Are Casual Jobs a Freeway to Permanent Employment?

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Are casual jobs a freeway to permanent employment?

Comparing the direct route from unemployment to permanent work

with the route via casual work

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July 2000

Abstract

This study examines whether casual work can shorten the time taken to move from unemployment into permanent work using longitudinal data from the Survey of Employment and Unemployment Patterns. The analysis is based on comparison of the transition rate from unemployment to permanent work with the combined transition rates of unemployment to casual work and casual work to permanent work. Hazard rate models are used to estimate each of the transition rates. The models include observed and unobserved heterogeneity and allow for correlation between the transition rates. The evidence presented suggests that accepting casual work is beneficial for some unemployed people in their search for permanent work.

1   Introduction

There is concern in Australia (as in many industrialised countries) that recent labour market deregulation has deepened the divide between good and bad jobs. Researchers using dual labour market theory have defined permanent jobs as primary sector (or good) employment and non-permanent/casual jobs as secondary sector (or bad) jobs. Common amongst the different formulisations of the dual labour market theory is the concern that workers may become trapped in the secondary sector, because work experience attained in this sector is either not recognised by primary sector employers or being in the secondary sector is a sign that the worker is sub-standard in some way. In the last decade, a large part of the industrialised world has experienced an expansion in the relative importance of non-permanent jobs. Although the definitions of permanent and non-permanent jobs differ markedly across countries, a common concern is that workers may not be able to move easily from non-permanent jobs into permanent jobs.

Many researchers conceptualise the nature and role of non-permanent work in terms of Brooks' (1985) definition of casual jobs as jobs that are short-term, irregular and uncertain, involving separate contracts of employment each time a worker is engaged. However, our empirical and practical understanding of the nature and role of casual employment has been restricted by the Australian Bureau of Statistics' (ABS) definition of casual work. The ABS defines casual employment in terms of entitlements received by the worker, not in terms of the job itself. Casual workers do not have access to the annual leave or sick leave entitlements that accrue to workers in 'permanent' jobs. The ABS definition of casual work does not match Brooks' definition, however more than half of the employment that lacks sick leave and holiday leave (excluding owner managers) is short-term, irregular or insecure as well[1].

Although some casual workers have worked with the same employer for a relatively long period, the employment contract of casual workers in historically on-going jobs can still be broken more easily, and with less warning, than the employment contract of a permanent

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[1] See tables 4 and 5 in Murtough and Waite (2000).

worker[2]. This higher level of insecurity often makes casual workers less satisfied with their job. As Smith and Ewer's (1999) qualitative research amongst female casual employees in the retail sector, community services and nursing reveals, there are numerous points of dissatisfaction with casual conditions in part-time jobs[3]. This suggests there are casual workers who would prefer to work in a permanent job with more employment security.

This paper sets out to determine whether casual employment assists those who have become unemployed in their bid to find permanent work. The view that experience gained in non-permanent employment is valuable for permanent job seekers is reflected in recent Australian federal Government policies such as Work for the Dole. The issue analysed here is whether taking up casual work while looking for permanent work accelerates the process of moving from unemployment into permanent employment.

International and Australian research with a similar goal to ours has limited the analysis to examining the transition rate from non-permanent to permanent work in isolation (for example, Alba-Ramírez, 1998; Burgess and Campbell, 1998; and Gaston and Timcke; 1999). Without a point of comparison, these researchers can do little more than conclude that the probability of moving from casual to permanent work seems low. However, it may still be considerably higher than the probability of moving from unemployment into permanent work directly for some groups of unemployed people.

Hotchkiss (1999) examines separately the duration until a job seeker finds permanent employment, for searchers who take up a transitional job[4] and for searchers who remain unemployed while searching. She allows the transition process to vary between searchers based on whether they take a transitional job and controls for the possibility that those, who take a transitional job, are better placed to find employment of any kind than other searchers. However, Hotchkiss' approach does not allow for the possibility that taking the transitional job changes the individual's probability of finding a permanent job, at that

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[2] However, casual employees with more than twelve months tenure have acquired some rights in the federal jurisdiction for protection against unfair dismissal.

[3] These conditions included unpredictable variations in hours, the often short-term notice given of variation and the failure to comply with provisions for minimum start periods.

[4] A transitional job is defined as a job during which the employee still looks for work.

point in time. That is, the transition rates into permanent employment before and after the take up of a transitional job are the same in her analysis.

We extend the analysis to allow different transition rates before and after the take-up of the casual job for those who accept casual employment. This approach compares the rates at which individuals find permanent employment depending on whether casual work is taken up. The model consists of three transition rate equations:

- the transition rate from unemployment to permanent work directly,

- the transition rate from unemployment to casual work, and

- the transition rate from casual work to permanent work.

These equations are estimated simultaneously, allowing for the possibility that those who take up casual work are more likely, as a group, to find employment of any sort than those who remain unemployed. The estimated transition rates are then used to simulate the duration from unemployment to permanent employment directly, and compare it with the sum of the simulated durations from unemployment to casual work and from casual work to permanent employment. This comparison enables us to predict whether casual work inhibits or enhances the search for permanent work, given the labour market conditions at the time of the survey (such as the mix of permanent and casual jobs).

