed part-time and not on welfare (PT-employed-non-welfare),
- g) unemployed and not on welfare (unemployed-non-welfare), and
- h) out of the labour force and not on welfare (OLF-non-welfare).

Note that there is not a natural order among the states from society's perspective, and this has implications for the way we think about this problem and for our choice of econometric models. Using the four employment-welfare receipt states as an example, we may say that from society's viewpoint the employed-non-welfare state is the most preferred combination and that the not-employed-welfare state is the least preferred, but then the ranking between the employed-welfare state and the not-employed-non-welfare state is not all that clear.

2.2. Education, work experience and health

There are two main conventional measures of human capital: years of formal education and years of labour market experience. Education is usually measured by the highest qualification obtained, and represents the human capital accumulated through schooling and (or) post-school formal education. Work experience is usually measured by the post-education work years and represents the human capital accumulated through a person's working life (Becker 1964). Increasingly, it has been recognized that health status should be part of the definition of human capital, as it is directly related to productivity and the utilisation of human capital, and indirectly related to the acquisition of human capital, through training, education and work experience (Grossman 1972, 1999; Currie and Madrian 1999). Human capital acquisition may include formal and informal training, and can result in either general or specific human capital depending on the degree to which it can be utilised in a specific job, employer or sector.

The HILDA survey includes a wide range of human capital variables. For traditional measures, it has years of schooling, the highest level of qualification and the years of employment since first leaving full-time education (a measure of work experience). The highest level of qualification is the natural choice as a measure of education. In order to measure health, the HILDA survey interview questionnaires ask whether an individual has a long-term health condition. Those with long-term conditions are further asked whether and to what extent their health conditions limit the amount of work they can do (often used as a measure of work disability). In addition, the HILDA survey self-completion questionnaires ask questions on general health, mental health, physical functioning, body pain and health risk behaviours such as smoking.

The HILDA survey contains a number of health measures which all measure largely but not exactly the same aspects of health. As we have no a priori reason for choosing one rather than another such measure, we use three alternative health measures in our subsequent analysis. The first measure is general health and has been retrieved from the self-completion questionnaire. This is a five-level self-reported health (SRH) measure. The five levels of health are: poor, fair, very good, good and excellent. As a general measure, SRH has the advantage of summarizing various dimensions of health, but it is often criticised for its subjective nature because it is self-reported and can be subject to reporting bias (Currie and Madrian 1999; Dwyer and Mitchell 1999).

The second measure is the presence of a number of specific long-term health conditions. Although this is also a self-reported measure, due to the more specific way the question is asked, this measure may not be as subjective in its nature as the general health SRH measure. The price for the reduced subjective nature of the long-term health conditions measures may be that they are not as good a measure of those aspects of health that will be directly related to labour market activity and performance (Bound 1991). The third health measure we utilise is work disability. This measure directly relates to labour market activity and performance, so that it clearly overcomes the drawback of the long-term health condition measure. However, like the self-reported general health, it is subjective in its nature and is probably the measure most likely (of the three measures) to suffer from reporting bias. This is because it can be clearly related to the unobserved choice/ability of whether to take up employment or not. Clearly, the three measures should tell a very similar story, but the differences will be informative.

Information on training in the HILDA survey is very limited and it is only collected for specific groups of persons depending on their employment status. For example, employed persons in waves 3 to 5 were asked whether on-the-job training occurred during the past 12 months and what the aims of that training were. By contrast, among those who are not employed, only unemployed individuals (i.e. not working but looking for work) were asked a set of questions relating to mutual obligation activity, such as participation in job placement, voluntary or paid work, and literacy or numeracy training. Although it may be safe to assume that these activities could be regarded as skill enhancing, this information is not as useful for our analysis. The reason is that participation in these Centrelink required mutual obligation activities may also indicate that the participating individuals were very low skilled to begin with, so that we cannot know where they ended up in the skills distribution after the skill enhancing activity. Consequently, there is no way that we can know whether, after the participating activity was completed, these participants were more or less employable than those who did not participate.

The formal analysis that follows can be divided into two main parts. First, we use descriptive analysis, mostly tabulations, to examine how human capital and individual and family characteristics are correlated with employment-welfare receipt status and the transitions of individuals across those different employment-welfare receipt states.

Second, we use multivariate regression analysis to isolate the association between the variables of interest from the effect of potential confounding factors. We use a number of econometric models designed to estimate the effect of human capital on employment-welfare receipt patterns whilst controlling for observed confounding factors, such as age and family characteristics.

3. Descriptive analysis

This section describes how the distribution of human capital varies between welfare recipients and non-recipients, across welfare payment types and various employment-welfare receipt states. It also examines how individual and family characteristics are related to the employment-welfare receipt states. We begin by showing how the working age population is distributed by employment and welfare receipt status. Table 1 presents the employment and welfare status of the working age population in Australia, excluding full-time students.

Table 1: Employment status of income support recipients and non-recipients: working age Australians excluding full-time students

Employment status	Welfare receipt status		All
	Non-recipients	Recipients	
Employed full time	66.61	8.36	55.66
Employed part time	20.41	20.89	20.50
Unemployed	1.66	12.96	3.79
Not in labour force	11.31	57.78	20.05
No. of observations	46871	10856	57727
No. of obs. as % of total	81.19	18.81	100

Note: HILDA pooled waves 1 to 6 (years 2001 to 2006)

The last column in Table 1 shows that 55.66 percent of all working age Australians work full-time, 20.5 percent work part-time; 3.79 percent are unemployed and 20.05 percent are out of the labour force. The last row indicates that (sampled at any point in time between 2001 and 2006) 18.81 percent of working age Australians were welfare recipients and 81.19 were not.

As would be expected, among the working age Australians who are not on welfare, close to 90 percent are employed ($66.61 + 20.41 = 87.02$); more than three quarters of

those employed work full-time (66.61/87.02). In contrast, over 70 percent of working age welfare recipients do not work ($57.78 + 12.96 = 70.74$), with about 80 percent of them being out of the labour force ($57.78/70.74$). Interestingly, there are about 13 percent of non-recipients who do not work, and 8 percent of recipients who work full-time. The former group (i.e. non-recipients who do not work) might include housekeepers (mostly wives); and the latter group (i.e. full-time employed-welfare recipients) must be low wages earners.

3.1. Distribution of human capital by welfare receipt status

Table 2 presents the distribution of human capital (measured by qualifications, work experience, and health) by welfare receipt status. Overall, welfare recipients tend to have less human capital than non-recipients for all of the human capital measures used here. First, looking at the highest level of qualification, we see that the proportion of welfare recipients with a degree or higher qualification is less than one third of non-welfare recipients. The proportion of those with a post-school certificate or diploma and the proportion of those who have completed Year 12 are also much lower among welfare recipients than among non-recipients. On the other hand, the proportion of those who did not complete Year 10 among welfare recipients is about four times as large as that among non-recipients.

Looking at work experience, our second measure of human capital, the average is about two years less among welfare recipients than among non-recipients. The low work experience among welfare recipients is largely driven by the fact that welfare recipients are much more likely to have less than five years of work experience and more likely to have work experience of between 10 and 30 years than non-recipients have.² A slightly larger proportion of welfare recipients have work experience of more than 30 years than non-recipients, mainly due to the fact that welfare recipients also tend to be older than non-recipients (see Table 7 below). No matter how health is measured, the health status of welfare recipients appears to be considerably worse than that of welfare non-recipients.

² The HILDA cut-off points for years of work experience are 1, 5, 10, 30, and more than 30.

Table 2: Distribution of human capital by welfare receipt status

	Non-recipients	Recipients	All
<i>Education</i>			
Below Yr 10	5.51	19.97	8.23
Yr 10-11	20.44	28.65	21.98
Yr 12	15.31	13.82	15.03
Certificates and diplomas	32.71	29.24	32.06
Degree and Higher	26.03	8.32	22.70
Sample Size ^(a)	46,856	10,850	57,706
<i>Work experience</i>			
No work experience	0.51	4.96	1.33
Less than 1 yr	1.81	3.93	2.20
Between 1-5 yrs	9.87	15.16	10.84
Between 5-10 yrs	13.13	14.11	13.31
Between 10-30 yrs	54.38	40.83	51.89
30 yrs and above	20.28	21.01	20.42
Mean (yrs)	19.30	16.8	18.80
Standard Deviation	11.70	13.3	12.00
Sample Size	45,635	10,267	55,902
<i>Self-reported health status</i>			
Excellent	13.65	6.99	12.41
Very good	41.10	23.11	37.76
Good	34.99	34.89	34.98
Fair	9.00	24.80	11.93
Poor	1.26	10.22	2.92
Sample Size	42,092	9,573	51,665
<i>Long-term health condition</i>			
No health condition	84.68	51.35	78.42
Has health condition	15.32	48.65	21.58
Sample Size	46,870	10,856	57,726
<i>Work disability</i>			
No disability	90.64	55.06	83.96
Has disability	9.36	44.94	16.04
Sample Size	43,789	10,126	53,915

Note: (a) Sample sizes vary due to missing values amongst different measures of human capital.

3.2. Distribution of human capital by welfare payment type

Table 3 shows how the distribution of human capital varies across welfare recipients with different payment types. Regarding their qualifications, disability support pension (DSP) recipients stand out from all other payment recipients. DSP recipients have a relatively smaller proportion of degree or other higher qualification holders and a larger proportion of individuals who did not complete Year 10 at school. The lower level of education attainment by DSP recipients may partly be due to disability itself if the presence or onset of disability could have been the limiting reason for lower participation in education.

Regarding work experience, DSP recipients and recipients of 'other' payments appear to have a longer work experience on average than the recipients of the remaining payment types. This is largely driven by a greater proportion of the recipients of DSP and 'other' payments with work experience of longer than 30 years. The recipients of parenting payment (single and partnered) have a shorter work experience than other payment recipients. Partnered parenting payment recipients have the largest proportion without any work experience and (with single parenting payment recipients) the smallest proportion with work experience of between 10 to 30 years. It should be noted that because work experience is closely correlated with age, and because many of these payments are also age related (e.g. disability is more likely amongst the older and single parenthood more likely amongst the younger) the proportions we get in this table are partly driven by age differences.

DSP recipients stand out again when looking at their health-related human capital. A much smaller proportion of DSP recipients report very good or excellent health when compared with other payment recipients, while a much larger proportion of DSP recipients report fair or poor health than the recipients of other payment types. The proportion of DSP recipients with long-term health conditions and work disability is also much larger than amongst the recipients of other types of welfare payments. Among non-DSP recipients, those on parenting payments (both partnered and single) have a smaller proportion of long-term health conditions or work disabilities than the remaining recipients of other payments.

Table 3: Distribution of human capital of by payment type

	Payment types				
	Unemployment benefits ^(a)	Parenting Payment Single	Parenting Payment Partnered	Disability Support Pension	Other payments
<i>Education</i>					
Below Yr 10	16.18	14.29	12.23	29.42	19.28
Yr 10-11	26.97	30.84	33.41	27.9	28.08
Yr 12	17.81	14.35	19.87	9.13	12.9
Certificates and diplomas	30.2	31.91	25.66	27.77	29.49
Degree and Higher	8.84	8.6	8.84	5.78	10.25
Sample Size ^(b)	2510	1686	916	2978	2760
<i>Work experience</i>					
No work experience	5.95	5.59	9.11	4.36	3
Less than 1 yr	9.95	3.68	2.42	2.39	0.98
Between 1-5 yrs	20.42	19.44	22.84	11.4	9.54
Between 5-10 yrs	14.09	20.39	22.49	11.37	10.63
Between 10-30 yrs	29.51	48.48	40.95	40.43	46.56
30 yrs and above	20.08	2.41	2.19	30.05	29.29
Mean (yrs)	14.3	11.2	9.3	20.1	20.3
Standard Deviation	14.7	8.6	7.7	13.7	13.3
Sample Size	2321	1574	867	2842	2663
<i>Self-reported Health status</i>					
Excellent	9.63	8.67	10.09	2.45	7.34
Very good	26.17	33.49	34.56	7.36	26.61
Good	40.25	39.58	42.07	20.91	39.41
Fair	19.18	15.02	11.69	42.6	21.57
Poor	4.77	3.24	1.6	26.67	5.08
Sample Size	2,159	1,511	813	2,568	2,522
<i>Long-term health condition</i>					
No health condition	64.76	77.42	78.38	8.59	60.45
Has health condition	35.24	22.58	21.62	91.41	39.55
Sample size	2,511	1,687	916	2,981	2,761
<i>Work disability</i>					
No disability	69.94	83.61	83.78	8.96	66.07
Has disability	30.06	16.39	16.22	91.04	33.93
Sample Size	2,325	1,562	857	2,856	2,526

Notes: (a) Unemployment benefits refer to Newstart Allowance, Mature Age Allowance and Youth Allowance.

(b) Sample sizes vary due to missing values amongst different measures of human capital.

3.3. Distribution of human capital by employment-welfare receipt state

Table 4 shows the distribution of human capital by detailed employment status of welfare recipients and non recipients. Here we used detailed employment status, as when we pool the six waves of data we have a sufficiently large number of observations for each employment-welfare receipt state.

In terms of educational attainment, for both welfare recipients and non-recipients those who are employed tend to be better educated than those who are not employed. For example, the proportion with a degree or higher qualification is larger among those who are employed than among those who are not employed for both welfare recipients and non-recipients, while the proportion that did not complete Year 10 is larger among those who are not employed than among those who are employed. For both employed-welfare recipients and non-recipients, a slightly higher proportion of those who are employed full-time have a post-school qualification than those who work part-time. Similarly, a slightly higher proportion of unemployed-welfare recipients and non-recipients have a post-school qualification than those who are out of the labour force. For each employment state, non-recipients appear to be better educated than welfare recipients. For example, a relatively larger proportion of welfare recipients who are out of the labour force did not complete Year 10 compared with non-recipients who are also out of the labour force, while a smaller proportion of the out-of-labour-force recipients have a degree or higher qualification than the out-of-labour-force non-recipients.

Turning to work experience, the proportion without any is larger among welfare recipients who are not employed than among welfare recipients who are employed. This might not come as a surprise, given that the former have a relatively lower educational attainment. What is a bit surprising is that the average work experience and the proportion with more than 30 years of work experience among welfare recipients who are out of the labour force is larger than those welfare recipients who work part-time. This may be due to the welfare recipients who are out of the labour force being much older than the recipients who work part-time. Another surprising point regarding work experience is that the average, and the distribution, of work experience between welfare recipients and non-recipients in the same employment state are not that different. This is in contrast to the differences of educational attainment between welfare recipients and non-recipients.

Table 4: Distribution of human capital by employment and welfare status

	Recipients				Non-recipients			
	FT Employ welfare	PT Employ welfare	Unem- ploy welfare	OLF welfare	FT Employ non- welfare	PT Employ non- welfare	Unem- ploy non- welfare	OLF non- welfare
<i>Education</i>								
Below Yr 10	6.72	10.67	14.78	26.42	4.51	5.42	9.38	10.99
Yr 10-11	23.13	26.29	31.63	29.64	17.34	25.29	25.58	29.19
Yr 12	12.67	17.87	16.28	11.97	14.44	17.3	19.28	16.24
Certificates and diplomas	42.07	31.98	29.42	26.34	35.99	25.87	28.28	26.37
Degree and Higher	15.42	13.19	7.89	5.63	27.71	26.12	17.48	17.22
Sample Size	908	2267	1407	6268	31219	9562	778	5297
<i>Work experience</i>								
No work experience	0.11	0.28	8.7	6.6	0.04	0.18	6.07	3.2
Less than 1 yr	2.02	3.82	9.94	2.96	1.35	3.09	8.55	1.3
Between 1-5 yrs	8.52	15.36	21.97	14.59	9.67	9.24	17.79	11.11
Between 5-10 yrs	10.99	15.04	17.16	13.58	12.88	11.11	14.34	18.19
Between 10-30 yrs	53.7	49.49	31.68	37.7	54.63	58.96	40.28	46.44
30 yrs and above	24.66	16.01	10.56	24.57	21.43	17.41	12.97	19.75
<i>Mean (yrs)</i>	20.9	16.6	11.3	17.5	20.0	18.7	13.4	16.9
<i>Standard Deviation</i>	12.3	11.9	11.7	13.9	11.6	11.3	12.0	12.4
Sample Size	892	2174	1288	5913	30513	9339	725	5058
<i>Self-reported health status</i>								
Excellent	9.25	9.65	9.40	5.16	14.13	13.61	14.85	10.78
Very good	34.9	30.95	27.68	17.49	41.50	42.64	34.71	36.86
Good	41.18	41.28	40.1	30.48	35.17	34.23	37.21	35.05
Fair	12.82	15.03	19.71	31.26	8.39	8.47	11.62	13.16
Poor	1.85	3.09	3.10	15.61	0.81	1.06	1.62	4.15
Sample Size	811	2042	1192	5528	27800	8788	680	4824
<i>Long-term health condition</i>								
No condition	68.72	67.68	66.24	39.6	86.28	84.97	82.13	75.14
Has condition	31.28	32.32	33.76	60.4	13.72	15.03	17.87	24.86
Sample size	908	2268	1407	6273	31222	9568	778	5302
<i>Work disability</i>								
No disability	76.85	73.03	71.91	41.99	92.87	89.91	87.65	79.49
Has disability	23.15	26.97	28.09	58.01	7.13	10.09	12.35	20.51
Sample size	812	2102	1296	5916	29006	9042	729	5012

In terms of self-reported health status, for both welfare recipients and non-recipients the proportion reporting fair or poor health is larger among individuals who are not

employed (either unemployed or out of the labour force) than among individuals who are employed. For employed people, those who are employed full-time appear to have a smaller proportion reporting fair or poor health than those who are employed part-time. Comparing those unemployed with those not in the labour force, we see that those who are unemployed have a smaller proportion reporting fair or poor health than those who are out of the labour force. It is also worth noting that those welfare recipients who are out of the labour force have the poorest health when compared with people in all other employment-welfare receipt states. For each employment state non-recipients appear to have better health status than welfare recipients. Health as measured by long-term health condition and work disability exhibits a similar pattern to self-reported health. That is, for both welfare recipients and non-recipients those who are out of the labour force have the largest proportion having health conditions or work disability, followed by those who are unemployed and then those who are part-time employed. Those who are full-time employed have the lowest proportion with long-term health conditions or work disability. Again, welfare recipients in the employment state have a larger proportion with long-term health condition or work disability than non-recipients in the same employment state.

3.4. Human capital and transitions between employment-welfare states

Tables 2 to 4 describe the ‘static’ relationship between human capital and employment-welfare receipt states. While they are useful for understanding how human capital is distributed across different groups of the working age population as characterised by their employment and welfare receipt status, they are not very helpful for understanding how human capital affects the ‘dynamics’ of individuals in terms of moving between those employment-welfare receipt states. Given the strong interest of policy makers in encouraging welfare to work transitions, the relationship between human capital and the transitions of individuals between those states may provide highly relevant policy information. Therefore, in this subsection we examine how transitions of individuals between the employment-welfare states are correlated with the human capital variables.

For the descriptive analysis here we look at the year-to-year (or wave-to-wave) transitions of individuals between the employment-welfare receipt states. In the econometric modelling section, the duration dimension of the transitions will be considered. By year-to-year transitions we mean how individuals’ employment and

welfare receipt status changes between two adjacent years (or waves). For example, for an individual in the FT-employed-welfare state in year t (called initial state), we follow them up to year $t+1$ to find out whether they have changed states and to which state they transited (called destination state) between year t and year $t+1$. The six waves of data give five pairs of adjacent years and thus the maximum number of transitions an individual can potentially experience is five. In the tables presented below, we pool the five pairs to produce the reported statistics.

If we use the eight employment-welfare receipt states as shown in Table 4, some transitions only involve a few individuals. To draw meaningful inferences on the relationship between human capital and the state transition patterns, we reduce the number of employment-welfare receipt states from eight to four (i.e. not-employed-welfare, employed-welfare, not-employed-non-welfare and employed-non-welfare). In doing so we combined part-time employment with full-time employment and unemployed with out of the labour force. The relationship between human capital and transitions between employment-welfare receipt states using detailed employment-welfare receipt states is presented in Appendix A. It is obvious from Appendix A that the number of observations is so small in some initial and destination states that it is not meaningful to look at the distribution of the human capital variables in those states.

Before examining how human capital and the transitions between employment-welfare receipt states are correlated, we first describe the transition patterns of the working age population across the four employment-welfare receipt states in Table 5. The initial states are listed in the first column and the destination states are shown in the rows. The numbers in columns 2 to 5 show the proportion transiting to each of the destination states. For example, the first data row shows that among those who are in the not-employed-welfare state in year t , 75.5 percent remain in that state, and 7.9, 8.2 and 8.3 percent transit to the employed-welfare state, not-employed-non-welfare state and employed-non-welfare state respectively in year $t+1$. Among those who are in the employed-welfare state in year t about half remain employed while on welfare in year $t+1$, but we see over 30 percent of them transit to the employed-non-welfare state in year $t+1$. This is perhaps a sign of ‘stepping-stone effect’ of employment. The employed-non-welfare state is very stable: about 93 percent of those in this state in year t do not change their state in the next year; for those who do change their state,

they are more likely to go to the not-employed-non-welfare state than to either the not-employed-welfare or the employed-welfare state.

Table 5: Year-to-year transition matrix of employment-welfare receipt states (row %)

State in year t (origin)	State in year $t+1$ (destination)				All
	Not-employed-welfare	Employed-welfare	Not-employed-non-welfare	Employed-non-welfare	
Not-employed-welfare	75.50	7.93	8.23	8.34	5,310
Employed-welfare	14.57	50.86	3.4	31.17	2,265
Not-employed-non-welfare	12.19	1.86	59.79	26.16	4,357
Employed-non-welfare	1.41	1.94	4.02	92.63	29,682
No. of obs.	5,290	2,230	4,312	29,782	41,614

Table 6a shows the distribution of human capital by transition destination of those whose initial state is not-employed-welfare (i.e. those who are on welfare and not employed in the base year). It appears from the table that different measures of human capital variables carry different messages. When looking at educational attainment, it appears that those who transit into employment (including both welfare recipients and non-recipients) in the following year are better educated than those who remain in the not-employed-welfare state and those who transit into the not-employed-non-welfare state. For example, those who transit into the employed-welfare and employed-non-welfare states from the not-employed-welfare state have a larger proportion having a degree or higher qualification and a lower proportion that did not complete Year 10 than those who remained in the initial state and those who transit into the not-employed-non-welfare state. It also appears that those who find jobs and exit from the welfare system (i.e. transit to the employed-non-welfare state) are better educated than those who become employed but are still on welfare (i.e. the employed-welfare state) when we compare the proportion with a degree or higher qualification and the proportion without completing Year 10.

Table 6a: Human capital distribution by transition destination originating from the not-employed-welfare state

	Remain in not employ welfare	State transiting to		
		Employ welfare	Not employ non-welfare	Employ non- welfare
<i>Education</i>				
Below Yr 10	27.65	13.91	20.30	7.07
Yr 10-11	30.88	31.52	31.97	29.52
Yr 12	10.96	16.52	16.20	19.54
Certificates and diplomas	25.51	28.70	25.05	29.31
Bachelor degree and higher	5.00	9.35	6.48	14.55
Sample size	4343	460	463	481
<i>Work experience</i>				
No work experience	7.26	5.48	6.79	3.85
Less than 1 yr	3.34	5.48	3.17	7.01
Between 1-5 yrs	14.38	18.95	18.78	22.62
Between 5-10 yrs	12.89	15.53	20.36	16.52
Between 10-30 yrs	38.00	37.90	35.52	43.44
30 yrs and above	24.12	16.67	15.38	6.56
Mean (yrs)	17.34	14.24	13.37	11.78
Standard Deviation	13.81	12.41	12.35	10.27
Sample Size	4158	438	442	442
<i>Self-reported health status</i>				
Excellent	4.77	7.99	10.98	11.16
Very good	16.91	26.88	26.01	30.70
Good	30.32	34.38	38.42	38.84
Fair	32.27	24.70	18.85	15.58
Poor	15.72	6.05	5.73	3.72
Sample Size	3855	413	419	430
<i>Long term health condition</i>				
No health condition	38.7	54.57	63.36	71.52
Has health condition	61.3	45.43	36.64	28.48
Sample size	4344	460	464	481
<i>Work disability</i>				
No disability	41.17	58.37	67.59	75.77
Has disability	58.83	41.63	32.41	24.23
Sample size	4083	430	435	454

However, when we look at work experience, we see on average that those who transit into the employed-non-welfare state do not appear to have a longer work experience than individuals in the other three states, although those who transit into the employed-non-welfare state have the lowest proportion without work experience. It is those who remain in the not-employed-welfare state who have the longest work experience, largely driven by the fact that they have the largest proportion having longer than 30 years of work experience. Again this may reflect the fact that those who remain in the not-employed-welfare state are older than those in the other three states.

For all three health measures, it appears that those who transit into the employed-non-welfare state have better health than those who transit into the not-employed-non-welfare state, and the latter have better health than those who transit into the employed-welfare state. Those who remain in the not-employed-welfare state have the worst health status.

Table 6b presents the distribution of human capital by transition destination of those who are in the employed-welfare state in the base year. In terms of educational attainment, those who transit to the employed-non-welfare state have the highest proportion having a degree or higher qualification and the lowest proportion that did not complete Year 10, while those who transit to the not-employed-welfare state have the lowest proportion having a degree or higher qualification and the highest proportion that did not complete Year 10. Those who transit to the not-employed-non-welfare state have a higher proportion having a degree or higher qualification and a lower proportion without completing Year 10 than those who remain in the employed-welfare state.

Turning to work experience, it appears that on average those on welfare (either employed or not) have a longer work experience than those who are not on welfare. Again, this might be because the former tend to be older than the latter. From the distribution of work experience, we cannot see a clear association between work experience and the employment-welfare receipt states.

Table 6b: Human capital distribution by transition destination originating from the employed-welfare state

	Remain in employed-welfare	State transiting to		
		Not-employed-welfare	Not-employed-non-welfare	Employed-non-welfare
<i>Education</i>				
Below Yr 10	10.24	13.26	7.06	6.96
Yr 10-11	26.04	28.24	31.76	23.29
Yr 12	15.97	17.00	15.29	17.67
Certificates and diplomas	35.38	32.85	29.41	33.87
Bachelor degree and higher	12.37	8.65	16.47	18.21
Sample size	1221	347	85	747
<i>Work experience</i>				
No work experience	0.17	0.60	0.00	0.41
Less than 1 yr	1.85	5.99	7.32	3.73
Between 1-5 yrs	9.99	17.37	17.07	13.95
Between 5-10 yrs	13.18	15.27	19.51	13.81
Between 10-30 yrs	53.82	39.52	45.12	55.11
30 yrs and above	20.99	21.26	10.98	12.98
Mean (yrs)	19.18	17.25	14.26	16.38
Standard Deviation	11.79	13.60	12.06	11.21
Sample Size	1191	334	82	724
<i>Self-reported health status</i>				
Excellent	9.04	6.84	9.46	11.39
Very good	32.27	23.13	36.49	39.20
Good	42.29	42.02	37.84	37.43
Fair	14.10	18.24	14.86	11.09
Poor	2.30	9.77	1.35	0.89
Sample Size	1128	307	74	676
<i>Long-term health condition</i>				
No health condition	65.85	53.31	74.12	78.71
Has health condition	34.15	46.69	25.88	21.29
Sample size	1221	347	85	747
<i>Work disability</i>				
No disability	72.5	57.28	85.14	83.64
Has disability	27.5	42.72	14.86	16.36
Sample size	1109	323	74	703

In terms of self-reported health, those who transit into the employed-non-welfare state have the highest proportion reporting very good or excellent health and the lowest proportion reporting fair or poor health, and are followed by those who transit to the not-employed-non-welfare state. Those who transit to the not-employed-welfare state have the lowest proportion reporting very good or excellent health and the highest proportion reporting fair or poor health. Long-term health conditions follow a similar pattern to self-reported health, but work disability does not. Nevertheless, for work disability we still see that those who transit to the not-employed-welfare state have the highest proportion with work disability; the proportion with work disability among those who transit to the employed-non-welfare state is much lower than among those who are on welfare (either employed or not).

Table 6c presents the distribution of human capital by transition destination of those who are in the not-employed-non-welfare state in the base year. In terms of education, those who transit to the employed-non-welfare state have a proportion having a degree or higher qualification that is almost double that of those who remain in the not-employed-non-welfare state. The proportion having a degree or higher qualification is also higher among those who transit to the employed-welfare state than among those who remain in the not-employed-non-welfare state. Those who transit to the not-employed-welfare state have the lowest proportion having a degree or higher qualification and the highest proportion that did not complete Year 10.

We cannot see any association between work experience and the transition destinations.

Turning to health, the association between it and the transition destinations is quite clear: For all three measures of health, we can see that those who transit to the employed-non-welfare state have the best health, and those who transit to the not-employed-welfare state have the worst health. Those who transit to the employed-welfare state also appear to have better health than those who remain in the not-employed-non-welfare state.

Table 6c: Human capital distribution by transition destination originating from the not-employed-non-welfare state

	Remain in not employ non-welfare	State transiting to		
		Not- employed- welfare	Employed- welfare	Employed non-welfare
<i>Education</i>				
Below Yr 10	10.37	18.35	8.16	6.76
Yr 10-11	31.39	29.16	20.41	26.27
Yr 12	16.33	16.12	22.45	17.35
Certificates and diplomas	26.08	28.47	36.73	26.52
Bachelor degree and higher	15.82	7.89	12.24	23.1
Sample size	2768	583	98	1199
<i>Work experience</i>				
No work experience	2.71	7.76	6.52	2.00
Less than 1 yr	0.85	2.35	6.52	4.26
Between 1-5 yrs	11.10	16.25	15.22	11.49
Between 5-10 yrs	18.82	16.43	17.39	16.45
Between 10-30 yrs	47.33	34.66	42.39	52.57
30 yrs and above	19.19	22.56	11.96	13.23
Mean (yrs)	16.70	16.00	13.20	15.60
Standard Deviation	12.0	13.7	11.8	11.2
Sample Size	2694	554	92	1149
<i>Self-reported health status</i>				
Excellent	10.34	9.43	13.48	14.61
Very good	37.16	27.74	39.33	41.83
Good	36.49	35.47	26.97	32.42
Fair	12.37	20.19	16.85	9.5
Poor	3.63	7.17	3.37	1.64
Sample size	2562	530	89	1095
<i>Long-term health condition</i>				
No health condition	76.27	62.44	72.45	84.9
Has health condition	23.73	37.56	27.55	15.1
Sample size	2769	583	98	1199
<i>Work disability</i>				
No disability	80.55	67.03	78.89	88.68
Has disability	19.45	32.97	21.11	11.32
Sample size	2622	543	90	1148

Finally Table 6d shows the distribution of human capital by transition destination of those who are in the employed-non-welfare state in the base year. For educational attainment those who transit to the not-employed-welfare state appear to have the lowest proportion having a post-school qualification and the highest proportion that did not complete Year 12. Those who transit to the employed-welfare state appear to be less educated than those who remain in the employed-non-welfare state in terms of post-school qualifications. Those who transit to the not-employed-non-welfare state have a higher proportion having a degree or higher qualification than those who transit to the employed-welfare state.

In terms of work experience, those who remain in the employed-non-welfare state appear have longer work experience on average than those who make a transition; the former also have the largest proportion having work experience of 10 to 30 years. Those who transit to the not-employed-welfare state appear to have the shortest work experience and the lowest proportion having 10-30 years of work experience.

In terms of health, those who transit to the not-employed-welfare state appear to have the worst health for all three measures of health, and those who remain in the employed-non-welfare state have the best health outcomes. Those who transit to the employed-welfare state appear to have a slightly higher proportion having long-term health conditions or work disability and a slightly lower proportion having very good or excellent health compared with those who transit to the not-employed-non-welfare state.

In summary, from Tables 6a and 6b we see that those welfare recipients with high human capital, particularly in terms of educational attainment and health, are more likely to leave welfare through employment than those recipients with low human capital; those recipients with high human capital are also more likely to become employed if they are not employed initially. On the other hand from Tables 6c and 6d we also see that those with low human capital, again in terms of education and health, are more likely to become not employed and go to welfare. All these findings suggest that different forms of human capital, particularly education and health, are important in preventing people from falling into welfare and in moving those who are on welfare out of it.

Table 6d: Human capital distribution by transition destination originating from the employed-non-welfare state

	Remain employed- non-welfare	State transiting to		
		Not-employed- welfare	Employed- welfare	Not-employed- non-welfare
<i>Education</i>				
Below Yr 10	4.50	11.20	6.08	7.19
Yr 10-11	18.82	27.70	21.96	23.13
Yr 12	14.65	18.66	20.18	15.31
Certificates and diplomas	33.82	29.47	32.49	28.44
Bachelor degree and higher	28.21	12.97	19.29	25.94
Sample size	28419	509	674	1280
<i>Work experience</i>				
No work experience	0.05	0.61	0.15	0.32
Less than 1 yr	1.39	6.30	4.96	3.43
Between 1-5 yrs	8.31	19.92	13.83	7.99
Between 5-10 yrs	12.05	14.63	12.18	14.78
Between 10-30 yrs	57.86	36.18	51.88	50.56
30 yrs and above	20.34	22.36	16.99	22.92
<i>Mean (yrs)</i>	20.00	16.90	17.50	19.00
<i>Standard Deviation</i>	11.10	14.00	12.00	12.40
Sample Size	27974	492	665	1252
<i>Self-reported health status</i>				
Excellent	14.10	9.11	12.82	13.92
Very good	42.50	28.67	37.61	39.07
Good	34.73	39.56	36.26	33.45
Fair	7.96	18.22	12.48	10.72
Poor	0.71	4.44	0.84	2.85
Sample Size	25980	450	593	1157
<i>Long term health condition</i>				
No health condition	86.66	75.64	78.67	79.63
Has health condition	13.34	24.36	21.33	20.37
Sample size	28425	509	675	1281
<i>Work disability</i>				
No disability	92.77	81.74	84.42	85.43
Has disability	7.23	18.26	15.58	14.57
Sample size	26552	471	629	1194

3.5. Individual and family characteristics and employment-welfare receipt patterns

In this subsection we look at how individual and family characteristics are related to employment-welfare receipt patterns. The individual and family characteristic variables considered here include sex, marital status, age, country of birth and ethnicity, family type, number of children under 15 years and the age of the youngest children under 25. The definitions for these variables are straightforward and thus do not need further explanation. In addition, we also examine two variables that measure individuals' general attitude towards work. The two work attitude variables are derived from two questions in the wave 1 self-completion questionnaires. The two questions asked respondents to rate the following two statements using a scale ranging from one to seven, with one representing 'strongly disagree' and seven 'strongly agree':

(a) *"In order to be happy in life it is important to have a paying job", and*

(b) *"I would enjoy having a job even if I didn't need the money".*

For ease of interpretation, we recode the seven level responses into three levels: with 1-2 denoting 'negative attitude', 3-5 'indifference', and 6-7 'positive attitude'. Since the two variables that reflect individuals' general attitudes towards work have only been collected once in the first wave of the survey, we will assign individuals who answered the two questions in the first wave the same answers in the subsequent waves if they stay in the survey. This is tantamount to assuming that responses to this question stay constant over time, an assumption that may sound reasonable but, nevertheless an assumption that may not always hold. For those who join the survey from wave 2, the two variables take missing values. Using the values before recoding, we found the two variables are highly correlated, with a correlation coefficient over 0.9. Therefore, while we examine both work attitude variables in the descriptive analysis, we only include the first one in our econometric modelling to avoid multicollinearity.

As for the human capital variables, we first examine how the individual and family characteristics are distributed among people in different employment-welfare receipt states and then examine whether these characteristics are related to transitions of individuals between the states.

Table 7 shows the distribution of individual and family characteristics by employment-welfare receipt states, again using the pooled six waves of data as in Table 2. From the table, about three quarters of those who are neither employed nor on welfare are women. Women also appear to be over-represented among welfare recipients (either employed or not). Over 80 percent of those who are neither employed nor on welfare are married; over 70 percent of those who are employed and not on welfare are married. Among those recipients who are not employed, a slightly higher proportion are married than among those recipients who are employed.

The proportion aged 55 years or older is much lower among employed-welfare recipients and non-recipients than among those who are in the not-employed-welfare state. Comparing employed persons, those who are on welfare have a slightly higher proportion aged 55 years or over. Employed persons (either on welfare or not) have a higher proportion aged between 40-54 years compared to those who are not employed (either on welfare or not). It is those who were on welfare and not employed that have the highest proportion aged 55 years and over.

As for country of birth and ethnic identity, a larger proportion of welfare recipients who are not employed are indigenous Australians than persons in the other three states. The proportion of immigrants from non-English speaking countries is higher among those who are not employed (either on welfare or not) than among those who are employed.

Table 7: Distribution of individual and family characteristics by employment-welfare receipt status

	Not-employed-welfare	Employed-welfare	Not-employed-non-welfare	Employed-non-welfare	All
<i>Gender</i>					
Male	41.60	36.43	24.98	54.85	48.92
Female	58.40	63.57	75.02	45.15	51.08
No. of obs.	7686	3179	6110	40824	57799
<i>Marital status</i>					
Not married	48.99	52.78	17.86	28.43	31.39
Married	51.01	47.22	82.14	71.57	68.61
No. of obs.	7686	3179	6109	40817	57791
<i>Age group</i>					
16-25	14.39	16.07	11.36	14.94	14.55
26-39	24.82	33.41	33.99	34.89	33.37
40-54	30.48	35.61	29.95	39.68	37.21
55 and older	30.22	14.82	24.21	10.41	14.75
No. of obs.	7686	3179	6110	40824	57799
<i>Country of birth and ethnic identity</i>					
Australian non-minority	68.84	79.45	70.54	76.96	75.34
Australian, aboriginal	6.18	2.83	1.93	1.39	2.16
Non-English speaking country	16.2	8.87	17.63	11.1	12.34
English speaking country	8.78	8.84	9.9	10.55	10.16
No. of obs.	7686	3178	6109	40817	57790
<i>Family type</i>					
Couple with children	30.59	35.86	59.18	50.17	47.73
Couple without children	23.03	15.76	25.58	26.02	25.01
Lone parent	21.69	30.39	4.68	6.26	9.47
Other	24.69	17.99	10.56	17.56	17.79
No. of obs.	7686	3179	6110	40824	57799
<i>Number of children aged under 15</i>					
0	63.53	50.14	52.97	61.74	60.42
1	14.28	22.19	16.05	15.08	15.47
2	12.16	17.91	19.71	16.35	16.24
3 or more	10.03	9.76	11.27	6.82	7.88
No. of obs.	7667	3177	6105	40811	57760
<i>Age of youngest child</i>					
No children under 25	53.3	38.87	48.06	48.74	48.73
0-4	14.02	14.89	20.05	12.62	13.72
5-14	17.81	32.51	18.03	22.77	22.15

15-25	14.87	13.72	13.86	15.86	15.4
No. of obs.	7668	3177	6105	40811	57761
Work attitude					
<i>In order to be happy in life it is important to have a paying job</i>					
Negative	16.96	14.63	20.25	11.62	13.4
Indifference	33.84	38.8	34.65	36.11	35.81
Positive	49.19	46.57	45.11	52.26	50.79
No. of obs.	6261	2665	5181	34461	48568
<i>I would enjoy having a job even if I did not need the money</i>					
Negative	20.05	13.77	19.64	14.02	15.38
Indifference	45.32	48.13	50.01	48.52	48.24
Positive	34.63	38.1	30.35	37.46	36.37
No. of obs.	6249	2672	5173	34480	48574

The proportion of sole parents is higher among welfare recipients (both employed and not-employed) than among non-recipients, and the proportion is also higher among welfare recipients who are employed than among recipients who are not employed. The proportion of couples without children is the lowest among welfare recipients who are employed, and the proportion of couples with children is higher among non-recipients (either employed or not) than among welfare recipients.

The proportion without children under 15 years is lower among employed recipients and not-employed non-recipients than among the other two groups, but the proportion with two children under 15 years is slightly higher among the former two groups than among the latter two groups. Employed recipients have the highest proportion having one child, perhaps reflecting the fact that this group also has the highest proportion of sole parents.

It is not surprising to find that those who are neither employed nor on welfare have the highest proportion having youngest children aged under 5, reflecting that they are largely stay-at-home mothers with pre-school age children. Those who combine work and welfare have the highest proportion having youngest children aged 5-14 years, suggesting that mothers may return to work (although only partially) when their children start school.

From the tabulation it does appear that employment-welfare receipt status is related to the work attitude variables. For example, when the “happy to have a paying job” statement is considered, those who are employed and not on welfare have the largest

proportion having positive work attitude and the lowest proportion having negative attitude. Those who are employed, although on welfare, have a lower proportion having a negative work attitude than those who are not employed. The association between the “enjoying having a job” work attitude variable and employment-welfare receipt status is even clearer. Those who are employed and not on welfare have the highest proportion agreeing with the “enjoying having a job” statement, and have the lowest proportion disagreeing with the statement. On the other hand, those who are not employed (either on welfare or not) have the highest proportion disagreeing with the statement.

Table 8 shows the distribution of individual and family characteristics by transition destination for each of the four initial employment-welfare receipt states. Instead of describing the table in detail, we summarize the prominent points from the table as follows:

- Females and married individuals are more likely to transit to the not-employed-non-welfare state from the other three states.
- Persons aged 55 years or over are less likely to transit to the employed-non-welfare state from the other three states.
- Indigenous Australians are more likely to transit to the not-employed-welfare state from the other three states.
- Sole parent families are more likely to transit to the employed-welfare state from the other three states.
- Persons with pre-school age children are more likely to transit to the not-employed-welfare state from the other three states, while persons with school-age children are more likely to transit to the employed-welfare state.
- There is little evidence that work attitude is associated with any particular transition destination.

Table 8: Individual and family characteristics and transitions between employment-welfare receipt states.

	Initial state: Not-employed-welfare				Initial state: Employed-welfare			
	Remain in initial state	State transiting to			Remain in initial state	State transiting to		
		Employ welfare	Not employ non-welfare	Employ non-welfare		Not employ welfare	Not employ non-welfare	Employ non welfare
<i>Gender</i>								
Male	41.71	38.00	25.40	51.02	33.68	38.48	24.68	40.93
Female	58.29	62.00	74.60	48.98	66.32	61.52	75.32	59.07
No. of obs.	4011	421	437	443	1152	330	77	706
<i>Marital status</i>								
Not married	48.82	58.19	32.04	55.08	53.21	52.42	46.75	49.72
Married	51.18	41.81	67.96	44.92	46.79	47.58	53.25	50.28
No. of obs.	4011	421	437	443	1152	330	77	706
<i>Age group</i>								
16-25	9.32	20.43	13.27	33.18	8.51	17.58	27.27	18.56
26-39	22.04	32.07	37.07	37.70	35.33	29.39	33.77	36.54
40-54	35.25	31.59	28.15	23.93	38.89	29.70	28.57	37.25
55 and older	33.33	15.91	21.51	5.19	17.27	23.03	10.39	7.51
No. of obs.	4011	421	437	443	1152	330	77	706
<i>Country of birth and ethnic identity</i>								
Australian non-minority	68.99	75.53	68.88	75.85	82.12	79.09	74.03	76.77
Australian, aboriginal	5.81	4.28	3.66	5.42	1.82	3.94	3.90	3.26
Non-English speaking country	15.81	10.93	19.68	11.74	6.94	7.88	14.29	10.48
English speaking country	9.40	9.26	7.78	7.00	9.11	9.09	7.79	9.49
No. of obs.	4011	421	437	443	1152	330	77	706
<i>Family type</i>								
couple with children	27.65	30.40	51.95	41.76	33.07	29.39	42.86	42.78
couple without children	25.70	15.68	16.25	13.77	16.93	22.73	14.29	11.90
Lone parent	21.96	30.88	17.85	18.96	34.46	23.33	29.87	27.76
Other	24.68	23.04	13.96	25.51	15.54	24.55	12.99	17.56
No. of obs.	4011	421	437	443	1152	330	77	706
<i>Number of children aged under 15</i>								
0	66.52	49.17	41.42	60.50	46.83	60.00	44.16	47.52
1	13.10	22.57	18.54	14.90	23.54	17.58	25.97	21.70
2	10.98	17.10	21.74	13.54	19.20	12.73	18.18	20.43
3 or more	9.40	11.16	18.31	11.06	10.43	9.70	11.69	10.35
No. of obs.	3999	421	437	443	1151	330	77	705

Age of youngest child under 25

No children	52.70	42.52	41.19	57.11	33.54	47.27	32.47	39.01
0-4	12.45	17.10	26.32	18.96	14.34	16.06	23.38	16.88
5-14	17.55	27.55	21.97	15.35	37.71	22.73	28.57	31.06
15-25	17.30	12.83	10.53	8.58	14.42	13.94	15.58	13.05
No. of obs.	4000	421	437	443	1151	330	77	705

Work Attitude***In order to be happy in life it is important to have a paying job***

Negative	17.48	18.03	19.20	13.54	14.24	21.56	15.15	12.50
Indifference	33.76	37.75	33.87	36.19	40.04	39.78	36.36	38.15
Positive	48.76	44.23	46.93	50.28	45.72	38.66	48.48	49.35
No. of obs.	3466	355	375	362	1039	269	66	616

I would enjoy having a job even if I did not need the money

Negative	20.45	14.08	18.35	19.34	13.31	18.22	10.61	14.12
Indifference	44.69	53.8	47.87	45.3	46.26	47.21	56.06	47.89
Positive	34.86	32.11	33.78	35.36	40.42	34.57	33.33	37.99
No. of obs.	3457	355	376	362	1044	269	66	616

Table 8: Continued

	Initial state: Not-employed-non-welfare				Initial state: Employed-non-welfare			
	Remain in initial state	State transiting to			Remain in initial state	State transiting to		
		Not employ welfare	Employ welfare	Employ non- welfare		Not employ welfare	employ welfare	Not employ non welfare
<i>Gender</i>								
Male	18.58	28.06	23.46	29.56	56.21	56.67	41.49	30.68
Female	81.42	71.94	76.54	70.44	43.79	43.33	58.51	69.32
No. of obs.	2605	531	81	1140	27495	420	576	1193
<i>Marital status</i>								
Not married	10.29	27.50	33.33	19.49	26.51	48.33	34.55	18.44
Married	89.71	72.50	66.67	80.51	73.49	51.67	65.45	81.56
No. of obs.	2605	531	81	1139	27489	420	576	1193
<i>Age group</i>								
16-25	5.53	13.37	19.75	15.18	12.48	25.48	12.67	11.82
26-39	33.70	34.46	44.44	41.05	35.61	29.05	37.33	39.65
40-54	32.78	26.55	22.22	33.42	42.20	28.81	37.33	31.77
55 and older	27.68	25.24	13.58	9.91	9.65	15.71	12.33	16.60
No. of obs.	2605	531	81	1140	27495	420	576	1193
<i>Country of birth and ethnic identity</i>								
Australian non- minority	71.06	67.98	79.01	75.44	77.30	71.19	78.78	76.87
Australian, aboriginal Non-English speaking country	1.00	4.90	2.47	2.02	1.18	4.52	2.43	1.76
English speaking country	18.27	20.72	14.81	11.49	10.75	13.10	9.74	10.73
No. of obs.	2605	531	81	1140	27491	420	575	1193
<i>Family type</i>								
Couple with children	61.69	52.92	58.02	65.61	51.41	34.05	53.82	47.86
Couple without children	27.49	21.47	12.35	20.26	25.92	26.43	15.97	37.05
Lone parent	2.26	11.86	23.46	3.51	5.74	14.29	15.28	4.27
Other	8.56	13.75	6.17	10.61	16.94	25.24	14.93	10.81
No. of obs.	2605	531	81	1140	27495	420	576	1193
<i>Number of children aged under 15</i>								
0	50.73	46.33	30.86	48.60	59.90	70.95	47.74	64.54
1	15.40	15.44	30.86	19.74	15.29	11.19	19.27	15.34
2	21.58	22.22	20.99	22.46	17.45	10.95	22.05	14.00
3 or more	12.29	16.01	17.28	9.21	7.36	6.90	10.94	6.12
No. of obs.	2604	531	81	1140	27490	420	576	1193
<i>Age of youngest child under 25</i>								

No children	43.20	42.94	39.51	48.42	46.65	64.05	37.85	52.72
0-4	22.39	27.31	32.10	18.33	13.08	10.71	15.63	17.18
5-14	18.89	17.89	22.22	20.00	23.99	15.00	33.16	15.51
15-25	15.51	11.86	6.17	13.25	16.29	10.24	13.37	14.59
No. of obs.	2604	531	81	1140	27490	420	576	1193

Work Attitudes

In order to be happy in life it is important to have a paying job

Negative	23.47	17.44	19.72	18.29	11.56	9.92	13.70	15.48
Indifference	33.69	28.48	38.03	39.05	35.90	33.43	37.96	37.42
Positive	42.84	54.08	42.25	42.65	52.54	56.66	48.34	47.10
No. of obs.	2348	453	71	973	24260	353	511	1053

I would enjoy having a job even if I did not need the money

Negative	21.52	21.15	14.08	15.43	13.75	18.7	13.48	16.25
Indifference	50.81	43.61	50.7	51.85	48.59	43.34	48.24	50.00
Positive	27.67	35.24	35.21	32.72	37.66	37.96	38.28	33.75
No. of obs.	2342	454	71	972	24275	353	512	1052

4. Econometric modelling of employment status and welfare receipt status

The descriptive analysis in Section 3 suggests that human capital, particularly as measured by education and health, is strongly associated with the patterns of individuals' employment status and welfare receipt status. However, as noted in Section 2, the mere association between human capital and the employment status and welfare receipt status which we described in Section 3, may be due to the presence of confounding factors such as, for example, individual and (or) family characteristics. In this section we examine the relationship between human capital and employment status and welfare receipt status utilising multivariate econometric models that control for observed confounding factors. Following the presentation sequence employed in the descriptive analysis, we first estimate models that examine how human capital may be associated with employment status and welfare receipt status, and then estimate models that examine how transitions between different employment and welfare receipt states may also be associated with human capital variables.

4.1. The statistical model

At any point in time individuals can be in one of the following four employment-welfare receipt states:

1. not-employed-welfare
2. employed-welfare
3. not-employed-non-welfare, and
4. employed-non-welfare.

The probability that an individual is in state j can be modelled as a function of the individual's human capital and other characteristics, summarised in X , $P_j = P(X, \beta_j)$, where β_j is a vector of parameters associated with X and state j . A commonly used model for choices among multiple states without a natural order is the multinomial logit model, which is defined by letting $P(\cdot)$ take a logit probability function. This can be written as,

$$\Pr(y = m) = \frac{e^{\mathbf{x}\beta_j}}{\sum_{j=1}^J e^{\mathbf{x}\beta_j}}, \quad m = 1, 2, \dots, J. \quad (1)$$

where y is the dependent variable indicating in which state an individual is. In our case, $J=4$, that is we are estimating a set of four choices. Estimating Equation 1 produces four sets of coefficients, one set for the probability of each choice being made.³

For identification purposes, one of the four sets of coefficients β_j s needs to be normalized to zero. It is common to normalize the coefficients associated with the first state to be all zeros, which implies that:

$$\Pr(y = 1) = \frac{1}{1 + \sum_{j=2}^J e^{\mathbf{x}\beta_j}}. \quad (2)$$

It should be noted that in terms of predicting the effect of explanatory variables on the outcomes, that is, in terms of predicting the probability that each one of the choices may be followed, it does not matter which set of coefficients we decide to normalise to zero. Predicted probability results will be the same independent of that choice.

Logit coefficient estimates are not readily interpretable, as the model is non-linear 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, ‘mean marginal effects’ (MME) of the explanatory variables are reported.

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

$$ME_{m,k}^i = \frac{\partial \Pr(y = m | \mathbf{x}^i)}{\partial x^i} = \Pr(y = m | \mathbf{x}^i) \left[\beta_{k,m|J} - \sum_{j=1}^J \beta_{k,j|J} \Pr(y = j | \mathbf{x}^i) \right] \quad (3)$$

while the *mean* marginal effect is given by:

$$MME_{m,k} = (1/n) \sum_{i=1}^n ME_{m,k}^i \quad (4)$$

³ Note that the data provide information on one choice per person (the actual choice). Estimation produces a predicted probability for each of the four choices for each person.

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 that a person is in state 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 of being in state m for a person with characteristics \mathbf{x}^i is given by:

$$ME_{m,k}^i = \Pr(y = m | \mathbf{x}_{-k}^i, x_k = 1) - \Pr(y = m | \mathbf{x}_{-k}^i, x_k = 0) \quad (5)$$

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 (4). 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.

Note that the mean marginal effect of a variable sums to zero across the J possible outcome categories, i.e. $\sum_{j=1}^J MME_{j,k} = 0$. The simple intuition needed here in order to

interpret mean marginal effects runs as follows. Take a choice between a set of four mutually exclusive and collectively exhaustive alternatives, that is, a choice over complete set of alternatives that are totally distinct from one another and that cover all possibilities open to the individual. Then take a variable that can influence this choice. If a change in the value of this variable results in the reduction of the probability of picking one of the alternatives, then by definition, the probability of picking any of the remaining alternatives will increase by the same amount (as probabilities have to add up to 100 percent). 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.

Rather than attempt to derive analytic standard errors, standard errors for the estimates of mean marginal effects are derived from 500 bootstrap samples. The standard error of any statistic M is computed from the bootstrap distribution as:

$$SE_M = \sqrt{\left(\frac{1}{B-1}\right) \sum_{i=1}^B \left[\hat{M}^i - \left(\frac{1}{B}\right) \sum_{i=1}^B \hat{M}^i \right]^2} \quad (6)$$

where B is the number of bootstrap iterations and \hat{M}^i is the value of M in the i th bootstrap sample. Clustering of individuals due to repeated observations across waves is accounted for in bootstrapping the standard errors.

4.2. *The sample*

The sample used to model the employment-welfare receipt states is similar to those used in Table 4. That is, the sample includes individuals aged 16 to 64 years for males and 16 to 61 years for females in all the six waves of HILDA. Full-time students are excluded from the analysis. Also excluded are those individuals with missing values in the variables used in the model. There are 43,853 observations in the sample, of them 5,469 are in the not-employed-welfare state, 2,426 in the employed-welfare state, 4,696 in the not-employed-non-welfare state, and 31,262 in the employed-non-welfare state. The explanatory variables used in the model and their summary statistics are presented in Appendix B.

4.3. *The estimation results*

Table 9 presents the MME estimates for the determination of employment-welfare receipt status. The first part shows the MME estimates for the human capital variables, and the second part for the individual and family characteristic variables. In most cases we only discuss estimates that are found to be statistically significant.

4.3.1. *Human capital variables*

We look at the estimates for the human capital variables first. Many of the associations in the raw (unconditional) data presented in Table 8 between the human capital variables and employment-welfare receipt status are found to be statistically significant in the multivariate (conditional) results in Table 9, particularly for the two states of not-employed-welfare and employed-non-welfare. In order to explain how the estimation results in Table 9 should be interpreted we use the work experience variable as an example. The sign of the estimated MME indicates that work

experience has a positive effect on the probability of being in the employed-non-welfare state (MME = 0.0252) and a negative effect on the probability of being in the other three states (all other three MMEs have a negative sign), but its effect on the probability of being in the employed-welfare state is insignificant. The MME estimates show that, other things equal,⁴ a one year increase in work experience will:

- increase the probability of being in the employed-non-welfare state by 2.5 percentage points
- reduce the probability of being in the not-employed-welfare state by 1.4 percentage points
- reduce the probability of being in the not-employed-non-welfare state by 1 percentage points
- and will have no effect on the probability of being in the employed-welfare state

Note that the sum of the MMEs (save a small rounding error) will add up to zero.

The estimates of squared work experience always have the opposite sign to the estimates of work experience itself, indicating that the effect of work experience is not linear (and is probably quadratic). That is, as work experience increases the absolute value of the change in the total effect of work experience decreases, so that the total effect reaches a minimum or a maximum at some high level of work experience. Often this type of estimate may be such that the change in the sign of the total effect ‘occurs’ at levels that are of no practical relevance.⁵

For the group of education variables, the omitted category is degree or higher qualification. The estimates indicate that the relationship between education and employment-welfare status is strong both statistically and in terms of magnitude. For example, the probability of being in the employed-non-welfare state of those who only completed Year 12 is 12.5 percentage points lower than those who have a degree or higher qualification; the probability of being in the not-employed-welfare and employed-welfare states are respectively 9.5 and 2.2 percentage points higher for those who have only completed Year 12 than for those who have a degree or higher

⁴ Since the model controls for other variables, the estimated effect should be interpreted as conditional in that the other variables are kept constant, or as used in the text “other things being equal”. For ease of reading, we may not repeat this sentence in interpreting the estimates for other variables, but the condition is implied.

⁵ Here, the effect of work experience peaks at around the 60 year mark which implies that this should be treated as a conventional log-shape effect (i.e. increasing at all practically relevant values, at a decreasing rate).

qualification. Those with a certificate or diploma or those who have not completed Year 12 have an even lower probability of being in the employed-non-welfare state and a higher probability of being in the not-employed-welfare and employed-welfare states.

Table 9: MME estimates for the determination of employment-welfare receipt status

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
<i>Human capital variables</i>								
work experience	-0.0142***	0.0008	-0.0010	0.0008	-0.0099***	0.0008	0.0252***	0.0014
work experience square	0.0001***	0.0000	0.0000	0.0000	0.0001***	0.0000	-0.0002***	0.0000
Certificate	0.1031***	0.0110	0.0279***	0.0061	0.0072	0.0069	-0.1381***	0.0100
Year 12	0.0947***	0.0143	0.0218***	0.0078	0.0088	0.0087	-0.1253***	0.0130
Year 10-11	0.1474***	0.0132	0.0218***	0.0071	0.0199**	0.0077	-0.1890***	0.0123
below Year 10	0.2550***	0.0214	0.0370***	0.0110	0.0059	0.0108	-0.2980***	0.0185
very good health	0.0002	0.0069	-0.0012	0.0046	-0.0044	0.0062	0.0054	0.0076
good health	0.0349***	0.0074	0.0094*	0.0053	-0.0056	0.0068	-0.0386***	0.0084
fair health	0.1516***	0.0136	0.0190**	0.0078	-0.0029	0.0081	-0.1677***	0.0129
poor health	0.3827***	0.0246	0.0017	0.0108	0.0371**	0.0172	-0.4216***	0.0196
<i>Individual and family characteristics</i>								
Age	-0.0002	0.0015	-0.0012	0.0017	-0.0068***	0.0017	0.0081***	0.0027
age square	0.0001***	0.0000	0.0000*	0.0000	0.0002***	0.0000	-0.0003***	0.0000
Females	-0.0253***	0.0078	0.0276***	0.0059	-0.0213*	0.0109	0.0189	0.0119
Married	-0.0681***	0.0100	-0.0134*	0.0079	0.0164*	0.0097	0.0651***	0.0123
Married females	-0.0447***	0.0097	-0.0631***	0.0090	0.0841***	0.0135	0.0237	0.0150
born in Eng-speaking country	0.0193**	0.0084	-0.0076	0.0054	-0.0006	0.0080	-0.0111	0.0104
born in non-Eng speaking country	0.0255***	0.0080	-0.0134**	0.0054	0.0230***	0.0079	-0.0351***	0.0105
child aged 0-4	0.0235	0.0145	0.0118	0.0112	-0.0266*	0.0143	-0.0088	0.0166
child aged 5-14	0.0044	0.0124	0.0190**	0.0090	-0.0217*	0.0119	-0.0017	0.0137
female & child aged 0-4	0.1239***	0.0274	0.0583***	0.0210	0.1917***	0.0350	-0.3739***	0.0249
female & child aged 5-14	0.0431**	0.0171	0.0802***	0.0186	0.0488**	0.0193	-0.1721***	0.0193
<i>Work attitude variables</i>								
Indifference	-0.0169**	0.0073	0.0006	0.0052	-0.0263***	0.0068	0.0426***	0.0096
Positive	-0.0223***	0.0073	-0.0038	0.0054	-0.0293***	0.0070	0.0555***	0.0096
<i>Alternative measures of health</i>								
Health condition	0.1549***	0.0065	0.0362***	0.0049	0.0132**	0.0055	-0.2042***	0.0078
Work disability	0.1544***	0.0065	0.0319***	0.0047	0.0131**	0.0054	-0.1994***	0.0078

Note: *** indicates the estimate is significant at 1% level; ** 5% and * 10%.

We report the estimates for self-reported health in the top panel in Table 9. The reference category here is excellent health. Results show that very good health makes no difference to the outcome probabilities compared with excellent health, which is

not surprising. However, individuals with lower than very good health are found to have a lower probability of being in the employed-non-welfare states and a higher probability in the states of not-employed-welfare and employed-welfare, compared with those who reported excellent health. The estimates also show that the lower the health status, the higher the probability of being in the not-employed-welfare state and the lower the probability of being in the employed-non-welfare state. For example, compared to individuals with excellent health, those with good health have a probability of being in the employed-non-welfare state that is 3.9 percentage points lower and a probability of being in the not-employed-welfare state that is 3.5 percentage points higher; fair health is found to increase the probability of being in the employed-welfare state by 15.2 percentage points and to reduce the probability of being in the employed-non-welfare state by 17.8 percentage points; poor health is found to increase the probability of being in the not-employed-welfare state by 38.3 percentage points and to reduce the probability of being in the employed-non-welfare state by 42.2 percentage points.

In the bottom panel in the table we also report estimates for the other two alternative measures of health (i.e. long-term health condition and work disability).⁶ The estimates for the two alternative health measures are very similar both qualitatively and in magnitude. Work disability and health conditions are found to reduce the probability of being in the employed-non-welfare state by about 20 percentage points and to increase the probability of being in the not-employed-welfare state by about 15 percentage points, compared with those without work disability or long-term health condition.

4.3.2. Individual and family characteristics

Now we turn to the estimates of individual and family characteristics. Age is found to increase the probability of being in the employed-non-welfare state and decrease the probability of being in the other three states, but only the estimate on the probability of being in the not-employed-non-welfare states is significant. The estimate on the age square variable, as with work experience, suggests a weak quadratic relationship. For example, the probability of being in the employed-non-welfare state increases up to the age of 27, it reaches its maximum at age 27 and declines thereafter. The

⁶ Full model estimation results using the two alternative health measures are reported in Appendix C.

probability of being in the not-employed-non-welfare state decreases up to the age of 34, it reaches its minimum at age 34 and increases thereafter.

Due to the interaction between the gender (female = 1) variable with marital status and the presence of young children, the female variable now refers to those females who are not married and without children, and the estimate for the female variable should be compared with single males without young children. The estimate for the female variable indicates that compared with single males without young children, single females without young children have a statistically lower probability of being in the not-employed-welfare state and a statistically higher probability of being in the employed-welfare state, but the magnitude of the estimated effects is not large. The estimates for the married female variable indicate that compared with single males without young children, married females without children have a probability of being in the not-employed-welfare state that is 4.5 percentage points lower, a probability of being in the employed-welfare state that is 6.3 percentage points lower, and a probability of being in the not-employed-non-welfare state that is 8.4 percentage points higher. The effect of the variable married females on the probability of being in the employed-non-welfare state is insignificant.

Also due to variable interactions, the marital status variable refers to married males. The estimates for this variable indicate that compared with single males, the probability of married males being in the not-employed-welfare state is 6.8 percentage points lower and the probability of being in the employed-non-welfare state is 6.5 percentage points higher. There is also weak evidence that married males are more likely to be in the not-employed-non-welfare state and less likely in the employed-welfare state than are single males.

Compared to Australian born individuals, immigrants are more likely to be found in the not-employed-welfare state. Further, immigrants from non-English speaking countries are more likely to be found in the not-employed-non-welfare state and less likely to be found in the states of employed-non-welfare or employed-welfare.

The presence of young children is found to be very important for the choices of females. Females with children under 15 years are less likely to be found in the employed-non-welfare state, but more likely to be found in the other three states The

effect of pre-school age children on female employment-welfare receipt states is much stronger than the effect of school age children.

As mentioned earlier, due to high correlation of the two work attitude variables we include only one of them in the model. The work attitude variable used here is constructed from responses to the statement “In order to be happy in life it is important to have a paying job”. Work attitude variables are found to have the expected effect as well. The estimates show that those who have a negative work attitude have the lowest probability of being in the employed-non-welfare state and the highest probability of being in the states of not-employed-welfare or not-employed-non-welfare. The effect of positive work attitude is only slightly stronger than the indifference work attitude.

5. Econometric modelling of transitions between employment and welfare receipt states

5.1. The competing risk duration model for transitions of states

The previous section modelled the probability of being in a specific employment-welfare combination. The time it may take to get to each of these states was not considered. This may, however be of importance, especially for policy design which aims at inducing change. A natural way to model transitions from one state to another is by using a duration model. Duration models estimate the speed with which a change may happen. Conceptually these models are simple. They define an event which describes a change in status (which is often referred to as ‘exit’, ‘failure’, ‘death’ and other such names) and then follow individuals over a period of time repeatedly sampling their status and recording if and when the event in question happens. These models are designed and estimated in such a way that they can handle well the cases where the ‘exit’ does not occur. These observations are called ‘right censored’. By contrast, duration models do not handle well ‘left censoring’ which is when individuals start from a different state. For the purposes of the present analysis the simple duration model of two states only with a given start state and a single type of exit, has to be augmented as we are dealing with individuals who find themselves in a number of states and may ‘exit’ into a number of states as well. To handle the possibility of four different initial employment-welfare receipt states and for each one of them the possibility of three alternative transition destinations, we employ a

competing risks duration model. Competing risks models derive their name from the fact that at every point in time individuals are subjected to a number of different risks which compete with one another, in the sense that each one of them is capable of generating an ‘exit’ and once an exit has occurred by one risk, the other risks become irrelevant. Competing risks duration models allow us to identify the factors influencing the transition to each of the destinations. Since we have four initial states from which transitions can occur, we estimate four transition models, each being a competing risks duration model with three possible exits.

One way of formulating a competing risk model with K transition destinations is to postulate that there are K latent durations for each individual, T_1, \dots, T_K , which are independent random variables.⁷ The destination actually reached is determined by whichever of the $\{T_k\}$ is the least, with the duration to exit from the initial state given by this lowest duration. Denote the destination-specific hazard (an exit probability is called a hazard in this literature) at time t for transition destination k as $h_k(t)$, which measures the probability of leaving for destination k in the next period, given $T_k \geq t$. For ease of implementation, we adopt a logit function for the destination specific hazard function,

$$h_k(t | x(t)) = \frac{\exp(x(t)' \beta_k + \gamma_{k,t} d(t))}{\sum_{j=1}^J \exp(x(t)' \beta_j + \gamma_{j,t} d(t))}. \quad (7)$$

Where $d(t)$ is a dummy variable equal to one if the duration considered is t and zero otherwise; $\gamma_{k,t}$ is the coefficient of the duration dummy variable. In this way the effect of duration on transitions is set to be very flexible and no assumptions are made about the functional form of the duration effects. As in the model for status determination in the previous section, we calculate and report the mean marginal effects for ease of interpretation.

5.2. The sample

Since we estimate a competing risk model for each of the four employment-welfare receipt states, we have four samples in this section. We use the initial state not-employed-welfare as an example to explain how we construct the samples. From the

⁷ Given the information in the data, models based on dependent latent durations cannot be identified (Florens, Fougère and Mouchart, 1996).

first wave we select those in the not-employed-welfare state. We then follow them up over time. If a person is found to transit to a different state, say employed-non-welfare, in a subsequent wave, say wave 3, then the records of the person in waves 1 and 2 are kept in the sample and the person is said to have been in the state not-employed-welfare for the first two years and then transited into the employed-non-welfare state between the second and the third year observations so that they are observed in the state employed-non-welfare in year 3. A duration of two years is recorded. If a person stays in the initial state for all six waves, all six wave records of this person are kept in the sample and the person is said to be right censored with a duration of six years. Attrition is treated as right-censored (at the wave before attrition occurs) and the observations are included in the sample.

Those who join the survey in later waves can be treated easily as well. For example, for a person who joined in wave 3 as a not-employed-welfare recipient, we can follow them. If the person is observed to transit to a new state, say employed-welfare in wave 5, their records of waves 3 and 4 are included in the sample and the person is said to transit to the employed-welfare state after being in the initial state for 2 years. If the person is still in the not-employed-welfare state in wave 6, the person is said to be right-censored, with all of their four waves of records being included in the sample. The other three samples for the initial states of employed-welfare, not-employed-non-welfare and employed-non-welfare are constructed in the same way. The summary statistics for the four samples are presented in Appendix B. Table 10 shows the transition destinations and the duration before transitions occur for each of the initial states.

Table 10: Transition destinations and duration before transition occurs

	Duration (years)						Column total
	1	2	3	4	5	6	
<i>Initial state: not-employed-welfare</i>							
Transition to							
Employed-welfare	186	63	37	24	12	0	322
Not-employed-non-welfare	207	77	25	21	7	0	337
Employed-non-welfare	247	45	10	4	6	0	312
No. transitions observed	574	219	173	110	104	203	1,383
Total number of cases (row)	1,214	404	245	159	129	203	2,354
<i>Initial state: employed-welfare</i>							
Transition to							
Not-employed-welfare	168	51	15	6	2	0	242
Not-employed-non-welfare	45	9	2	0	0	0	56
Employed-non-welfare	437	80	29	13	11	0	570
No. transitions observed	343	100	45	36	20	42	586
Total number of cases (row)	993	240	91	55	33	42	1,454
<i>Initial state: not-employed-non-welfare</i>							
Transition to							
Not-employed-welfare	309	60	27	12	3	0	411
Employed-welfare	61	5	1	1	0	0	68
Employed-non-welfare	663	128	61	30	6	0	888
No. transitions observed	582	177	98	83	71	125	1,136
Total number of cases (row)	1,615	370	187	126	80	125	2,503
<i>Initial state: employed-non-welfare</i>							
Transition to							
Not-employed-welfare	178	64	36	27	10	0	315
Employed-welfare	208	117	59	37	32	0	453
Not-employed-non-welfare	422	226	143	97	76	0	964
No. transitions observed	1,748	1,009	749	592	693	2,320	7,111
Total number of cases (row)	2,556	1,416	987	753	811	2,320	8,843

5.3. Estimation results

The remainder of Section 5 presents the results from the estimation of duration competing-risks models. We begin with the discussion of the estimates of the human capital variables. Estimated MMEs for the human capital variables from the regressions of each of the four samples are put together and presented in Table 11a in four parts. Note that for each of the four samples (i.e. starting states) there are four sets of estimates (possible transitions). This implies that in each set of estimates three columns will refer to the MME of the variable on the probability of transiting to another state and one column will refer to the MME of the variable on the probability of remaining in that state. For example, in the first part that estimates the transitions from the state of Not-employed-welfare, the first column of estimates comes under the same column title (Not-employed-welfare) and estimates the probability of *remaining* in this state. By contrast, the other three columns in the same set of estimates refer to *leaving* the state of Not-employed-welfare to one of the three alternative states.

5.3.1. Human capital variables: Work experience

We begin with the estimates for the work experience variables for those who were observed to be at the start of the sampling period in the state of Not-employed-welfare. Results indicate that a one-year increase in work experience reduced their probability of remaining in the not-employed-welfare state by 1.3 percentage points, and increased the probability of transiting to the employed-welfare state and the employed-non-welfare state by 0.4 and 0.7 percentage points respectively. Work experience does not appear to influence the probability of transiting from the state Not-employed-welfare to the state Not-employed-non-welfare. The estimates for the work experience square variable indicate that there is a quadratic relationship (that is, a U-shaped or inverse U-shaped relationship) between experience and transition probabilities. In the cases of remaining in the Not-employed-welfare state and transiting to the Employed-non-welfare state estimations reveal that there is a respective minimum and maximum point, but both these points are estimated to be at levels of work experience that lie beyond retirement age, which makes them of little practical significance. In the case of transiting from the Not-employed-welfare state to

the Employed-welfare state, the maximum is estimated to be reached at 43 years of working experience, which would lie close to retirement age for most employees.

Table 11a: Effects of human capital on the probability of transitions

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
Part 1. Transitions from Not-employed-welfare								
work experience	-0.0127***	0.0018	0.0043***	0.0011	0.0016	0.0011	0.0067***	0.0013
work experience square	0.0002***	0.0000	-0.0001**	0.0000	0.0000	0.0000	-0.0001**	0.0000
certificate	0.0622***	0.0199	-0.0173	0.0110	0.0015	0.0154	-0.0465***	0.0088
Year 12	0.0389*	0.0213	-0.0037	0.0132	0.0031	0.0166	-0.0383***	0.0076
Year 10-11	0.0800***	0.0200	-0.0238**	0.0108	0.0018	0.0150	-0.0581***	0.0091
below Year 10	0.0849***	0.0200	-0.0275***	0.0103	0.0049	0.0167	-0.0623***	0.0068
very good health	0.0269	0.0188	0.0010	0.0130	-0.0173	0.0109	-0.0105	0.0107
good health	0.0287	0.0195	-0.0064	0.0126	-0.0159	0.0116	-0.0063	0.0109
fair health	0.0679***	0.0186	-0.0103	0.0129	-0.0300***	0.0108	-0.0276***	0.0103
poor health	0.1289***	0.0152	-0.0357***	0.0100	-0.0435***	0.0090	-0.0497***	0.0066
Part 2. Transitions from Employed-welfare								
work experience	-0.0051**	0.0025	0.0020	0.0046	-0.0014	0.0012	0.0045	0.0041
work experience square	0.0001	0.0001	-0.0001	0.0001	0.0000	0.0000	0.0000	0.0001
certificate	0.0344	0.0246	0.0338	0.0321	-0.0119	0.0084	-0.0563**	0.0262
Year 12	0.0623*	0.0329	0.0072	0.0392	-0.0093	0.0089	-0.0602**	0.0268
Year 10-11	0.0482*	0.0286	0.0000	0.0341	-0.0005	0.0096	-0.0477*	0.0260
below Year 10	0.0867**	0.0428	0.0091	0.0480	-0.0068	0.0110	-0.0890***	0.0330
very good health	-0.0108	0.0248	-0.0351	0.0485	0.0106	0.0493	0.0353	0.0347
good health	0.0159	0.0243	0.0034	0.0431	0.0091	0.0436	-0.0284	0.0306
fair health	0.0373	0.0333	-0.0106	0.0587	0.0185	0.0661	-0.0452	0.0339
poor health	0.2801***	0.0755	-0.1116	0.0770	0.0047	0.0471	-0.1731***	0.0345
Part 3. Transitions from Not-employed-non-welfare								
work experience	-0.0045***	0.0013	0.0009	0.0008	-0.0107***	0.0026	0.0143***	0.0024
work experience square	0.0001**	0.0000	0.0000	0.0000	0.0001	0.0001	-0.0001**	0.0001
Certificate	0.0834***	0.0219	0.0141	0.0088	-0.0274	0.0237	-0.0701***	0.0148
Year 12	0.0773***	0.0265	0.0046	0.0089	-0.0127	0.0267	-0.0691***	0.0160
Year 10-11	0.0771***	0.0222	-0.0047	0.0061	-0.0061	0.0250	-0.0664***	0.0151
below Year 10	0.1592***	0.0347	0.0045	0.0109	-0.0852**	0.0343	-0.0785***	0.0183
very good health	-0.0156	0.0141	-0.0006	0.0065	-0.0145	0.0225	0.0307*	0.0185
good health	0.0076	0.0150	-0.0003	0.0064	-0.0072	0.0228	-0.0001	0.0186
fair health	0.0653***	0.0221	0.0110	0.0115	-0.0372	0.0279	-0.0391*	0.0211
poor health	0.0780**	0.0338	-0.0021	0.0100	0.0166	0.0404	-0.0925***	0.0266
Part 4. Transitions from Employed-non-welfare								
work experience	-0.0013***	0.0003	-0.0007*	0.0004	-0.0021***	0.0005	0.0040***	0.0008
work experience square	0.0000***	0.0000	0.0000	0.0000	0.0000***	0.0000	-0.0001***	0.0000
Certificate	0.0068***	0.0024	0.0074***	0.0022	0.0039	0.0028	-0.0182***	0.0043
Year 12	0.0060**	0.0031	0.0046	0.0029	0.0014	0.0035	-0.0120**	0.0054

Year 10-11	0.0145***	0.0038	0.0071***	0.0027	0.0076**	0.0034	-0.0292***	0.0057
below Year 10	0.0203***	0.0069	0.0122**	0.0057	0.0188***	0.0069	-0.0513***	0.0111
very good health	0.0020	0.0025	-0.0001	0.0023	-0.0017	0.0030	-0.0001	0.0046
good health	0.0068**	0.0029	0.0013	0.0024	-0.0015	0.0031	-0.0066	0.0050
fair health	0.0194***	0.0063	0.0094**	0.0043	0.0088*	0.0050	-0.0377***	0.0089
poor health	0.0635***	0.0210	0.0018	0.0083	0.0830***	0.0203	-0.1483***	0.0289

Note: *** indicates the estimate is significant at 1% level; ** 5%, * 10%.

Estimates in the second part referring to transitions from the Employed-welfare state, suggest that each year of work experience reduces the probability of transition to the Not-employed-welfare state by about 0.5 percentage points, but that the effect of work experience on any other transitions from Employed-welfare is not statistically significant.

The third part of Table 11a presents the estimates of the transitions from the state Not-employed-non-welfare. Work experience increases the probability of transition to the Employed-non-welfare state and decreases the probability of transition to the Not-employed-welfare state. It also decreases the probability of remaining in the state of Not-employed-non-welfare. These three relationships are also U-shaped, but peaking at levels of work experience higher than 45 years that are in practical terms at or beyond the retirement point for most employees. Finally, the transition to Employed-welfare is not found to be influenced by work experience.

The final part of Table 11a presents the estimates of the transitions from the state Employed-non-welfare. Work experience reduces the probability of all transitions out of this state and increases the probability of remaining in the Employed-non-welfare state.

In summary, higher work experience is found to reduce the probability of remaining in or transiting to the Not-employed-welfare state and increase the probability of remaining in or transiting to the Employed-non-welfare state. It is also found to increase the probability of transiting to the Employed-welfare state from the Not-employed-welfare state, and to reduce the probability of transiting to the Not-employed-non-welfare state from the Employed-non-welfare state.

5.3.2. Human capital variables: Education

We now turn to the education variables in Table 11a, where the reference category is those who hold a degree or other higher qualifications. In general education is found

to be important in most of the transitions, particularly for the transition to the Not-employed-welfare state and the transition to the Employed-non-welfare state.

Regarding the transitions from the Not-employed-welfare state, our estimates show that compared with degree holders, the probability of transiting to the Employed-non-welfare state for those who have only completed Year 12 is 3.8 percentage points lower, while the probability of remaining in the Not-employed-welfare state is 3.9 percentage points higher.

Regarding the transitions from the Employed-welfare state, education levels lower than degree are found to have a significant negative effect on the probability of transiting to the Employed-non-welfare state and a significant positive effect on the probability of transiting to the Not-employed-welfare state. In other words, higher education helps to lift those who combine welfare and work to get off welfare completely, and prevents them from sliding into the state of complete welfare reliance.

Regarding the transitions from the Not-employed-non-welfare state, it is found that those who have a degree or higher qualification have a higher probability of transiting to the Employed-non-welfare state and a lower probability of transiting to the Not-employed-welfare state than those without a degree. The effect of education on the probability of transiting to the Employed-welfare state is estimated to be insignificant.

In the last part of Table 11a, estimates of the transitions from the Employed-non-welfare state, suggest that those with a qualification lower than Year 12 have a higher probability of transiting to the Not-employed-welfare or the Employed-welfare states and a lower probability of remaining in the Employed-non-welfare state. Those who have completed Year 12 and those who hold a certificate or a diploma have also been found to have a higher probability of transiting to the Not-employed-welfare state and a lower probability of remaining in the Employed-non-welfare state, compared with degree holders.

In summary, higher education is found to help increase the probability of transiting to (or remaining in) the Employed-non-welfare state and reduce the probability of transiting to (or remaining in) the Not-employed-welfare state. Estimates also suggest that the lower the education, the larger the effect in absolute terms except for those with a Year 12 qualification. Our results support the widely accepted view that education is very important in getting people into work and out of welfare.

5.3.3. *Human capital variables: Health*

As in previous modelling we first use the self-reported health measure. Estimates are presented in Table 11a. We also estimate models that use alternative health measures, and we report these estimates in Table 11b.

The omitted health category for the self-reported health variables in Table 11a is excellent health. Overall it is found that good or very good health makes little difference to the transition probabilities compared with excellent health. However, both fair health and poor health are found to have a significant effect on the probabilities of transitions, particularly the transitions to the states of employed-non-welfare state and not-employed-welfare.

Regarding the transitions from the Not-employed-welfare state, both fair and poor health are found to increase the probability of remaining in the not-employed-welfare state significantly and decrease the probability of transiting to any of the other states. For example, the average person in poor health who is initially not employed and on welfare has a probability of remaining in that state 13 percentage points higher than the average person in excellent health; a probability of transiting to any of the other three states that is from 3.6 to 5 percentage points lower.

Regarding the transitions from the Employed-welfare state, only poor health is found to have a significant effect on the probability of transiting to the Employed-non-welfare state and the probability of transiting to the Not-employed-welfare state. The estimates show that compared to those reporting excellent health, those reporting poor health have a probability of transiting to the Employed-non-welfare state that is 17.3 percentage points lower, and a probability of transiting to the Not-employed-welfare state that is 28 percentage points higher.

For those who are initially in the Not-employed-non-welfare state, the probability of transiting to the Employed-non-welfare state is also found to be lower and the probability of transiting to the Not-employed-welfare state is found to be higher for those reporting fair or poor health when compared to those reporting excellent health.

For those who are Employed and not on welfare initially, the estimates show that poor or fair health significantly reduces the probability of remaining in the same state and increases the probability of transiting to all other states, particularly to the state of Not-employed-welfare.

Table 11b presents estimates for the two alternative health measures used in this research: a long-term health condition and a work disability. Estimation results are largely in line with the results derived using self-reported health. That is, a low level of health measured by the presence of a long-term health condition and (or) a work disability is found to reduce the probability of transiting to (or remaining in) the Employed-non-welfare state and increase the probability of transiting to (or remaining in) the Not-employed-welfare state. Having a long-term health condition or a work disability is also found to reduce the probability of transiting to the states of Employed-welfare and Not-employed-non-welfare from the Not-employed-welfare state, and increases the probability of remaining in the Employed-welfare state and the probability of transiting to the Employed-welfare and Not-employed-non-welfare states from the Employed-non-welfare state.

Table 11b: Estimates for alternative health measures

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
<i>Transitions from Not-employed-welfare</i>								
Health condition	0.0713***	0.0114	-0.0130*	0.0073	-0.0181**	0.0074	-0.0402***	0.0065
Work disability	0.0761***	0.0116	-0.0214***	0.0073	-0.0171**	0.0072	-0.0376***	0.0064
<i>Transitions from Employed-welfare</i>								
Health condition	0.0589***	0.0140	0.0547***	0.0208	0.0011	0.0077	-0.1147***	0.0164
Work disability	0.0638***	0.0137	0.0641***	0.0204	-0.0044	0.0072	-0.1236***	0.0169
<i>Transitions from Not-employed-non-welfare</i>								
Health condition	0.0716***	0.0113	0.0092	0.0060	-0.0020	0.0163	-0.0788***	0.0127
Work disability	0.0743***	0.0119	0.0048	0.0053	-0.0073	0.0167	-0.0718***	0.0133
<i>Transitions from Employed-non-welfare</i>								
Health condition	0.0096***	0.0021	0.0103***	0.0024	0.0166***	0.0033	-0.0365***	0.0043
Work disability	0.0071***	0.0020	0.0083***	0.0026	0.0174***	0.0036	-0.0329***	0.0047

Note: We use the same control variables as in the models that use self-reported health..

5.3.4. Individual and family characteristics

Finally, Table 11c presents the estimates for individual and family characteristics. As in the descriptive analysis of this report, we summarize the main findings to preserve space.

Table 11c: Estimates on individual and family characteristics

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
<i>Transitions from Not-employed-welfare</i>								
Age	-0.0001	0.0037	-0.0025	0.0024	0.0010	0.0024	0.0015	0.0024
age square	0.0001**	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001***	0.0000
Females	0.0168	0.0194	0.0108	0.0102	-0.0169	0.0157	-0.0107	0.0093
Married	-0.0406**	0.0197	0.0013	0.0102	0.0284**	0.0138	0.0109	0.0099
Married females	-0.0024	0.0248	-0.0241**	0.0117	0.0183	0.0174	0.0082	0.0128
born in Eng-speaking country	0.0044	0.0187	0.0064	0.0116	0.0020	0.0122	-0.0127	0.0094
born in non-Eng speaking country	0.0033	0.0151	-0.0170*	0.0088	0.0177	0.0116	-0.0040	0.0090
child aged 0-4	0.0408	0.0305	-0.0015	0.0193	-0.0319	0.0241	-0.0074	0.0132
child aged 5-14	0.0270	0.0313	0.0256	0.0184	-0.0341	0.0242	-0.0185	0.0123
female & child aged 0-4	-0.1714**	0.0871	-0.0079	0.0211	0.2170**	0.0925	-0.0376***	0.0122
female & child aged 5-14	-0.1385*	0.0799	0.0102	0.0202	0.1466*	0.0861	-0.0183	0.0150
work attitude-indifference	-0.0062	0.0146	0.0009	0.0094	-0.0061	0.0090	0.0115	0.0092
Work attitude-positive	-0.0134	0.0141	-0.0004	0.0093	-0.0028	0.0091	0.0166*	0.0090
duration 2 years	0.0358***	0.0109	-0.0074	0.0076	-0.0062	0.0074	-0.0221***	0.0064
duration 3 years	0.0748***	0.0134	-0.0071	0.0099	-0.0273***	0.0083	-0.0404***	0.0068
duration 4 years	0.0792***	0.0144	-0.0087	0.0110	-0.0192**	0.0097	-0.0513***	0.0060
duration 5 years	0.0669***	0.0187	-0.0107	0.0124	-0.0327***	0.0102	-0.0235*	0.0124
<i>Transitions from Employed-welfare</i>								
Age	-0.0029	0.0044	-0.0078	0.0087	-0.0015	0.0027	0.0122	0.0077
age square	0.0001	0.0001	0.0002	0.0001	0.0000	0.0000	-0.0003***	0.0001
Females	-0.0237	0.0235	0.0428	0.0421	0.0052	0.0353	-0.0243	0.0298
Married	-0.0191	0.0236	0.0494	0.0540	0.0206	0.0516	-0.0510	0.0348
Married females	0.0170	0.0280	-0.1050*	0.0548	-0.0114	0.0390	0.0994**	0.0445
born in Eng-speaking country	0.0118	0.0218	-0.0376	0.0360	-0.0001	0.0110	0.0259	0.0306
born in non-Eng speaking country	0.0185	0.0256	-0.0452	0.0344	0.0131	0.0134	0.0136	0.0314
child aged 0-4	-0.0646*	0.0366	-0.0034	0.0620	-0.0104	0.0443	0.0785	0.0521
child aged 5-14	-0.0301	0.0317	0.0477	0.0729	-0.0299	0.0815	0.0123	0.0434
female & child aged 0-4	0.0927	0.1356	-0.0804	0.1838	0.1396	0.2385	-0.1519***	0.0419
female & child aged 5-14	0.0047	0.0472	0.0177	0.1324	0.0956	0.1744	-0.1180**	0.0482
work attitude-indifference	-0.0285*	0.0161	0.0061	0.0293	0.0040	0.0120	0.0183	0.0273
Work attitude-positive	-0.0619***	0.0177	0.0187	0.0297	0.0060	0.0111	0.0371	0.0259
duration 2 years	-0.0086	0.0137	0.1012***	0.0217	-0.0071	0.0068	-0.0855***	0.0184
duration 3 years	-0.0291*	0.0171	0.1621***	0.0275	-0.0209***	0.0053	-0.1120***	0.0230
duration 4 years	-0.0539***	0.0180	0.2353***	0.0312	-0.0155*	0.0082	-0.1658***	0.0248
duration 5 years	-0.0791***	0.0172	0.1762***	0.0421	-0.0237***	0.0032	-0.0734*	0.0396

Transitions from Not-employed-non-welfare

Age	0.0029	0.0030	-0.0021	0.0018	-0.0154***	0.0057	0.0146***	0.0049
age square	0.0000	0.0000	0.0000	0.0000	0.0003***	0.0001	-0.0004***	0.0001
Females	0.0231	0.0169	0.0066	0.0109	-0.0239	0.0335	-0.0059	0.0289
Married	-0.0358	0.0239	-0.0051	0.0164	0.0151	0.0332	0.0259	0.0247
Married females	-0.0784**	0.0314	-0.0337	0.0450	0.1241**	0.0491	-0.0120	0.0354
born in Eng-speaking country	-0.0134	0.0142	-0.0094**	0.0038	0.0105	0.0232	0.0123	0.0189
born in non-Eng speaking country	0.0166	0.0126	0.0002	0.0051	0.0523***	0.0181	-0.0691***	0.0149
child aged 0-4	0.0625	0.0436	0.0264	0.0788	-0.0148	0.0724	-0.0741*	0.0420
child aged 5-14	0.0008	0.0327	-0.0505	0.0790	0.0473	0.0676	0.0025	0.0374
female & child aged 0-4	0.0330	0.0485	0.0409	0.1436	-0.0338	0.1160	-0.0401	0.0478
female & child aged 5-14	0.0078	0.0683	0.3018	0.3186	-0.2337	0.2143	-0.0759	0.0623
work attitude-indifference	-0.0142	0.0114	0.0004	0.0048	-0.0249	0.0193	0.0388**	0.0164
Work attitude-positive	0.0133	0.0111	-0.0029	0.0047	-0.0263	0.0184	0.0160	0.0157
duration 2 years	-0.0329***	0.0085	-0.0102***	0.0036	0.1070***	0.0139	-0.0640***	0.0118
duration 3 years	-0.0501***	0.0086	-0.0147***	0.0025	0.1432***	0.0177	-0.0785***	0.0157
duration 4 years	-0.0638***	0.0088	-0.0127***	0.0036	0.1546***	0.0199	-0.0780***	0.0192
duration 5 years	-0.0821***	0.0082	-0.0152***	0.0019	0.2357***	0.0191	-0.1384***	0.0186

Transitions from Employed-non-welfare

Age	0.0002	0.0006	0.0001	0.0008	-0.0019*	0.0010	0.0016	0.0014
age square	0.0000	0.0000	0.0000	0.0000	0.0000***	0.0000	0.0000**	0.0000
Females	-0.0008	0.0019	0.0074***	0.0028	0.0049	0.0045	-0.0114**	0.0054
Married	-0.0074***	0.0026	-0.0019	0.0032	0.0026	0.0044	0.0067	0.0060
Married females	-0.0016	0.0028	-0.0135***	0.0043	0.0257***	0.0067	-0.0106	0.0081
born in Eng-speaking country	0.0046*	0.0024	-0.0013	0.0022	-0.0009	0.0032	-0.0024	0.0046
born in non-Eng speaking country	0.0048**	0.0024	-0.0018	0.0020	-0.0021	0.0034	-0.0010	0.0047
child aged 0-4	0.0031	0.0035	0.0048	0.0044	-0.0087*	0.0052	0.0008	0.0076
child aged 5-14	-0.0031	0.0026	0.0043	0.0035	-0.0078*	0.0045	0.0066	0.0061
female & child aged 0-4	0.0020	0.0051	0.0329**	0.0134	0.0537***	0.0161	-0.0886***	0.0202
female & child aged 5-14	0.0087	0.0081	0.0289***	0.0095	0.0008	0.0064	-0.0384***	0.0132
work attitude-indifference	0.0003	0.0022	-0.0004	0.0022	-0.0064**	0.0030	0.0065	0.0043
Work attitude-positive	0.0016	0.0021	-0.0016	0.0021	-0.0075**	0.0031	0.0075*	0.0041
duration 2 years	-0.0030**	0.0012	0.0014	0.0018	-0.0005	0.0025	0.0021	0.0032
duration 3 years	-0.0046***	0.0013	-0.0042**	0.0017	-0.0032	0.0027	0.0120***	0.0035
duration 4 years	-0.0049***	0.0014	-0.0067***	0.0017	-0.0054*	0.0029	0.0170***	0.0036
duration 5 years	-0.0083***	0.0010	-0.0041*	0.0021	-0.0039	0.0032	0.0163***	0.0040

Transitions from the Not-employed-welfare state

- Compared with single males without young children, married males have a probability of transiting to the Not-employed-non-welfare state that is 2.8 percentage points higher, and a probability of remaining in the Not-employed-welfare state that is 4.1 percentage points lower.
- Compared with single males without young children, married females without young children have a probability of transiting to the Employed-welfare state that is 2.4 percentage points lower.
- Compared with single males, females with pre-school-age children have a probability of transiting to the Not-employed-non-welfare state that is 21.7 percentage points higher, a probability of transiting to the Employed-non-welfare state that is 3.8 percentage points lower, and a probability of remaining in the Not-employed-welfare state that is 17 percentage points lower.
- Compared with single males, there is weak evidence that females with school-age children have a higher probability of transiting to the Not-employed-non-welfare state, and a lower probability of remaining in the Not-employed-welfare state.
- There is only weak evidence that those with a positive work attitude have a higher probability of transiting to the Employed-non-welfare state, when compared to those with a negative work attitude.

Transitions from the Employed-welfare state

- Compared with single males without young children, married females without young children have a the probability of transiting to the Employed-non-welfare state that is 9.9 percentage points higher, and a probability of remaining in the Employed-welfare state that is 10.5 percentage points lower.
- Compared with single males without young children, females with pre-school age children have a probability of transiting to the Employed-non-welfare state that is 15.2 percentage points lower. For females with school-age children, the probability of transiting to the Employed-non-welfare state is 11.8 percentage points lower.
- Compared to those with negative work attitude, the probability of transiting to the Not-employed-welfare state is 2.9 percentage points lower for those with an

indifferent attitude, and 6.2 percentage points lower for those with positive work attitude.

Transitions from the Not-employed-non-welfare state

- Up to the age of 36, the probability of transiting to the Employed-non-welfare state increases with age. After 36 the probability declines with age.
- Up to the age of 51, the probability of remaining in the Not-employed-non-welfare state decreases with age. Beyond 51, it increases with age.
- Compared with single males without young children, married females without young children have a probability of transiting to the Not-employed-welfare state that is 7.8 percentage points lower, and a probability of remaining in the Not-employed-non-welfare state is 12.4 percentage points higher.
- Compared to Australian-born individuals, immigrants from an English speaking country have a probability of transiting to the Employed-welfare state that is about one percentage points lower. Immigrants from a non-English speaking country have a probability that is 6.9 percentage points lower, and a probability of remaining in the Not-employed-non-welfare state that is 5.2 percentage points higher.
- Compared to those with a negative work attitude, those with a indifferent work attitude have a probability of transiting to the Employed-non-welfare state that is 3.9 percentage points higher. For reasons that are not immediately clear, a positive work attitude does not seem to affect the same probability in a statistically significant way, although it has the expected sign.

Transitions from the Employed-non-welfare state

- Compared with single males without young children, single females without young children have a probability of transiting to the Employed-welfare state that is 0.7 percentage points higher, and a probability of remaining in the Employed-non-welfare state that is 1.1 percentage points lower.
- Compared with single males without young children, married males have a probability of transiting to the Not-employed-welfare state that is 0.7 percentage points lower.

- The probability that immigrants will transit to the Not-employed-welfare state is 0.5 percentage points higher than that of people born in Australia.
- Compared with single males without young children, females with pre-school age children have a probability of transiting to the Not-employed-non-welfare state that is 5.4 percentage points higher, a probability of transiting to the Employed-welfare state that is 3.3 percentage points higher, and a probability of remaining in the Employed-non-welfare state that is 8.9 percentage points lower.
- Compared with single males without young children, females with school-age children have a probability of transition to the Employed-welfare state that is 2.9 percentage points higher, and a probability of remaining in the Employed-non-welfare state that is 3.8 percentage points lower.
- Those with an indifferent or negative work attitude have a probability of transiting to the Not-employed-non-welfare state that is 6-7 percentage points lower than those with a positive work attitude.

5.4. The role of job search behaviour and mutual obligation requirements in the transitions into employment

In this subsection we investigate in some detail how job search behaviour may affect transitions from the two Not-employed states: Not-employed-welfare and Not-employed-non-welfare. In each wave of the HILDA survey, those who are currently ***unemployed*** are asked whether they have taken any of the following actions in order to find a job in the last four weeks. They are asked whether they have:

- (a) Written, phoned or applied in person to an employer for work*
- (b) Answered an advertisement for a job*
- (c) Checked factory noticeboards, or used the touch screens at Centrelink offices*
- (d) Been registered with Centrelink as a jobseeker*
- (e) Checked or registered with an employment agency*
- (f) Advertised or tendered for work*
- (g) Contacted friends/relatives*
- (h) Looked in newspapers, but did not actually answer an advertisement for a job*
- (i) Looked on Internet but did not actually answer an advertisement for a job*

We use the answers to these questions to construct a number of job search behaviour variables. All the job search behaviour variables are dummy variables, that is they take the value one if the activity in question has been carried out and the value zero if not. Due to the small number of positive responses and the conceptual similarity of the activities, we combined activity (f) with (a) and activity (i) with (h). As these job search activities are not exclusive and individuals can undertake more than one of these activities at the same time, we need to be careful as to the interpretation we apply to the estimates of these variables. For each activity, the reference persons are those who do not undertake that particular activity, not those who did not undertake any activity at all. In addition, the responses to these questions refer to activities that were undertaken some time in the year before the interview. However, the employment outcomes that determine who will be asked are those of the next wave. It is possible that individuals may change their job search activity between the current and the next waves and it may be that the new search behaviour is the one that leads to the employment outcomes in the next wave.

In this subsection we also examine whether mutual obligation requirements may play a role in the probability of transiting from the Not employed states. Unlike job search behaviour, questions regarding mutual obligation requirements are asked of those individuals who were *ever* unemployed during the calendar period specified in each survey. The list of mutual obligation requirements includes: *part-time study, part-time paid work, voluntary unpaid work, work for the dole, job search training, approved literacy/numeracy training, Green Corps, job placement employment and training, intensive assistance, community development employment projects, new apprenticeship access program, advanced English for immigrants, job pathway program, and defence force reserve*. Due to the small numbers of observations for any single one of these mutual obligations, it is not possible to examine the effect of any one of the requirements. Since it is also difficult to group these requirements in a meaningful way, we construct only one dummy variable from these mutual obligation requirements, which refers to those who *take any mutual obligation activity*. The variable takes a value one if a person undertook any of the requirements except for the defence force reserve. Otherwise, the variable is zero. We can regard undertaking these requirements as enhancing work skills, since all of the requirements involve training and/or work experience. However, given that those who are low skilled may

be more likely to be required to undertake these (skill enhancing) requirements/activities, it is difficult to identify empirically the degree of skill enhancement and its effect on labour market outcomes. Therefore, compared with those who do not undertake the requirements/activities, those who do may not have a higher probability of transition from the Not employment states.

We use detailed information on labour force status to identify those who are marginally attached to the labour market and see whether their marginal attachment may have an effect on their probability of transiting into employment (i.e. out of the two Not-employed states).

The samples used here are essentially the same as those used for estimating transitions from the Not-employed-welfare and the Not-employed-non-welfare states, but the sample sizes end up being slightly different because of the missing values in the newly introduced job search and mutual obligation variables.

Table 12 presents the estimates for the newly added variables. The variables used in the earlier transition models are also included as controls and their estimates can be found in Appendix D.

Regarding transitions from the Not-employed-welfare state, when we compare those who are marginally attached with those who are out of the labour force and not marginally attached to the labour market, we see that they are less likely to remain in the Not-employed-welfare state, but they are more likely to transit to the Employed-welfare state and combine welfare and work, rather than transit to Employed-non-welfare by becoming employed and leaving welfare altogether. Undertaking mutual obligation activities does not appear to affect significantly the transitions from the Not-employed-welfare state.

Looking at the job search behaviour variables, we find that those who have written, phoned or applied in person to prospective employers, or have advertised or tendered for work, are more likely to transit to the Employed-welfare state from the Not-employed-welfare state. They are also less likely to transit to the Not-employed-non-welfare state, compared with those who do not undertake these job search activities. Those who have answered job advertisements are more likely to transit to the Employed-non-welfare state and less likely to remain in the Not-employed-welfare state, but they are also more likely to transit to the Not-employed-non-welfare state.

Table 12: Estimates on labour market attachment and job search behaviour variables

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
Transition from not-employed-welfare								
Out of labour force, but marginally attached	-0.0342***	0.0120	0.0328***	0.0086	-0.0029	0.0072	0.0043	0.0076
Take any mutual obligation activity	0.0116	0.0201	-0.0047	0.0103	0.0078	0.0176	-0.0146*	0.0075
Job search behaviour								
Written, phoned or applied in person to employers, or advertised or tendered for work	-0.0308	0.0229	0.0551***	0.0188	-0.0360***	0.0126	0.0116	0.0114
Answered job advertisement	-0.0918***	0.0301	0.0090	0.0141	0.0588**	0.0285	0.0240**	0.0120
Checked factory noticeboard or touch screen of Centrelink	-0.0076	0.0244	-0.0125	0.0109	0.0099	0.0206	0.0102	0.0109
Registered with Centrelink as job seeker	-0.0064	0.0239	0.0111	0.0159	-0.0126	0.0158	0.0079	0.0119
Registered with employment agency	-0.0506*	0.0282	0.0090	0.0148	0.0146	0.0238	0.0270**	0.0134
Contacted friends or relatives	0.0405*	0.0239	-0.0110	0.0130	-0.0234	0.0185	-0.0061	0.0106
Looked in newspapers or on internet, but not answer job advertisement	-0.0415*	0.0223	0.0257*	0.0145	-0.0119	0.0165	0.0277**	0.0114
Transition from not-employed-non-welfare								
Out of labour force, but marginally attached	0.0197*	0.0103	0.0065	0.0047	-0.0655***	0.0150	0.0393***	0.0121
Take any mutual obligation activity	0.0322	0.0397	0.0246	0.0224	0.0034	0.0607	-0.0602	0.0418
Job search behaviour								
Written, phoned or applied in person to employers, or advertised or tendered for work	-0.0259*	0.0156	-0.0061	0.0064	-0.1141***	0.0315	0.1461***	0.0304
Answered job advertisement	0.0205	0.0288	0.0424**	0.0204	-0.1148***	0.0398	0.0519*	0.0295
Checked factory noticeboard or touch screen of Centrelink	-0.0195	0.0299	0.0362	0.0350	-0.0298	0.0523	0.0130	0.0402
Registered with Centrelink as job seeker	0.1239**	0.0535	-0.0025	0.0097	-0.0625	0.0552	-0.0589**	0.0287
Registered with employment agency	-0.0003	0.0263	0.0000	0.0081	-0.0879**	0.0444	0.0882**	0.0413
Contacted friends or relatives	-0.0039	0.0311	-0.0002	0.0095	-0.0011	0.0481	0.0052	0.0338
Looked in newspapers or on internet, but not answer job advertisement	-0.0088	0.0202	0.0101	0.0103	-0.0056	0.0325	0.0043	0.0253

Registration with an employment agency has a positive effect on the probability of transiting to the Employed-non-welfare state and a negative effect on the probability of remaining in the Not-employed-welfare state. Looking at internet or newspapers

without actually applying for jobs has a similar effect to registration with an employment agency.

Regarding transitions from the not-employed-non-welfare state, marginal attachment to the labour market reduces the probability of remaining in the Not-employed-non-welfare state significantly, largely by increasing the probability of moving to the Employed-non-welfare state. Mutual obligation activities do not appear to have an effect on the probability of transiting from this state.

Those who have written, phoned or applied in person to employers, or have advertised or tendered for work, have a much higher probability of transiting to the Employed-non-welfare state and a much lower probability of remaining in the Not-employed-non-welfare state, compared with those who do not undertake this job search activity. This job search activity also appears to reduce the probability of transiting to the Not-employed-welfare state from the Not-employed-non-welfare state. Those who answered job advertisements appear to have a higher probability of transiting to the two employed states and a lower probability of remaining in the Not-employed-non-welfare state. Those who register with Centrelink as job seekers have a lower probability of transiting to the Employed-non-welfare state and a higher probability of transiting to the Not-employed-welfare state, compared with those who do not register with Centrelink. Registration with an employment agency increases the probability of transition to the Employed-non-welfare state, and reduces the probability of transition to the Not-employed-welfare state.

A note of caution regarding the interpretation of the results on recorded job search activities is necessary at this point. It is clear that results suggest that some job search activities have the expected and desired effect regarding raising the probability of either retaining or obtaining a favourable labour market position. The intuition is as clear as it is simple: if one does not apply for a job, one almost always does not get a job. However, the relationship between activity and outcomes that we observe in the data is not exclusively due to the effect of the activity. To a degree that cannot be known using the data at hand, the outcomes can also be the result of a self-selection process into the activity. Most activities are more likely to be undertaken if they can confer some expected benefits. The less likely that an individual believes that a search activity may yield a beneficial labour market outcome, the less likely it is that this individual will undertake this search activity. Put very simply, this is why most of us

do not apply for jobs where we think our chances are too low. In a clear expected utility maximising manner where search costs may be positive, there will be self-selection into search activities. It follows that when we only observe the outcomes of those who undertook the activity we will be overestimating the effectiveness of the activity due to the self selection into this activity of those who stand the highest chances to benefit from it.

5.6. The roles of job characteristics in the transitions from the employed states

In this subsection we examine whether job characteristics play a role in the transitions from the two employed states: Employed-welfare and Employed-non-welfare. The job characteristics we examine here include wages, type of employment contracts, firm size, employment sector and occupation. Wages refer to hourly wages derived from reported weekly earnings from the main job and reported weekly hours worked in the main job. We differentiate between three employment contract types: fixed-term contracts, casual employment contracts and permanent or continuing employment contracts. The firm size variable is defined at three levels:

- small firms with less than 50 employees,
- medium size firms with from 50 to 199 employees, and
- large firms with 200 or more employees.

We construct three broad categories of occupations:

- white collar which includes managers, administrators or professionals,
- other white collar which includes clerical, sales and services, and
- blue collar which includes tradespersons, labourers, production or transport workers and related workers.

We employ a similar sampling method to the one that was devised for the estimation of the transitions models (from the employed-welfare state and from the employed-non-welfare state). The resulting sample sizes here are smaller because of missing values in the job characteristics variables.

In the estimation of the effects of job characteristics on the transition from employment, we include the variables that were used as controls in earlier transition

models. Table 13 presents the estimates for the job characteristics variables only. The estimates for all other control variables can be found in Appendix E.

First we look at the transitions from the Employed-welfare state. The estimates for the hourly wage variable appear to have the expected sign, suggesting that higher wages lead to a higher probability of transition to the Employed-non-welfare state, a higher probability of remaining in the Employed-welfare state, and a lower probability of transiting to the Not-employed-welfare and Not-employed-non-welfare states. However, estimated MMEs are very small and none of them is statistically significant. The reference category for the type of employment contract dummy variables is the permanent or continuing employment contracts. Compared with permanent or continuing employment contracts, both fixed-term contracts and casual jobs are found to increase the probability of transiting to the Not-employed-welfare state and also to reduce the probability of remaining in the Employed-welfare state. The reference category for the firm size dummy variables is medium sized firms. Only small firms are found to reduce the probability of remaining in the Employed-welfare state, compared with medium sized firms. The public sector variable suggests that public sector employees are less likely than private sector employees to transit to the Not-employed-non-welfare state. The effect on other transitions is insignificant. The reference category for the occupation dummy variables is white collar jobs. The results suggest that when compared with white collar jobs, blue collar jobs reduce the probability of transiting to the Employed-non-welfare state and increase the probability of transiting to the Not-employed-non-welfare state,. Those belonging to the other white collar jobs category are also found to have a higher probability of transiting to the Not-employed-welfare state, than the reference category (white collar jobs).

Finally, turn to the transitions from the Employed-non-welfare state, which is clearly the most desirable and stable employment-welfare combination. The wage variable is found to have a significant negative effect on the probability of transiting to the states of Not-employed-welfare and Employed-welfare, and a significant positive effect on the probability of remaining in the Employed-non-welfare state. These results are consistent with expectations. Looking at the employment contract variables, casual jobs are found to increase the probability of transiting to the other states significantly, and are also found to reduce the probability of remaining in the Employed-non-

welfare state. Fixed-term contracts are also found to reduce the probability of remaining in the Employed-non-welfare state when compared to permanent or continuing jobs, but the effects on the other transitions are not insignificant. Looking at the firm-size variables, workers in small firms are found to have a higher probability of transiting to the Not-employed-welfare state and a lower probability of remaining in the Employed-non-welfare state, compared with workers in medium sized firms. There does not appear to be any statistically significant difference between medium and large sized firms. The estimates for the occupation variables are not significant, suggesting that after we have controlled for all other variables, occupation in itself has no effect on transitions from the Employed-non-welfare state.

Table 13: The estimates for the job characteristics variables

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
<i>Transitions from Employed-welfare</i>								
Hourly wages	-0.0004	0.0010	0.0006	0.0014	-0.0006	0.0005	0.0004	0.0012
Fixed term contract	0.1162**	0.0478	-0.1585***	0.0468	-0.0158*	0.0087	0.0582	0.0425
Casual job	0.0565***	0.0159	-0.0610**	0.0255	0.0003	0.0079	0.0042	0.0222
Small firm	0.0146	0.0187	-0.0614**	0.0304	0.0119	0.0144	0.0349	0.0257
Large firm	-0.0162	0.0280	-0.0489	0.0533	0.0271	0.0530	0.0380	0.0398
Public	-0.0028	0.0228	0.0018	0.0375	-0.0260***	0.0039	0.0270	0.0336
Other white collar	0.0861***	0.0332	-0.0439	0.0416	-0.0005	0.0119	-0.0417	0.0321
Blue collar	0.1489***	0.0454	-0.0408	0.0514	-0.0027	0.0150	-0.1053***	0.0339
<i>Transitions from Employed-non-welfare</i>								
Hourly wages	-0.0002***	0.0001	-0.0003***	0.0001	-0.0001	0.0001	0.0006***	0.0002
Fixed term contract	0.0013	0.0026	0.0046	0.0034	0.0062	0.0043	-0.0120**	0.0055
Casual job	0.0101***	0.0022	0.0152***	0.0027	0.0293***	0.0040	-0.0546***	0.0051
Small firm	0.0045**	0.0018	0.0019	0.0018	0.0036	0.0028	-0.0100***	0.0036
Large firm	0.0036	0.0029	0.0013	0.0025	0.0048	0.0037	-0.0097*	0.0050
Public	0.0013	0.0028	0.0055*	0.0029	-0.0002	0.0035	-0.0066	0.0053
Other white collar	0.0017	0.0024	-0.0003	0.0020	0.0013	0.0031	-0.0027	0.0042
Blue collar	0.0047	0.0029	0.0007	0.0028	-0.0023	0.0038	-0.0031	0.0053

6. Discussion and conclusion

The prime objective of this project has been to investigate the relationship between employment status, employability and welfare receipt in the Australian labour market

in the years 2001 to 2006 using the latest available information from the HILDA data set. The project was designed to include variables on employability that would reflect directly the demand side of the labour market, however these could not be obtained. The main focus of the project was to investigate the way human capital determines labour market outcomes amongst the group of workers that are most likely to be welfare recipients. The analysis of the project encompassed the complete working population of Australia in order to allow for useful comparisons between welfare recipients and non-recipients. The finding of previous research that a sizeable proportion of the Australian labour force moves in and out of welfare on a regular basis has been confirmed by this research as well. The project investigated a number of human capital variables: work experience, education/qualifications and health. It commenced with an extensive description of the data to set the scene and to help the understanding of the econometric analysis that followed. Econometric modelling was carried out with two objectives: First, to investigate the determinants of incidence of employment status and welfare receipt status in a multivariate context where employment and welfare receipt are treated together as the two main constituents of labour market outcomes; Second, to investigate the determinants of movements in and out of employment and in and out of welfare receipt, as well as the length of stay in employment and in welfare.

In order to analyse the determinants of employment-welfare outcomes a multinomial logit model was used, where outcomes are not ordered in any natural sense. The main results confirmed that all human capital measures are important regarding the pertinent employment-welfare outcomes, but work experience is the least important one, with education/qualifications coming next and health being the most important. The interpretation and generalisation of results was shown to be complex as the estimated relationships are in most cases not linear, a finding that limits the scope of the present results and calls for further more targeted and more in-depth analysis. For example, we find that the effect of qualifications is widely spread across the distribution of education but unequally so by education level. By contrast, we find that the effects of health status can be very strong, but are concentrated in the small group of those with very poor health. Both these effects (of education/qualifications and health status) are shown by the analysis to differ substantially depending on the specific combination of employment and welfare receipt.

A competing-risks duration model was used to model the length of stay in and the transitions between combinations of employment and welfare receipt. Results confirmed that human capital matters a great deal and in a way that is far more complicated than the naïve unemployment duration models in the literature suggest. Mobility is positively influenced by better education and clearly negatively influenced by poor health. A number of additional control variables were used in the analysis, including family and individual characteristics, but their relative effect was found to be limited. Alternative health measures were utilised only to confirm that they generate very similar estimates, a result that agrees with the wider literature.

A number of additional measures that can be considered to reflect the employability of an individual worker were utilised in the estimations. Labour market attachment was found to be of little consequence. Undertaken mutual obligation activities were also found to be of little relative consequence. Search activities were found to be of some consequence, but the issue of self-selection casts doubt on the exact meaning of our results and the data would not allow us to take this line of investigation to a conclusive level. Self-reported attitudes towards work were also found to be of no empirical consequence. Finally, a number of job characteristics variables, related to the employer rather than the employee, were included in the regression. With the exception of the type of contract, these were found to have rather weak associations with transitions between states of employment and welfare receipt.

A prominent finding in this study is that human capital, particularly as measured by qualifications/education and health, has a strong effect on the incidence of individual employment and welfare receipt patterns as well as on the transitions of individuals between employment and welfare receipt states. There are clearly a number of important and wide ranging policy implications. These can be studied in the context of the analytical framework and the results developed in this study. Take, for example, the recent discussion surrounding skill shortages in Australia in the 2000s. There appeared to be calls about a skill shortage problem in Australia that could create a barrier to economic growth. At the same time, it was clear that there was a pool of working age individuals who were not employed and were reliant on welfare payments. These are often individuals with lower skills and qualifications than those who are employed and who do not rely on welfare. Some have skills that are no longer in demand due to technological change. Our results suggest clearly but

indirectly that lower education and qualifications can be thought of as contributory factors for the presence of excess demand for skills. Two main observations should follow this statement. First, we should consider the caveat that we have not incorporated direct demand for skills measures, which means that we should treat this interpretation of our results with caution. Second, even if we were to conclude that there is a skills shortage, we would then have to establish the degree to which improving the education and qualifications would be a cost effective way to overcome the problem. Clearly, there are many different ways that education and qualifications could be used to improve productivity and only a targeted cost-effectiveness exercise would allow us to establish which type of expenditure on education would provide the best value for money. Our study can be of value in this context, as it indicates that providing formal training to low skilled people is a form of investment that may improve their employability and thus reduce their reliance on welfare.

The importance of health in determining individual employment status and welfare receipt suggests that labour market policies need to be complemented by health related policies for effectiveness. In practice, the connection between health policy and labour market policy is often overlooked. It should be recognized that health policies are not just for health *per se*. It is clear that improvements in population health raise the wellbeing of individuals in a direct way. But, importantly improvements in population health also increase overall employment probabilities and earnings and therefore raise directly and indirectly economic status. Looking at improvements in education and in health status we need to take both a short-term and a long-term policy perspective. In the short-term, policies that help accommodate poor health and/or health conditions in the workplace, as well as policies that provide further training for those with low skills may be useful to encourage individuals with health problems and/or with low education to (re)engage in labour market activities. In the long-term, the results in this research provide supportive evidence for further increases in human capital investments aimed at raising the national level of skills and education as well as long term population health strategies aiming at a healthier labour force in the future. The long-term investment perspective becomes more important in the context of population ageing.

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Appendix

A. Distribution of human capital by transition destinations using detailed employment-welfare receipt status

Table A1a: Transitions from Full-time employed, welfare recipient

	Remain in full-time employed recipient state	State transiting to						
		Recipient, working part time	Recipient, unemployed	Recipient, not in labour force	Non-recipient, working full time	Non-recipient, working part time	Non-recipient, unemployed	Non-recipient, not in labour force
Education								
Below Yr 10	6.69	9.8	8.33	13.95	4.84	6.9	0	15.38
Yr 10-11	17.72	29.41	41.67	20.93	22.58	34.48	14.29	46.15
Yr 12	8.27	15.69	16.67	16.28	16.13	10.34	0	7.69
Certificates and diplomas	53.54	31.37	25	44.19	38.31	27.59	28.57	23.08
Degree and Higher	13.78	13.73	8.33	4.65	18.15	20.69	57.14	7.69
Sample Size	254	51	12	43	248	29	7	13
Work experience								
No work experience	0	0	0	0	0.41	0	0	0
Less than 1 yr	1.19	0	16.67	4.65	1.63	3.45	0	0
Between 1-5 yrs	5.14	12	0	6.98	7.76	3.45	14.29	16.67
Between 5-10 yrs	8.7	8	33.33	13.95	11.84	17.24	28.57	33.33
Between 10-30 yrs	50.2	56	50	41.86	62.86	58.62	57.14	41.67
30 yrs and above	34.78	24	0	32.56	15.51	17.24	0	8.33
Mean (yrs)	24.12	19.79	11.91	22.83	19.11	18.51	15.59	14.83
Standard Deviation	12.39	11.34	9.48	14.12	10.88	11.57	10.60	14.42
Sample Size	253	50	12	43	245	29	7	12
Health status								
Excellent	9.24	8.33	0	5.13	9.3	7.14	0	20
Very good	38.24	27.08	20	17.95	40.47	39.29	57.14	20
Good	41.18	41.67	50	51.28	36.28	39.29	42.86	40
Fair	11.34	16.67	30	12.82	13.49	10.71	0	10
Poor	0	6.25	0	12.82	0.47	3.57	0	10
Sample Size	238	48	10	39	215	28	7	10
Long-term health condition								
No health condition	62.6	62.75	75	48.84	76.61	82.76	85.71	46.15
Has health condition	37.4	37.25	25	51.16	23.39	17.24	14.29	53.85
Sample Size	254	51	12	43	248	29	7	13
Work disability								
No disability	65.35	60.78	75	58.14	77.42	89.66	71.43	61.54
Has disability	34.65	39.22	25	41.86	22.58	10.34	28.57	38.46
Sample Size	254	51	12	43	248	29	7	13

Table A1b: Transitions from part-time employed, welfare recipient

	Remain in part- time employed recipient state	State transiting to						
		Full-time employed, welfare recipient	Recipient, unemployed	Recipient, not in labour force	Non- recipient, working full time	Non- recipient, working part time	Non- recipient, unemployed	Non- recipient, not in labour force
<i>Education</i>								
Below Yr 10	11.59	9.72	11.39	14.83	5.91	9.34	0	6.12
Yr 10-11	29.1	20.83	31.65	27.27	21.51	24.22	21.43	32.65
Yr 12	17.51	26.39	15.19	17.7	20.43	17.99	7.14	22.45
Certificates and diplomas	30.21	31.94	35.44	29.67	31.72	32.18	50	28.57
Degree and Higher	11.59	11.11	6.33	10.53	20.43	16.26	21.43	10.2
Sample Size	811	72	79	209	186	289	14	49
<i>Work experience</i>								
No work experience	0.38	0	1.33	0	1.17	0	0	0
Less than 1 yr	1.52	2.9	8	4.48	5.85	5.26	0	12.77
Between 1-5 yrs	11.88	4.35	28	16.42	25.73	12.63	23.08	14.89
Between 5-10 yrs	13.78	23.19	10.67	17.41	14.62	14.74	7.69	19.15
Between 10-30 yrs	55.88	57.97	42.67	37.31	42.69	55.79	61.54	38.3
30 yrs and above	16.56	11.59	9.33	24.38	9.94	11.58	7.69	14.89
<i>Mean (yrs)</i>	17.89	15.91	12.84	18.09	13.06	15.57	13.66	14.27
<i>Standard Deviation</i>	11.24	9.65	11.71	13.71	11.52	10.56	10.64	12.55
Sample Size	791	69	75	201	171	285	13	47
<i>Health status</i>								
Excellent	8.31	13.85	12.31	6.84	12.87	11.7	7.14	7.32
Very good	30.43	30.77	29.23	22.11	40.35	39.25	28.57	39.02
Good	43.3	40	43.08	37.37	33.33	40	50	36.59
Fair	15.01	13.85	10.77	22.11	11.7	8.68	14.29	17.07
Poor	2.95	1.54	4.62	11.58	1.75	0.38	0	0
Sample Size	746	65	65	190	171	265	14	41
<i>Long-term health condition</i>								
No health condition	66.58	70.83	58.23	50.72	78.49	81.31	57.14	81.63
Has health condition	33.42	29.17	41.77	49.28	21.51	18.69	42.86	18.37
Sample Size	811	72	79	209	186	289	14	49
<i>Work disability</i>								
No disability	70.04	72.22	62.03	53.59	81.72	85.12	71.43	87.76
Has disability	29.96	27.78	37.97	46.41	18.28	14.88	28.57	12.24
Sample Size	811	72	79	209	186	289	14	49

Table A1c: Transitions from unemployed, welfare recipient

	Remain in unemployed recipient state	State transiting to						
		Recipient, working full time	Recipient, working part time	Recipient, not in labour force	Non- recipient, working full time	Non- recipient, working part time	Non- recipient, unemployed	Non- recipient, not in labour force
<i>Education</i>								
Below Yr 10	19.45	10.34	15.5	20	7.22	2.86	22.86	12.9
Yr 10-11	32.76	34.48	31.01	29.33	34.02	28.57	42.86	32.26
Yr 12	13.99	3.45	17.05	16.89	15.98	35.71	0	22.58
Certificates and diplomas	26.96	34.48	29.46	28.44	30.41	18.57	25.71	16.13
Degree and Higher	6.83	17.24	6.98	5.33	12.37	14.29	8.57	16.13
Sample Size	293	29	129	225	194	70	35	31
<i>Work experience</i>								
No work experience	12.77	0	5	12.86	5.06	6.15	0	3.45
Less than 1 yr	8.39	0	14.17	3.81	8.99	16.92	14.29	10.34
Between 1-5 yrs	20.44	20.69	20.83	17.14	22.47	33.85	28.57	34.48
Between 5-10 yrs	14.96	20.69	13.33	15.71	17.98	12.31	17.14	6.9
Between 10-30 yrs	31.75	51.72	30.83	36.19	38.2	29.23	28.57	31.03
30 yrs and above	11.68	6.9	15.83	14.29	7.3	1.54	11.43	13.79
<i>Mean (yrs)</i>	11.68	14.28	12.09	13.33	11.09	7.46	10.28	13.13
<i>Standard Deviation</i>	12.06	11.16	12.26	12.54	10.43	8.53	10.63	14.88
Sample Size	274	29	120	210	178	65	35	29
<i>Health status</i>								
Excellent	12.11	3.7	9.91	3.19	11.7	8.77	9.68	24.14
Very good	26.17	37.04	32.43	21.81	35.67	36.84	25.81	20.69
Good	37.89	37.04	30.63	43.09	39.18	36.84	54.84	41.38
Fair	22.66	11.11	26.13	25.53	12.28	17.54	9.68	10.34
Poor	1.17	11.11	0.9	6.38	1.17	0	0	3.45
Sample Size	256	27	111	188	171	57	31	29
<i>Long-term health condition</i>								
No health condition	64.51	62.07	65.89	52.89	77.84	78.57	82.86	77.42
Has health condition	35.49	37.93	34.11	47.11	22.16	21.43	17.14	22.58
Sample Size	293	29	129	225	194	70	35	31
<i>Work disability</i>								
No disability	69.62	62.07	68.22	56	80.41	78.57	85.71	74.19
Has disability	30.38	37.93	31.78	44	19.59	21.43	14.29	25.81
Sample Size	293	29	129	225	194	70	35	31

Table A1d: Transitions from not in labour force, welfare recipient

	Remain in not in LFS recipient state	State transiting to						
		Full-time employed, welfare recipient	Recipient, working part time	Recipient, unemployed	Non- recipient, working full time	Non- recipient, working part time	Non- recipient, unemployed	Non- recipient, not in labour force
Education								
Below Yr 10	29.54	10.81	14.45	16.59	10.61	6.36	9.68	22.25
Yr 10-11	30.79	35.14	30.47	29.38	23.48	28.18	32.26	31.32
Yr 12	10	16.22	17.58	15.17	17.42	20.91	25.81	16.21
Certificates and diplomas	25.05	32.43	28.13	32.23	33.33	29.09	29.03	24.73
Degree and Higher	4.61	5.41	9.38	6.64	15.15	15.45	3.23	5.49
Sample Size	3449	37	256	211	132	110	31	364
Work experience								
No work experience	6.51	13.89	4.51	10.55	3.31	0.98	7.69	8
Less than 1 yr	2.65	0	2.87	7.04	4.96	0.98	0	1.43
Between 1-5 yrs	13.78	22.22	17.21	16.58	20.66	16.67	15.38	17.43
Between 5-10 yrs	12.18	8.33	18.03	20.6	16.53	19.61	26.92	20.29
Between 10-30 yrs	39.1	27.78	41.39	32.66	48.76	53.92	38.46	36.57
30 yrs and above	25.78	27.78	15.98	12.56	5.79	7.84	11.54	16.29
Mean (yrs)	18.21	16.01	14.86	11.88	12.42	13.85	13.02	13.73
Standard Deviation	13.90	15.01	11.98	11.66	9.93	9.97	11.35	12.41
Sample Size	3317	36	244	199	121	102	26	350
Health status								
Excellent	4.29	6.45	7.17	3.26	11.57	12.75	10.34	10.43
Very good	15.25	12.9	25.32	21.2	29.75	21.57	44.83	23.62
Good	28.23	38.71	35.02	37.5	34.71	41.18	34.48	38.04
Fair	33.85	29.03	25.74	29.35	15.7	18.63	10.34	21.17
Poor	18.37	12.9	6.75	8.7	8.26	5.88	0	6.75
Sample Size	3075	31	237	184	121	102	29	326
Long-term health condition								
No health condition	34.32	43.24	48.83	46.92	62.88	70	83.87	58.9
Has health condition	65.68	56.76	51.17	53.08	37.12	30	16.13	41.1
Sample Size	3450	37	256	211	132	110	31	365
Work disability								
No disability	38.2	56.76	55.08	51.18	65.91	71.82	90.32	62.19
Has disability	61.8	43.24	44.92	48.82	34.09	28.18	9.68	37.81
Sample Size	3450	37	256	211	132	110	31	365

Table A1e: Transitions from full-time employed, non-recipient

	Remain in full-time employed non-recipient state	State transiting to						
		Full-time employed, welfare recipient	Recipient, working part time	Recipient, unemployed	Recipient, not in labour force	Non-recipient, working part time	Non-recipient, unemployed	Non-recipient, not in labour force
<i>Education</i>								
Below Yr 10	4.23	4.22	5.83	11.19	11.43	5.8	3.85	7.42
Yr 10-11	16.8	23.21	25	34.27	24	20.43	17.31	18.86
Yr 12	13.9	15.19	21.67	16.08	18.29	16.61	21.15	12.5
Certificates and diplomas	36.7	36.71	24.17	27.27	36	28.22	36.54	32.2
Degree and Higher	28.38	20.68	23.33	11.19	10.29	28.93	21.15	29.03
Sample Size	21057	237	120	143	175	1258	156	472
<i>Work experience</i>								
No work experience	0.02	0	0	0	0.59	0.16	0.65	0
Less than 1 yr	1	1.28	5.83	6.52	2.96	2.19	6.54	0.87
Between 1-5 yrs	8.45	8.55	20.83	21.74	16.57	9.59	15.69	6.3
Between 5-10 yrs	12.48	8.12	14.17	15.94	13.02	13.97	13.73	13.7
Between 10-30 yrs	56.84	58.55	42.5	42.03	37.87	53.7	42.48	49.13
30 yrs and above	21.22	23.5	16.67	13.77	28.99	20.39	20.92	30
<i>Mean (yrs)</i>	20.27	20.99	16.13	14.42	20.07	19.30	16.94	21.55
<i>Standard Deviation</i>	11.15	11.19	12.76	11.56	14.89	11.84	12.85	12.86
Sample Size	20740	234	120	138	169	1231	153	460
<i>Health status</i>								
Excellent	14.04	12.94	10.28	8.26	8.39	17.6	11.81	13.99
Very good	42.25	40.8	28.97	29.75	27.1	39.2	36.22	37.53
Good	35.08	35.32	35.51	47.93	35.48	33.19	40.16	35.2
Fair	7.96	10.45	23.36	12.4	21.94	8.97	11.81	9.79
Poor	0.68	0.5	1.87	1.65	7.1	1.05	0	3.5
Sample Size	19093	201	107	121	155	1148	127	429
<i>Long-term health condition</i>								
No health condition	86.91	78.9	71.07	82.52	69.14	83.94	83.33	78.81
Has health condition	13.09	21.1	28.93	17.48	30.86	16.06	16.67	21.19
Sample Size	21058	237	121	143	175	1258	156	472
<i>Work disability</i>								
No disability	88.18	83.97	79.34	86.01	71.43	85.37	86.54	81.14
Has disability	11.82	16.03	20.66	13.99	28.57	14.63	13.46	18.86
Sample Size	21057	237	121	143	175	1258	156	472

Table A1f: Transitions from part-time employed, non recipient

	Remain in part- time employed non- recipient state	State transiting to						
		Recipient, working full time	Recipient, working part time	Recipient, unemployed	Recipient, not in labour force	Non- recipient, working full time	Non- recipient, unemployed	Non- recipient, not in labour force
<i>Education</i>								
Below Yr 10	4.99	4	8.9	4.17	14.41	5.75	11.54	7.96
Yr 10-11	26.63	28	22.46	35.42	28.81	20.69	20.51	28.75
Yr 12	15.69	0	16.53	14.58	18.64	20.35	23.08	14.29
Certificates and diplomas	24.39	56	33.9	25	23.73	28.4	25.64	24.41
Degree and Higher	28.3	12	18.22	20.83	14.41	24.81	19.23	24.59
Sample Size	4686	25	236	48	118	1479	78	553
<i>Work experience</i>								
No work experience	0.06	0	0.43	2.13	0	0.49	0	0.18
Less than 1 yr	1.57	0	2.58	8.51	6.25	4.96	11.27	2.91
Between 1-5 yrs	5.45	8	9.44	31.91	12.5	14.32	15.49	7.09
Between 5-10 yrs	9.96	4	16.74	23.4	11.61	11.52	16.9	15.27
Between 10-30 yrs	65.32	76	57.08	29.79	37.5	54.33	49.3	54.91
30 yrs and above	17.63	12	13.73	4.26	32.14	14.39	7.04	19.64
<i>Mean (yrs)</i>	19.71	19.68	16.98	9.82	20.51	16.98	12.97	18.35
<i>Standard Deviation</i>	10.43	10.24	10.96	10.21	14.55	11.44	10.03	11.67
Sample Size	4640	25	233	47	112	1432	71	550
<i>Health status</i>								
Excellent	13.3	4.55	12.8	4.55	7.69	15.74	14.08	14.51
Very good	45.18	31.82	38.86	34.09	25.96	39.17	26.76	41.96
Good	33.22	31.82	37.44	36.36	43.27	35.77	42.25	29.41
Fair	7.61	31.82	9.95	18.18	19.23	8.2	14.08	10.98
Poor	0.68	0	0.95	6.82	3.85	1.11	2.82	3.14
Sample Size	4413	22	211	44	104	1353	71	510
<i>Long-term health condition</i>								
No health condition	86.59	80	79.24	83.33	71.19	85.53	82.05	79.42
Has health condition	13.41	20	20.76	16.67	28.81	14.47	17.95	20.58
Sample Size	4690	25	236	48	118	1479	78	554
<i>Work disability</i>								
No disability	87.7	72	80.93	87.5	75.42	85.66	83.33	79.78
Has disability	12.3	28	19.07	12.5	24.58	14.34	16.67	20.22
Sample Size	4690	25	236	48	118	1478	78	554

Table A1g: Transitions from unemployed, non-recipient

	Remain in unemployed non- recipient state	State transiting to						
		Recipient, working full time	Recipient, working part time	Recipient, unemployed	Recipient, not in labour force	Non- recipient, working full time	Non- recipient, working part time	Non- recipient, not in labour force
Education								
Below Yr 10	7.41	20	10.53	10.34	11.76	7.04	6.15	10.71
Yr 10-11	31.48	20	21.05	34.48	32.35	18.31	33.08	28.57
Yr 12	16.67	20	10.53	13.79	17.65	19.72	21.54	14.29
Certificates and diplomas	31.48	20	47.37	31.03	32.35	34.27	22.31	27.38
Degree and Higher	12.96	20	10.53	10.34	5.88	20.66	16.92	19.05
Sample Size	54	5	19	29	34	213	130	84
Work experience								
No work experience	8	0	5.26	10.34	12.5	2.45	3.15	2.5
Less than 1 yr	6	0	15.79	0	0	9.8	10.24	3.75
Between 1-5 yrs	22	0	15.79	17.24	15.63	15.2	15.75	15
Between 5-10 yrs	6	40	21.05	27.59	15.63	11.76	14.96	12.5
Between 10-30 yrs	44	40	36.84	31.03	40.63	48.53	41.73	50
30 yrs and above	14	20	5.26	13.79	15.63	12.25	14.17	16.25
<i>Mean (yrs)</i>	14.09	16.55	9.98	12.10	15.36	14.87	14.11	15.98
<i>Standard Deviation</i>	13.12	10.77	9.94	10.95	12.67	11.75	11.75	12.10
Sample Size	50	5	19	29	32	204	127	80
Health status								
Excellent	10.87	0	16.67	22.22	6.9	17.93	14.05	9.33
Very good	41.3	40	16.67	22.22	17.24	42.93	33.88	26.67
Good	43.48	40	33.33	33.33	48.28	27.72	42.15	52
Fair	4.35	20	22.22	22.22	20.69	10.33	9.09	12
Poor	0	0	11.11	0	6.9	1.09	0.83	0
Sample Size	46	5	18	27	29	184	121	75
Long-term health condition								
No health condition	83.33	80	68.42	75.86	82.35	85.45	86.15	77.38
Has health condition	16.67	20	31.58	24.14	17.65	14.55	13.85	22.62
Sample Size	54	5	19	29	34	213	130	84
Work disability								
No disability	85.19	80	68.42	82.76	85.29	85.92	86.15	77.38
Has disability	14.81	20	31.58	17.24	14.71	14.08	13.85	22.62
Sample Size	54	5	19	29	34	213	130	84

Table A1h: Transitions from out of labour force, non-recipient

	Remain in not in LFS non- recipient state	State transiting to						
		Full-time employed, welfare recipient	Recipient, working part time	Recipient, unemployed	Recipient, not in labour force	Non- recipient, working full time	Non- recipient, working part time	Non- recipient, unemployed
Education								
Below Yr 10	10.4	7.69	10.2	12.24	20.31	8.16	6.09	11.96
Yr 10-11	31.49	7.69	24.49	30.61	27.9	22.86	29.01	28.26
Yr 12	16.09	7.69	16.33	16.33	16.52	17.96	15.06	21.74
Certificates and diplomas	26.49	69.23	34.69	28.57	28.79	29.39	23.88	16.3
Degree and Higher	15.52	7.69	14.29	12.24	6.47	21.63	25.96	21.74
Sample Size	2,442	13	49	49	448	245	624	92
Work experience								
No work experience	2.51	0	8.16	6.82	7.75	4.5	0.99	2.27
Less than 1 yr	0.33	7.69	2.04	6.82	2.35	3.6	1.32	4.55
Between 1-5 yrs	10.5	15.38	10.2	25	14.79	13.51	8.72	20.45
Between 5-10 yrs	19.58	0	20.41	22.73	15.96	16.67	18.75	13.64
Between 10-30 yrs	47.78	61.54	46.94	22.73	35.21	47.75	57.73	50
30 yrs and above	19.29	15.38	12.24	15.91	23.94	13.96	12.5	9.09
<i>Mean (yrs)</i>	16.83	17.08	14.09	11.93	16.37	15.50	16.01	13.40
<i>Standard Deviation</i>	11.93	12.62	11.58	13.03	13.87	11.82	10.52	10.90
Sample Size	2,390	13	49	44	426	222	608	88
Health status								
Excellent	10.33	20	13.33	6.38	9.73	16.51	12.5	11.11
Very good	37.96	40	42.22	34.04	26.43	36.7	44.86	32.22
Good	35.39	20	28.89	44.68	33.92	33.49	32.19	40
Fair	12.46	20	15.56	14.89	21.45	11.47	8.39	12.22
Poor	3.86	0	0	0	8.48	1.83	2.05	4.44
Sample Size	2,255	10	45	47	401	218	584	90
Long-term health condition								
No health condition	75.89	76.92	69.39	67.35	58.93	82.45	85.1	81.52
Has health condition	24.11	23.08	30.61	32.65	41.07	17.55	14.9	18.48
Sample Size	2,443	13	49	49	448	245	624	92
Work disability								
No disability	77.24	84.62	77.55	69.39	62.28	84.49	86.38	86.96
Has disability	22.76	15.38	22.45	30.61	37.72	15.51	13.62	13.04
Sample Size	2,443	13	49	49	448	245	624	92

B. Summary statistics of main modelling samples

Table A2: summary statistics

Status	Determination of status		Transitions from Non-employed welfare		Transitions from Employed welfare		Transitions from Non-employed non welfare		Transitions from Employed non welfare	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
work experience	19.98	11.84	17.82	13.80	19.13	11.91	17.29	12.42	20.83	11.24
Certificate	0.3213	0.4670	0.2772	0.4477	0.3627	0.4809	0.2647	0.4412	0.3343	0.4718
year 12	0.1416	0.3486	0.1185	0.3232	0.1476	0.3547	0.1586	0.3654	0.1426	0.3496
year 10-11	0.2218	0.4155	0.3032	0.4597	0.2481	0.4320	0.2973	0.4571	0.1942	0.3956
below year 10	0.0789	0.2696	0.2344	0.4237	0.0973	0.2964	0.1035	0.3046	0.0466	0.2108
very good health	0.3798	0.4854	0.1898	0.3922	0.3273	0.4693	0.3644	0.4813	0.4195	0.4935
good health	0.3491	0.4767	0.3161	0.4650	0.4073	0.4914	0.3563	0.4789	0.3492	0.4767
fair health	0.1193	0.3241	0.2973	0.4571	0.1418	0.3489	0.1288	0.3351	0.0850	0.2788
poor health	0.0289	0.1676	0.1368	0.3436	0.0272	0.1627	0.0394	0.1946	0.0086	0.0924
health condition	0.2168	0.4120	0.5654	0.4958	0.3166	0.4652	0.2413	0.4279	0.1444	0.3515
work disability	0.1982	0.3986	0.5295	0.4992	0.2861	0.4520	0.2221	0.4157	0.1298	0.3361
age	41.61	11.62	45.59	12.93	41.35	11.58	43.55	12.41	40.65	11.06
Females	0.5193	0.4996	0.5840	0.4929	0.6360	0.4812	0.7677	0.4224	0.4617	0.4985
Married	0.7130	0.4524	0.5304	0.4991	0.4979	0.5001	0.8571	0.3500	0.7399	0.4387
Married females	0.3687	0.4824	0.3074	0.4614	0.2626	0.4401	0.6961	0.4600	0.3384	0.4732
born in Eng-speaking country	0.1068	0.3088	0.1033	0.3044	0.0927	0.2901	0.1031	0.3041	0.1090	0.3117
born in non-Eng speaking country	0.1151	0.3191	0.1476	0.3547	0.0907	0.2872	0.1574	0.3642	0.1050	0.3065
child aged 0-4	0.1656	0.3717	0.1529	0.3599	0.1554	0.3624	0.2828	0.4504	0.1510	0.3581
child aged 5-14	0.2226	0.4160	0.1710	0.3765	0.3450	0.4755	0.1893	0.3918	0.2271	0.4190
female & child aged 0-4	0.0916	0.2885	0.1253	0.3310	0.1105	0.3135	0.2683	0.4431	0.0578	0.2333
female & child aged 5-14	0.1286	0.3347	0.1302	0.3365	0.2758	0.4470	0.1661	0.3722	0.1112	0.3144
work attitude:indifference	0.3606	0.4802	0.3375	0.4729	0.3883	0.4875	0.3507	0.4772	0.3640	0.4812
work attitude:positive	0.5042	0.5000	0.4917	0.5000	0.4633	0.4988	0.4421	0.4967	0.5188	0.4997
No. of obs.	43853		5469		2426		4696		31262	

C. Model estimation results using alternative health measures

Table A3: Using health conditions for the determination of status

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
<i>Human capital variables</i>								
work experience	-0.0141***	0.0008	-0.0008	0.0008	-0.0098***	0.0008	0.0247***	0.0013
work experience square	0.0001***	0.0000	0.0000	0.0000	0.0001***	0.0000	-0.0002***	0.0000
Certificate	0.1043***	0.0111	0.0260***	0.0060	0.0076	0.0069	-0.1379***	0.0100
year 12	0.0942***	0.0140	0.0205***	0.0076	0.0095	0.0087	-0.1242***	0.0127
year 10-11	0.1509***	0.0130	0.0200***	0.0068	0.0199***	0.0077	-0.1907***	0.0119
below year 10	0.2658***	0.0210	0.0328***	0.0105	0.0048	0.0106	-0.3034***	0.0176
Health condition	0.1549***	0.0065	0.0362***	0.0049	0.0132**	0.0055	-0.2042***	0.0078
<i>Individual and family characteristics</i>								
Age	-0.0004	0.0015	-0.0014	0.0017	-0.0068***	0.0017	0.0086***	0.0027
age square	0.0001***	0.0000	0.0000*	0.0000	0.0002***	0.0000	-0.0003***	0.0000
Females	-0.0187**	0.0077	0.0288***	0.0058	-0.0221**	0.0109	0.0120	0.0118
Married	-0.0639***	0.0100	-0.0134*	0.0078	0.0151	0.0097	0.0622***	0.0121
Married females	-0.0493***	0.0097	-0.0616***	0.0089	0.0846***	0.0134	0.0263*	0.0149
born in Eng-speaking country	0.0220***	0.0084	-0.0074	0.0054	0.0001	0.0079	-0.0148	0.0103
born in non-Eng speaking country	0.0376***	0.0086	-0.0122**	0.0055	0.0235***	0.0079	-0.0490***	0.0106
child aged 0-4	0.0195	0.0140	0.0143	0.0115	-0.0264*	0.0144	-0.0074	0.0162
child aged 5-14	0.0035	0.0120	0.0207**	0.0091	-0.0220*	0.0118	-0.0022	0.0135
female & child aged 0-4	0.1346***	0.0269	0.0539***	0.0201	0.1887***	0.0348	-0.3773***	0.0240
female & child aged 5-14	0.0438***	0.0168	0.0798***	0.0184	0.0490**	0.0192	-0.1726***	0.0189
<i>Work attitude variables</i>								
Indifference	-0.0162**	0.0075	0.0007	0.0052	-0.0270***	0.0067	0.0425***	0.0094
Positive	-0.0201***	0.0073	-0.0036	0.0054	-0.0301***	0.0069	0.0537***	0.0093

Note: *** indicates the estimate is significant at 1% level; ** 5% and * 10%.

Table A4: Using work disability for the determination of status

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
<i>Human capital variables</i>								
work experience	-0.0142***	0.0008	-0.0009	0.0008	-0.0098***	0.0008	0.0249***	0.0013
work experience square	0.0001***	0.0000	0.0000	0.0000	0.0001***	0.0000	-0.0002***	0.0000
Certificate year 12	0.1076***	0.0112	0.0264***	0.0060	0.0073	0.0069	-0.1414***	0.0100
year 10-11	0.0973***	0.0142	0.0207***	0.0076	0.0095	0.0087	-0.1275***	0.0129
below year 10	0.1546***	0.0131	0.0202***	0.0069	0.0194**	0.0077	-0.1942***	0.0121
Disability	0.2727***	0.0215	0.0335***	0.0106	0.0043	0.0107	-0.3105***	0.0179
	0.1544***	0.0065	0.0319***	0.0047	0.0131**	0.0054	-0.1994***	0.0078
<i>Individual and family characteristics</i>								
Age	0.0001	0.0015	-0.0012	0.0017	-0.0068***	0.0017	0.0079***	0.0027
age square	0.0001***	0.0000	0.0000*	0.0000	0.0002***	0.0000	-0.0003***	0.0000
Females	-0.0198**	0.0078	0.0284***	0.0058	-0.0222**	0.0109	0.0136	0.0117
Married	-0.0628***	0.0101	-0.0135*	0.0078	0.0149	0.0097	0.0613***	0.0122
Married females	-0.0501***	0.0098	-0.0619***	0.0089	0.0847***	0.0134	0.0273*	0.0149
born in Eng-speaking country	0.0195**	0.0083	-0.0081	0.0053	-0.0001	0.0079	-0.0113	0.0101
born in non-Eng speaking country	0.0378***	0.0086	-0.0124**	0.0054	0.0231***	0.0079	-0.0485***	0.0106
child aged 0-4	0.0220	0.0144	0.0141	0.0114	-0.0266*	0.0144	-0.0096	0.0164
child aged 5-14	0.0056	0.0121	0.0208**	0.0091	-0.0222*	0.0118	-0.0042	0.0134
female & child aged 0-4	0.1285***	0.0268	0.0547***	0.0203	0.1906***	0.0349	-0.3739***	0.0243
female & child aged 5-14	0.0402**	0.0166	0.0797***	0.0184	0.0495**	0.0192	-0.1694***	0.0189
<i>Work attitude variables</i>								
Indifference	-0.0156**	0.0075	0.0006	0.0052	-0.0272***	0.0068	0.0422***	0.0095
Positive	-0.0200***	0.0073	-0.0038	0.0054	-0.0302***	0.0070	0.0540***	0.0094

Note: *** indicates the estimate is significant at 1% level; ** 5% and * 10%.

Table A5a: Using health conditions for transitions off the not employed welfare state

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
<i>Human capital variables</i>								
work experience	-0.0122***	0.0018	0.0043***	0.0011	0.0015	0.0011	0.0064***	0.0013
work experience square	0.0002***	0.0000	-0.0001**	0.0000	0.0000	0.0000	-0.0001**	0.0000
Certificate year 12	0.0604***	0.0199	-0.0182*	0.0109	0.0024	0.0155	-0.0446***	0.0085
year 10-11	0.0396*	0.0211	-0.0044	0.0129	0.0028	0.0167	-0.0380***	0.0074
below year 10	0.0796***	0.0199	-0.0248**	0.0107	0.0018	0.0151	-0.0566***	0.0087
Health condition	0.0868***	0.0198	-0.0288***	0.0101	0.0039	0.0166	-0.0619***	0.0064
	0.0713***	0.0114	-0.0130*	0.0073	-0.0181**	0.0074	-0.0402***	0.0065
<i>Individual and family characteristics</i>								
Age	-0.0007	0.0038	-0.0027	0.0024	0.0009	0.0024	0.0026	0.0024
age square	0.0001**	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001***	0.0000
Females	0.0242	0.0196	0.0093	0.0101	-0.0199	0.0160	-0.0136	0.0093
Married	-0.0336*	0.0196	-0.0003	0.0103	0.0252*	0.0137	0.0087	0.0098
Married females	-0.0144	0.0250	-0.0221*	0.0119	0.0232	0.0177	0.0134	0.0130
born in Eng-speaking country	0.0081	0.0187	0.0058	0.0116	0.0013	0.0122	-0.0151*	0.0092
born in non-Eng speaking country	0.0089	0.0151	-0.0181**	0.0087	0.0158	0.0115	-0.0065	0.0087
child aged 0-4	0.0354	0.0316	0.0006	0.0199	-0.0285	0.0247	-0.0075	0.0134
child aged 5-14	0.0286	0.0315	0.0252	0.0184	-0.0335	0.0244	-0.0203*	0.0118
female & child aged 0-4	-0.1547*	0.0874	-0.0089	0.0209	0.2059**	0.0919	-0.0423***	0.0119
female & child aged 5-14	-0.1377*	0.0808	0.0115	0.0204	0.1468*	0.0869	-0.0206	0.0145
<i>Work attitude variables</i>								
Indifference	-0.0049	0.0145	0.0000	0.0093	-0.0057	0.0090	0.0106	0.0090
Positive	-0.0094	0.0142	-0.0017	0.0092	-0.0034	0.0091	0.0145	0.0088

Table A5b: Using work disability for transitions off the not employed welfare state

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
work experience	-0.0122***	0.0018	0.0043***	0.0011	0.0015	0.0011	0.0064***	0.0013
work experience square	0.0002***	0.0000	-0.0001**	0.0000	0.0000	0.0000	-0.0001**	0.0000
certificate	0.0610***	0.0198	-0.0178	0.0109	0.0018	0.0154	-0.0451***	0.0086
year 12	0.0400*	0.0212	-0.0043	0.0130	0.0027	0.0166	-0.0383***	0.0074
year 10-11	0.0795***	0.0199	-0.0246**	0.0108	0.0015	0.0150	-0.0564***	0.0088
below year 10	0.0869***	0.0197	-0.0284***	0.0102	0.0034	0.0165	-0.0619***	0.0065
Disability	0.0761***	0.0116	-0.0214***	0.0073	-0.0171**	0.0072	-0.0376***	0.0064
<i>Individual and family characteristics</i>								
Age	-0.0003	0.0037	-0.0026	0.0023	0.0007	0.0024	0.0021	0.0024
age square	0.0001**	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001***	0.0000
Females	0.0222	0.0196	0.0096	0.0101	-0.0193	0.0160	-0.0125	0.0093
Married	-0.0347*	0.0195	0.0005	0.0103	0.0252*	0.0137	0.0090	0.0097
Married females	-0.0124	0.0249	-0.0234**	0.0118	0.0230	0.0176	0.0128	0.0130
born in Eng-speaking country	0.0063	0.0187	0.0060	0.0116	0.0015	0.0122	-0.0137	0.0093
born in non-Eng speaking country	0.0104	0.0151	-0.0193**	0.0086	0.0152	0.0115	-0.0063	0.0087
child aged 0-4	0.0396	0.0311	-0.0018	0.0196	-0.0294	0.0246	-0.0084	0.0130
child aged 5-14	0.0299	0.0314	0.0234	0.0182	-0.0336	0.0244	-0.0197*	0.0118
female & child aged 0-4	-0.1618*	0.0877	-0.0086	0.0211	0.2107**	0.0924	-0.0404***	0.0118
female & child aged 5-14	-0.1363*	0.0810	0.0101	0.0200	0.1468*	0.0869	-0.0206	0.0145
<i>Work attitude variables</i>								
Indifference	-0.0068	0.0146	0.0004	0.0094	-0.0056	0.0090	0.0120	0.0092
Positive	-0.0113	0.0143	-0.0012	0.0093	-0.0032	0.0091	0.0157*	0.0090

Note: *** indicates the estimate is significant at 1% level; ** 5%, * 10%.

Table A6a: Using health conditions for transitions off the employed welfare state

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
work experience	-0.0122***	0.0018	0.0043***	0.0011	0.0015	0.0011	0.0064***	0.0013
work experience square	0.0002***	0.0000	-0.0001**	0.0000	0.0000	0.0000	-0.0001**	0.0000
certificate	0.0604***	0.0199	-0.0182*	0.0109	0.0024	0.0155	-0.0446***	0.0085
year 12	0.0396*	0.0211	-0.0044	0.0129	0.0028	0.0167	-0.0380***	0.0074
year 10-11	0.0796***	0.0199	-0.0248**	0.0107	0.0018	0.0151	-0.0566***	0.0087
below year 10	0.0868***	0.0198	-0.0288***	0.0101	0.0039	0.0166	-0.0619***	0.0064
health condition	0.0713***	0.0114	-0.0130*	0.0073	-0.0181**	0.0074	-0.0402***	0.0065
<i>Individual and family characteristics</i>								
Age	-0.0007	0.0038	-0.0027	0.0024	0.0009	0.0024	0.0026	0.0024
age square	0.0001**	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001***	0.0000
Females	0.0242	0.0196	0.0093	0.0101	-0.0199	0.0160	-0.0136	0.0093
Married	-0.0336*	0.0196	-0.0003	0.0103	0.0252*	0.0137	0.0087	0.0098
Married females	-0.0144	0.0250	-0.0221*	0.0119	0.0232	0.0177	0.0134	0.0130
born in Eng-speaking country	0.0081	0.0187	0.0058	0.0116	0.0013	0.0122	-0.0151*	0.0092
born in non-Eng speaking country	0.0089	0.0151	-0.0181**	0.0087	0.0158	0.0115	-0.0065	0.0087
child aged 0-4	0.0354	0.0316	0.0006	0.0199	-0.0285	0.0247	-0.0075	0.0134
child aged 5-14	0.0286	0.0315	0.0252	0.0184	-0.0335	0.0244	-0.0203*	0.0118
female & child aged 0-4	-0.1547*	0.0874	-0.0089	0.0209	0.2059**	0.0919	-0.0423***	0.0119
female & child aged 5-14	-0.1377*	0.0808	0.0115	0.0204	0.1468*	0.0869	-0.0206	0.0145
<i>Work attitude variables</i>								
Indifference	-0.0049	0.0145	0.0000	0.0093	-0.0057	0.0090	0.0106	0.0090
Positive	-0.0094	0.0142	-0.0017	0.0092	-0.0034	0.0091	0.0145	0.0088

Note: *** indicates the estimate is significant at 1% level; ** 5%, * 10%.

Table A6b: Using work disability for transitions off the employed welfare state

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
work experience	-0.0046*	0.0025	0.0022	0.0046	-0.0015	0.0012	0.0039	0.0042
work experience square	0.0000	0.0001	-0.0001	0.0001	0.0000	0.0000	0.0000	0.0001
certificate	0.0355	0.0246	0.0335	0.0324	-0.0121	0.0083	-0.0569**	0.0258
year 12	0.0587*	0.0324	0.0091	0.0390	-0.0095	0.0089	-0.0583**	0.0267
year 10-11	0.0474*	0.0285	0.0086	0.0343	-0.0008	0.0095	-0.0552**	0.0257
below year 10	0.0896**	0.0431	0.0076	0.0482	-0.0059	0.0114	-0.0913***	0.0322
Disability	0.0638***	0.0137	0.0641***	0.0204	-0.0044	0.0072	-0.1236***	0.0169
<i>Individual and family characteristics</i>								
Age	-0.0037	0.0045	-0.0090	0.0086	-0.0015	0.0027	0.0142*	0.0078
age square	0.0001*	0.0001	0.0002	0.0001	0.0000	0.0000	-0.0003***	0.0001
Females	-0.0237	0.0227	0.0451	0.0424	0.0058	0.0355	-0.0272	0.0296
Married	-0.0119	0.0234	0.0484	0.0546	0.0214	0.0520	-0.0578*	0.0347
Married females	0.0073	0.0269	-0.1076*	0.0551	-0.0121	0.0393	0.1124**	0.0448
born in Eng-speaking country	0.0176	0.0236	-0.0405	0.0364	0.0000	0.0111	0.0229	0.0303
born in non-Eng speaking country	0.0274	0.0269	-0.0366	0.0336	0.0126	0.0132	-0.0034	0.0296
child aged 0-4	-0.0718**	0.0351	0.0004	0.0623	-0.0103	0.0446	0.0818	0.0519
child aged 5-14	-0.0287	0.0312	0.0514	0.0724	-0.0305	0.0816	0.0079	0.0432
female & child aged 0-4	0.1142	0.1414	-0.0880	0.1827	0.1373	0.2419	-0.1635***	0.0386
female & child aged 5-14	0.0013	0.0465	0.0255	0.1348	0.0963	0.1772	-0.1231***	0.0468
<i>Work attitude variables</i>								
Indifference	-0.0307*	0.0165	0.0033	0.0292	0.0041	0.0121	0.0232	0.0272
Positive	-0.0629***	0.0179	0.0174	0.0298	0.0060	0.0111	0.0396	0.0256

Note: *** indicates the estimate is significant at 1% level; ** 5%, * 10%.

Table A7a: Using health conditions for transitions off the not employed non-welfare state

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
work experience	-0.0046*	0.0025	0.0023	0.0046	-0.0014	0.0012	0.0037	0.0042
work experience square	0.0000	0.0001	-0.0001	0.0001	0.0000	0.0000	0.0000	0.0001
Certificate	0.0350	0.0245	0.0335	0.0323	-0.0122	0.0083	-0.0562**	0.0259
year 12	0.0575*	0.0322	0.0086	0.0388	-0.0094	0.0089	-0.0567**	0.0268
year 10-11	0.0455	0.0282	0.0068	0.0340	-0.0006	0.0096	-0.0516**	0.0257
below year 10	0.0912**	0.0430	0.0077	0.0482	-0.0066	0.0111	-0.0923***	0.0321
health condition	0.0589***	0.0140	0.0547***	0.0208	0.0011	0.0077	-0.1147***	0.0164
<i>Individual and family characteristics</i>								
Age	-0.0039	0.0045	-0.0094	0.0086	-0.0015	0.0027	0.0148*	0.0079
age square	0.0001*	0.0001	0.0002*	0.0001	0.0000	0.0000	-0.0003***	0.0001
Females	-0.0214	0.0226	0.0464	0.0424	0.0059	0.0355	-0.0309	0.0296
Married	-0.0120	0.0236	0.0471	0.0546	0.0211	0.0520	-0.0563	0.0348
Married females	0.0072	0.0270	-0.1068*	0.0552	-0.0121	0.0393	0.1117**	0.0449
born in Eng-speaking country	0.0182	0.0234	-0.0410	0.0365	-0.0001	0.0111	0.0229	0.0305
born in non-Eng speaking country	0.0257	0.0268	-0.0389	0.0336	0.0131	0.0134	0.0001	0.0296
child aged 0-4	-0.0715**	0.0355	0.0012	0.0622	-0.0101	0.0448	0.0804	0.0519
child aged 5-14	-0.0296	0.0309	0.0521	0.0725	-0.0299	0.0818	0.0074	0.0430
female & child aged 0-4	0.1137	0.1417	-0.0894	0.1823	0.1386	0.2416	-0.1629***	0.0389
female & child aged 5-14	0.0015	0.0465	0.0231	0.1345	0.0962	0.1772	-0.1208**	0.0472
<i>Work attitude variables</i>								
Indifference	-0.0320*	0.0166	0.0030	0.0293	0.0038	0.0121	0.0251	0.0272
Positive	-0.0631***	0.0179	0.0184	0.0298	0.0058	0.0111	0.0389	0.0255

Note: *** indicates the estimate is significant at 1% level; ** 5%, * 10%.

Table A7b: Using work disability for transitions off the not employed non-welfare state

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
work experience	-0.0048***	0.0013	0.0009	0.0008	-0.0105***	0.0026	0.0144***	0.0024
work experience square	0.0001**	0.0000	0.0000	0.0000	0.0001	0.0001	-0.0001**	0.0001
Certificate	0.0894***	0.0226	0.0148	0.0090	-0.0315	0.0241	-0.0726***	0.0147
year 12	0.0786***	0.0265	0.0048	0.0088	-0.0150	0.0267	-0.0684***	0.0158
year 10-11	0.0815***	0.0226	-0.0042	0.0062	-0.0084	0.0254	-0.0689***	0.0150
below year 10	0.1685***	0.0357	0.0051	0.0114	-0.0906***	0.0348	-0.0830***	0.0177
Disability	0.0743***	0.0119	0.0048	0.0053	-0.0073	0.0167	-0.0718***	0.0133
<i>Individual and family characteristics</i>								
Age	0.0026	0.0030	-0.0021	0.0018	-0.0150***	0.0057	0.0145***	0.0049
age square	0.0000	0.0000	0.0000	0.0000	0.0003***	0.0001	-0.0003***	0.0001
Females	0.0260	0.0166	0.0064	0.0110	-0.0227	0.0338	-0.0096	0.0294
Married	-0.0358	0.0230	-0.0059	0.0173	0.0152	0.0328	0.0265	0.0252
Married females	-0.0747**	0.0305	-0.0320	0.0449	0.1208**	0.0490	-0.0141	0.0359
born in Eng-speaking country	-0.0152	0.0138	-0.0095**	0.0038	0.0116	0.0231	0.0131	0.0191
born in non-Eng speaking country	0.0221*	0.0132	0.0004	0.0051	0.0489***	0.0182	-0.0714***	0.0147
child aged 0-4	0.0687	0.0440	0.0272	0.0804	-0.0217	0.0729	-0.0742*	0.0406
child aged 5-14	-0.0006	0.0324	-0.0508	0.0795	0.0448	0.0676	0.0065	0.0376
female & child aged 0-4	0.0269	0.0464	0.0409	0.1452	-0.0297	0.1172	-0.0381	0.0467
female & child aged 5-14	0.0078	0.0695	0.3037	0.3204	-0.2342	0.2158	-0.0773	0.0618
<i>Work attitude variables</i>								
Indifference	-0.0116	0.0115	0.0004	0.0049	-0.0260	0.0194	0.0372**	0.0162
Positive	0.0192*	0.0112	-0.0030	0.0048	-0.0285	0.0185	0.0123	0.0156

Note: *** indicates the estimate is significant at 1% level; ** 5%, * 10%.

Table A8a: Using health conditions for transitions off the employed non-welfare state

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
work experience	-0.0013***	0.0003	-0.0007*	0.0004	-0.0022***	0.0005	0.0042***	0.0008
work experience square	0.0000***	0.0000	0.0000	0.0000	0.0000***	0.0000	-0.0001***	0.0000
Certificate	0.0077***	0.0025	0.0073***	0.0022	0.0039	0.0028	-0.0189***	0.0044
year 12	0.0067**	0.0032	0.0046	0.0029	0.0016	0.0035	-0.0129**	0.0054
year 10-11	0.0161***	0.0040	0.0072***	0.0027	0.0075**	0.0034	-0.0309***	0.0058
below year 10	0.0236***	0.0075	0.0124**	0.0057	0.0195***	0.0069	-0.0556***	0.0113
health condition	0.0096***	0.0021	0.0103***	0.0024	0.0166***	0.0033	-0.0365***	0.0043
<i>Individual and family characteristics</i>								
Age	0.0003	0.0006	0.0001	0.0008	-0.0017*	0.0010	0.0012	0.0014
age square	0.0000	0.0000	0.0000	0.0000	0.0000***	0.0000	0.0000**	0.0000
Females	-0.0007	0.0019	0.0076***	0.0028	0.0049	0.0045	-0.0118**	0.0054
Married	-0.0075***	0.0026	-0.0021	0.0033	0.0023	0.0044	0.0072	0.0060
Married females	-0.0018	0.0027	-0.0135***	0.0044	0.0260***	0.0067	-0.0107	0.0081
born in Eng-speaking country	0.0045*	0.0024	-0.0013	0.0022	-0.0009	0.0032	-0.0023	0.0047
born in non-Eng speaking country	0.0055**	0.0025	-0.0015	0.0021	-0.0013	0.0034	-0.0028	0.0048
child aged 0-4	0.0030	0.0034	0.0051	0.0044	-0.0089*	0.0052	0.0008	0.0076
child aged 5-14	-0.0031	0.0026	0.0045	0.0035	-0.0080*	0.0045	0.0066	0.0061
female & child aged 0-4	0.0020	0.0051	0.0331**	0.0134	0.0539***	0.0162	-0.0890***	0.0203
female & child aged 5-14	0.0090	0.0083	0.0291***	0.0095	0.0010	0.0064	-0.0391***	0.0132
<i>Work attitude variables</i>								
Indifference	0.0004	0.0023	-0.0004	0.0022	-0.0068**	0.0030	0.0067	0.0043
Positive	0.0015	0.0021	-0.0016	0.0021	-0.0078**	0.0031	0.0079*	0.0042

Note: *** indicates the estimate is significant at 1% level; ** 5%, * 10%.

Table A8b: Using work disability for transitions off the employed non-welfare state

	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
work experience	-0.0013***	0.0003	-0.0007*	0.0004	-0.0022***	0.0005	0.0042***	0.0008
work experience square	0.0000***	0.0000	0.0000	0.0000	0.0000***	0.0000	-0.0001***	0.0000
Certificate	0.0079***	0.0026	0.0075***	0.0022	0.0040	0.0028	-0.0193***	0.0044
year 12	0.0068**	0.0032	0.0047	0.0029	0.0019	0.0035	-0.0133**	0.0054
year 10-11	0.0163***	0.0040	0.0072***	0.0027	0.0077**	0.0034	-0.0311***	0.0059
below year 10	0.0240***	0.0076	0.0125**	0.0057	0.0198***	0.0069	-0.0563***	0.0114
Disability	0.0071***	0.0020	0.0083***	0.0026	0.0174***	0.0036	-0.0329***	0.0047
<i>Individual and family characteristics</i>								
Age	0.0004	0.0006	0.0001	0.0008	-0.0017*	0.0010	0.0012	0.0014
age square	0.0000	0.0000	0.0000	0.0000	0.0000***	0.0000	0.0000**	0.0000
Females	-0.0007	0.0018	0.0075***	0.0028	0.0049	0.0045	-0.0116**	0.0054
Married	-0.0074***	0.0026	-0.0020	0.0032	0.0024	0.0044	0.0070	0.0060
Married females	-0.0018	0.0027	-0.0136***	0.0044	0.0260***	0.0067	-0.0105	0.0081
born in Eng-speaking country	0.0043*	0.0024	-0.0015	0.0022	-0.0010	0.0032	-0.0018	0.0046
born in non-Eng speaking country	0.0053**	0.0025	-0.0015	0.0020	-0.0013	0.0034	-0.0024	0.0048
child aged 0-4	0.0030	0.0035	0.0051	0.0044	-0.0088*	0.0052	0.0006	0.0076
child aged 5-14	-0.0031	0.0026	0.0046	0.0035	-0.0079*	0.0045	0.0065	0.0061
female & child aged 0-4	0.0018	0.0051	0.0327**	0.0133	0.0532***	0.0160	-0.0877***	0.0202
female & child aged 5-14	0.0086	0.0082	0.0287***	0.0094	0.0007	0.0064	-0.0380***	0.0132
<i>Work attitude variables</i>								
Indifference	0.0005	0.0023	-0.0004	0.0022	-0.0067**	0.0030	0.0066	0.0043
Positive	0.0016	0.0021	-0.0016	0.0021	-0.0079**	0.0031	0.0079*	0.0042

Note: *** indicates the estimate is significant at 1% level; ** 5%, * 10%.

D. Summary statistics and estimation results for models that include job search behaviour variables

Table A9: Summary statistics

	Transitions off not-employed-welfare		Transition off not-employed-non-welfare	
	Mean	Std. Dev.	Mean	Std. Dev.
Duration	2.2064	1.4376	1.9557	1.3351
work experience	17.82	13.80	17.29	12.42
work experience square	508.14	596.87	453.12	550.12
Certificate	0.2772	0.4477	0.2647	0.4412
year 12	0.1185	0.3232	0.1586	0.3654
year 10-11	0.3032	0.4597	0.2973	0.4571
below year 10	0.2344	0.4237	0.1035	0.3046
very good health	0.1898	0.3922	0.3644	0.4813
good health	0.3161	0.4650	0.3563	0.4789
fair health	0.2973	0.4571	0.1288	0.3351
poor health	0.1368	0.3436	0.0394	0.1946
health condition	0.5654	0.4958	0.2413	0.4279
work disability	0.5295	0.4992	0.2221	0.4157
Age	45.59	12.93	43.55	12.41
age square	2245.62	1117.23	2050.75	1075.16
Females	0.5840	0.4929	0.7677	0.4224
Married	0.5304	0.4991	0.8571	0.3500
Married females	0.3074	0.4614	0.6961	0.4600
born in Eng-speaking country	0.1033	0.3044	0.1031	0.3041
born in non-Eng speaking country	0.1476	0.3547	0.1574	0.3642
child aged 0-4	0.1529	0.3599	0.2828	0.4504
child aged 5-14	0.1710	0.3765	0.1893	0.3918
female & child aged 0-4	0.1253	0.3310	0.2683	0.4431
female & child aged 5-14	0.1302	0.3365	0.1661	0.3722
work attitude:indifference	0.3375	0.4729	0.3507	0.4772
work attitude:positive	0.4917	0.5000	0.4421	0.4967
OLF but marginally attached	0.2403	0.4273	0.2545	0.4356
Written, phoned or applied in person to employers, or advertised or tendered for work	0.1370	0.3438	0.0943	0.2923
Answered job advertisement	0.0993	0.2991	0.0698	0.2549
Checked factory noticeboard or touch screen of Centrelink	0.0898	0.2859	0.0264	0.1604
Registered with Centrelink as job seeker	0.1143	0.3182	0.0315	0.1747
Registered with employment agency	0.0969	0.2959	0.0428	0.2024
Contacted friends or relatives	0.0296	0.1696	0.0209	0.1430
Looked in newspapers or on internet, but not answer job advertisement	0.0602	0.2378	0.0462	0.2100
Take any mutual obligation activity	0.0964	0.2951	0.0134	0.1151
No. of obs.	5469		4696	

Table A10: Estimation results

Variables	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
<i>Transitions off not-employed-welfare</i>								
work experience	-0.0114***	0.0018	0.0038***	0.0011	0.0016	0.0011	0.0060***	0.0013
work experience square	0.0002***	0.0000	-0.0001**	0.0000	0.0000	0.0000	-0.0001**	0.0000
Certificate	0.0589***	0.0194	-0.0162	0.0110	0.0012	0.0154	-0.0440***	0.0085
year 12	0.0315	0.0213	0.0002	0.0136	0.0029	0.0168	-0.0346***	0.0079
year 10-11	0.0697***	0.0197	-0.0194*	0.0112	0.0015	0.0152	-0.0518***	0.0088
below year 10	0.0740***	0.0200	-0.0215**	0.0109	0.0047	0.0168	-0.0571***	0.0069
very good health	0.0239	0.0190	0.0009	0.0130	-0.0168	0.0110	-0.0081	0.0110
good health	0.0277	0.0198	-0.0077	0.0125	-0.0157	0.0117	-0.0043	0.0111
fair health	0.0530***	0.0194	-0.0059	0.0134	-0.0296***	0.0109	-0.0175	0.0110
poor health	0.1109***	0.0170	-0.0275**	0.0116	-0.0436***	0.0090	-0.0397***	0.0086
Age	-0.0002	0.0037	-0.0022	0.0024	0.0012	0.0024	0.0012	0.0024
age square	0.0001*	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001**	0.0000
Females	0.0126	0.0192	0.0124	0.0103	-0.0189	0.0158	-0.0062	0.0091
Married	-0.0406**	0.0194	0.0056	0.0103	0.0274**	0.0137	0.0076	0.0103
Married females	-0.0135	0.0247	-0.0206*	0.0119	0.0174	0.0171	0.0167	0.0135
born in Eng-speaking country	0.0092	0.0180	0.0034	0.0109	0.0026	0.0122	-0.0151*	0.0089
born in non-Eng speaking country	0.0064	0.0153	-0.0177**	0.0089	0.0179	0.0115	-0.0066	0.0091
child aged 0-4	0.0302	0.0311	-0.0008	0.0195	-0.0316	0.0243	0.0022	0.0146
child aged 5-14	0.0202	0.0302	0.0259	0.0184	-0.0334	0.0241	-0.0127	0.0123
female & child aged 0-4	-0.1806**	0.0860	0.0018	0.0232	0.2097**	0.0926	-0.0309**	0.0135
female & child aged 5-14	-0.1402*	0.0782	0.0128	0.0206	0.1420*	0.0851	-0.0147	0.0150
work attitude-indifference	-0.0042	0.0143	-0.0014	0.0091	-0.0053	0.0090	0.0109	0.0091
Work attitude-positive	-0.0070	0.0139	-0.0040	0.0092	-0.0016	0.0091	0.0126	0.0089
duration 2	0.0317***	0.0110	-0.0060	0.0077	-0.0065	0.0074	-0.0192***	0.0065
duration 3	0.0685***	0.0136	-0.0037	0.0104	-0.0276***	0.0083	-0.0372***	0.0071
duration 4	0.0741***	0.0145	-0.0054	0.0114	-0.0193**	0.0097	-0.0495***	0.0065
duration 5	0.0565***	0.0192	-0.0060	0.0132	-0.0330***	0.0101	-0.0176	0.0133

See Table 12 in the main text for estimates for job search behaviour variables

Transition off not-employed-non-welfare

work experience	-0.0046***	0.0013	0.0008	0.0008	-0.0098***	0.0026	0.0136***	0.0024
work experience square	0.0001**	0.0000	0.0000	0.0000	0.0001	0.0001	-0.0001**	0.0001
Certificate	0.0801***	0.0214	0.0120	0.0082	-0.0235	0.0232	-0.0686***	0.0146
year 12	0.0748***	0.0257	0.0037	0.0083	-0.0135	0.0258	-0.0650***	0.0156
year 10-11	0.0723***	0.0215	-0.0049	0.0060	-0.0070	0.0245	-0.0603***	0.0151
below year 10	0.1548***	0.0338	0.0033	0.0106	-0.0878***	0.0338	-0.0703***	0.0186
very good health	-0.0151	0.0141	-0.0002	0.0064	-0.0173	0.0223	0.0326*	0.0184
good health	0.0084	0.0152	-0.0004	0.0063	-0.0057	0.0225	-0.0023	0.0188
fair health	0.0670***	0.0224	0.0082	0.0107	-0.0436	0.0279	-0.0316	0.0216
poor health	0.0841**	0.0343	-0.0011	0.0101	-0.0123	0.0409	-0.0706**	0.0292

Age	0.0033	0.0030	-0.0025	0.0019	-0.0128**	0.0055	0.0119**	0.0049
age square	0.0000	0.0000	0.0000	0.0000	0.0003***	0.0001	-0.0003***	0.0001
Females	0.0225	0.0170	0.0039	0.0110	-0.0125	0.0335	-0.0140	0.0296
Married	-0.0339	0.0241	-0.0072	0.0187	0.0212	0.0335	0.0200	0.0253
Married females	-0.0757**	0.0313	-0.0249	0.0432	0.0854*	0.0497	0.0151	0.0341
born in Eng- speaking country	-0.0136	0.0142	-0.0096**	0.0038	0.0185	0.0224	0.0047	0.0184
born in non-Eng speaking country	0.0150	0.0127	0.0000	0.0048	0.0507***	0.0177	-0.0657***	0.0146
child aged 0-4	0.0611	0.0438	0.0286	0.0804	-0.0250	0.0705	-0.0647	0.0410
child aged 5-14	0.0006	0.0329	-0.0519	0.0776	0.0401	0.0680	0.0112	0.0389
female & child aged 0-4	0.0365	0.0493	0.0519	0.1418	-0.0754	0.1081	-0.0131	0.0490
female & child aged 5-14	0.0057	0.0665	0.3116	0.3116	-0.2437	0.2083	-0.0736	0.0632
work attitude- indifference	-0.0162	0.0113	-0.0007	0.0046	-0.0175	0.0187	0.0343**	0.0159
Work attitude- positive	0.0101	0.0111	-0.0042	0.0046	-0.0167	0.0177	0.0109	0.0153
duration 2	-0.0318***	0.0085	-0.0100***	0.0036	0.0966***	0.0136	-0.0548***	0.0115
duration 3	-0.0485***	0.0088	-0.0149***	0.0022	0.1298***	0.0179	-0.0664***	0.0159
duration 4	-0.0628***	0.0090	-0.0119***	0.0041	0.1408***	0.0202	-0.0662***	0.0195
duration 5	-0.0816***	0.0085	-0.0152***	0.0019	0.2247***	0.0204	-0.1279***	0.0199

See Table 12 in the main text for estimates for job search behaviour variables

E. Summary statistics and estimation results for models that include job characteristic variables

Table A11: Summary statistics

	Transitions off employed-welfare		Transition off employed-non-welfare	
	Mean	Std. Dev.	Mean	Std. Dev.
Duration	1.7264	1.1899	2.6679	1.5858
work experience	17.94	11.40	19.78	11.04
work experience square	451.74	491.26	513.16	486.60
Certificate	0.3465	0.4760	0.3252	0.4684
year 12	0.1608	0.3675	0.1491	0.3562
year 10-11	0.2531	0.4349	0.1885	0.3911
below year 10	0.1004	0.3006	0.0427	0.2021
very good health	0.3373	0.4729	0.4204	0.4936
good health	0.3983	0.4897	0.3493	0.4767
fair health	0.1457	0.3529	0.0838	0.2771
poor health	0.0205	0.1418	0.0081	0.0897
health condition	0.2925	0.4550	0.1375	0.3444
work disability	0.2628	0.4403	0.1231	0.3286
Age	40.15	11.29	39.61	11.05
age square	1739.17	912.59	1691.18	880.23
Females	0.6908	0.4623	0.4862	0.4998
Married	0.4366	0.4961	0.7125	0.4526
Married females	0.2580	0.4376	0.3442	0.4751
born in Eng-speaking country	0.0863	0.2810	0.1053	0.3070
born in non-Eng speaking country	0.0831	0.2761	0.1040	0.3052
child aged 0-4	0.1527	0.3598	0.1472	0.3543
child aged 5-14	0.3691	0.4827	0.2252	0.4177
female & child aged 0-4	0.1166	0.3210	0.0567	0.2313
female & child aged 5-14	0.3157	0.4649	0.1152	0.3193
work attitude:indifference	0.3929	0.4885	0.3716	0.4833
work attitude:positive	0.4679	0.4991	0.5132	0.4998
Wages	14.81	9.33	20.37	15.00
fixed term	0.0712	0.2573	0.0940	0.2919
casual jobs	0.4976	0.5001	0.1533	0.3603
small firms	0.6724	0.4695	0.5362	0.4987
large firms	0.1398	0.3468	0.2278	0.4194
public sector	0.0928	0.2903	0.1077	0.3100
Other white collar	0.5094	0.5000	0.4191	0.4934
blue collar	0.3303	0.4704	0.2454	0.4304
No. of obs.	1853		25142	

Table A12: Estimation results

Variables	Not-employed-welfare		Employed-welfare		Not-employed-non-welfare		Employed-non-welfare	
	MME	s.e.	MME	s.e.	MME	s.e.	MME	s.e.
<i>Transitions off employed-welfare</i>								
work experience	-0.0030	0.0033	0.0004	0.0057	-0.0002	0.0015	0.0029	0.0050
work experience square	0.0000	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001
certificate	0.0214	0.0283	0.0101	0.0415	-0.0192*	0.0109	-0.0124	0.0347
year 12	0.0153	0.0344	-0.0062	0.0477	-0.0116	0.0105	0.0025	0.0379
year 10-11	0.0090	0.0310	0.0142	0.0452	-0.0057	0.0118	-0.0175	0.0374
below year 10	0.0355	0.0401	0.0261	0.0550	-0.0090	0.0130	-0.0526	0.0454
very good health	-0.0179	0.0253	-0.0509	0.0534	0.0144	0.0608	0.0544	0.0408
good health	-0.0069	0.0253	0.0003	0.0519	0.0056	0.0549	0.0011	0.0391
fair health	0.0071	0.0324	-0.0032	0.0690	0.0214	0.0810	-0.0253	0.0429
poor health	0.2192**	0.0898	-0.0707	0.1025	0.0164	0.0857	-0.1649***	0.0459
age	-0.0031	0.0056	-0.0067	0.0115	-0.0029	0.0032	0.0127	0.0097
age square	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	-0.0003**	0.0001
females	-0.0131	0.0242	0.0681	0.0459	-0.0138	0.0316	-0.0412	0.0378
married	0.0034	0.0263	0.0564	0.0555	0.0056	0.0476	-0.0654*	0.0395
Married females	-0.0031	0.0308	-0.1178**	0.0596	0.0047	0.0421	0.1162**	0.0518
born in Eng-speaking country	0.0373	0.0291	-0.0846*	0.0444	0.0076	0.0160	0.0397	0.0354
born in non-Eng speaking country	0.0250	0.0286	-0.0514	0.0420	0.0027	0.0143	0.0237	0.0401
child aged 0-4	-0.0440	0.0366	-0.0235	0.0748	-0.0274	0.0669	0.0950	0.0605
child aged 5-14	-0.0221	0.0411	0.0491	0.0840	-0.0222	0.0924	-0.0048	0.0530
female & child aged 0-4	0.0535	0.1153	-0.1379	0.1936	0.2620	0.2748	-0.1777***	0.0430
female & child aged 5-14	0.0117	0.0579	0.0163	0.1282	0.0927	0.1657	-0.1206**	0.0557
work attitude-indifference	-0.0427**	0.0184	0.0140	0.0380	0.0129	0.0257	0.0158	0.0315
Work attitude-positive	-0.0733***	0.0202	0.0344	0.0368	0.0113	0.0225	0.0276	0.0305
duration 2	-0.0164	0.0157	0.0921***	0.0251	-0.0016	0.0088	-0.0741***	0.0221
duration 3	-0.0098	0.0219	0.1377***	0.0324	-0.0195***	0.0068	-0.1084***	0.0279
duration 4	-0.0408*	0.0232	0.2171***	0.0386	-0.0245***	0.0037	-0.1518***	0.0320
duration 5	-0.0800***	0.0193	0.1835***	0.0501	-0.0240***	0.0036	-0.0795*	0.0463

See Table 13 in the main text for estimates for job characteristics variables

Transition off employed-non-welfare

work experience	-0.0014***	0.0003	-0.0004	0.0004	-0.0017***	0.0006	0.0035***	0.0009
work experience square	0.0000***	0.0000	0.0000	0.0000	0.0000**	0.0000	-0.0001***	0.0000
certificate	0.0037	0.0029	0.0040	0.0027	0.0018	0.0034	-0.0095*	0.0050
year 12	0.0031	0.0033	0.0018	0.0032	-0.0014	0.0040	-0.0035	0.0059
year 10-11	0.0086**	0.0040	0.0024	0.0030	-0.0011	0.0039	-0.0098	0.0062
below year 10	0.0122*	0.0064	0.0055	0.0055	0.0120	0.0077	-0.0297***	0.0111
very good health	0.0008	0.0026	-0.0011	0.0024	-0.0035	0.0034	0.0037	0.0045
good health	0.0052*	0.0028	0.0008	0.0025	-0.0029	0.0035	-0.0030	0.0048
fair health	0.0171***	0.0061	0.0071*	0.0041	0.0087	0.0054	-0.0329***	0.0085
poor health	0.0585***	0.0222	-0.0039	0.0072	0.0746***	0.0244	-0.1291***	0.0319

age	0.0009	0.0007	0.0002	0.0009	-0.0012	0.0011	0.0000	0.0016
age square	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
females	0.0000	0.0022	0.0079**	0.0035	0.0003	0.0054	-0.0082	0.0067
married	-0.0059**	0.0024	0.0010	0.0036	0.0048	0.0044	0.0001	0.0059
Married females born in Eng-speaking country	-0.0043	0.0030	-0.0157***	0.0057	0.0274***	0.0073	-0.0074	0.0095
born in non-Eng speaking country	0.0052*	0.0028	-0.0006	0.0024	0.0009	0.0037	-0.0055	0.0050
child aged 0-4	0.0026	0.0024	-0.0042*	0.0022	0.0001	0.0036	0.0014	0.0047
child aged 5-14	0.0040	0.0037	0.0023	0.0046	-0.0083	0.0057	0.0020	0.0080
female & child aged 0-4	-0.0031	0.0028	0.0025	0.0042	-0.0126***	0.0049	0.0132*	0.0071
female & child aged 5-14	0.0010	0.0053	0.0356**	0.0153	0.0455***	0.0165	-0.0820***	0.0211
work attitude- indifference	0.0068	0.0072	0.0319***	0.0123	-0.0012	0.0074	-0.0375**	0.0161
Work attitude- positive	0.0003	0.0025	0.0001	0.0024	-0.0068**	0.0033	0.0064	0.0048
duration 2	0.0016	0.0024	-0.0006	0.0022	-0.0047	0.0034	0.0037	0.0046
duration 3	-0.0026*	0.0015	0.0009	0.0020	0.0000	0.0028	0.0016	0.0036
duration 4	-0.0033**	0.0016	-0.0040**	0.0019	-0.0010	0.0031	0.0083**	0.0038
duration 5	-0.0033*	0.0018	-0.0027	0.0022	-0.0035	0.0035	0.0094**	0.0043
duration 5	-0.0075***	0.0015	-0.0020	0.0027	-0.0004	0.0039	0.0098**	0.0048

See Table 13 in the main text for estimates for job characteristics variables