In the next section, we discuss the theoretical basis for the analysis. The econometric model resulting from the economic theory is described in section three. Section four describes and summarises the data used for the empirical analysis, the Australian Bureau of Statistics' Survey of Employment and Unemployment Patterns 1994-1997 (SEUP). The results of the transition rate model and a simulation study based on the model are reported in section five and section six concludes.

2   Theoretical approach

The theoretical basis for the analysis is "job search theory" [5]. A crucial assumption in this paper is that job search continues until a permanent job is found. People regard permanent jobs to be more desirable, and of a higher quality, than casual jobs. Therefore, we assume that unemployed people as well as casual workers are searching for permanent employment. The data provide little evidence as to the type of job desired by the unemployed person or casual worker. The data identify job seekers, but do not tell us the type of job being sought. We realise that some of those casual workers, identified as job seekers, could be searching for another casual job. The temporary nature of casual jobs may necessitate the casual worker to spend much time looking for further work. While some, in this position, might withdraw from permanent job search because of their lack of success (although still preferring permanent employment), others might truly prefer casual employment to permanent employment.

The assumption that all casual workers are searching for a permanent job means the effect of casual work will be underestimated, because we cannot identify all those who prefer a casual to a permanent job. However, because we select a sample of only those who commenced a spell of unemployment[6] in the first year of the survey period, people in long-term casual jobs without intermittent unemployment spells are excluded. The excluded group is likely to contain those casual workers who are satisfied with their situation, whereas people experiencing spells of unemployment are less likely to belong to the category of satisfied casual workers.

An alternative and complementary approach is to select only those people in the sample who worked in permanent employment during the six months preceding the unemployment spell. These people most likely prefer working in a permanent job. A third alternative is to analyse the rates of finding casual and permanent work of those people who have found permanent employment before the end of the survey period. Using the three alternatives gives three sets of results. The true relationship between taking up casual employment and

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[5] Job search theory originates with Stigler (1961, 1962).
[6] Our definition of unemployed people is those who are not in employment and who are looking for work.

finding permanent employment lies somewhere around the results of the three alternative approaches. This comparison is left for future analysis.

2.1 Job search theory

The central assumption of job search theory is that individuals are not perfectly informed about the wage distribution commensurate with their holdings of human capital (Mortensen, 1977). Information on available job offers, gained through job search, improves the individual's chances of securing a better wage. When considering whether to accept a job offer, individuals compare the potential wage gain of continuing the search against the search costs. In this theory, jobs are considered to be homogeneous except for their wage rate.

The duration of search spells (or alternatively the exit rate out of search spells) depends on labour supply factors and labour demand factors. Job search theory assumes that the searcher bases his/her acceptance decision on whether the market wage offered is higher than the reservation wage[7]. The level of the reservation wage depends on factors such as the level of social security payments and the individual's productivity within the home[8]. However, the arrival rate of job offers is also influenced by labour demand factors, such as the unemployment rate in the local area.

2.2 The three durations under analysis

At the centre of our analysis are the individual's hazard rates into permanent employment. This hazard rate is the probability of moving into permanent work on a given day conditional on having remained unemployed or in casual work up to that day. Transition, exit and hazard rate are used as synonyms. Once the hazard rate is known, the expected duration until permanent work is found can be calculated. This is outlined in section three.

In unemployment, financial resources are depleted and more knowledge is gained about the state of the labour market. Consequently, it is often assumed that the longer the individual

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[7] The reservation wage is the job seeker's minimum acceptable wage rate, where the expected return to searching for another period is equal to the expected cost of searching for another period.
[8] For example, women with children are expected to have a higher reservation wage.

remains unemployed the lower the reservation wage becomes. This is expected to increase the transition rate. However, the length of time in unemployment may stigmatise job seekers in the eyes of the employers, which makes a job offer less likely and decreases the transition rate.

Accepting a casual job while continuing to search for permanent employment reduces the cost of search, by alleviating part of the financial burden that accompanies unemployment. This can be a strategic move because it allows the searcher the financial freedom to wait for an appropriate permanent job and to avoid any negative stigma associated with unemployment. However on the downside, the casual worker has less time and energy to devote to finding a permanent job and may be stigmatised by the casual job. Furthermore, the increased income may increase the job acceptance costs, or the opportunity cost of taking a permanent job. Both effects combine to increase the expected search duration. Notwithstanding this effect, it can be rational to take a casual job when the casual pay (over and above social security payments received while unemployed) outweighs the extra time taken to secure a permanent job.

Three reasons why casual work could help to reduce the duration of job search until permanent work is found are:

- Casual employment provides work experience that increases human capital in the same way as permanent employment is theorised to do. However, casual employment often does not provide the same amount of on-the-job training as permanent employment does. As a result, the positive effect of work experience might be less in a casual job than in a permanent job.

- Casual employment screens job seekers into those who are most able to work and signals to potential employers the job seeker's capability of dealing with the responsibilities and commitment associated with working in the paid labour market[9]. Potential employers of permanent workers can see how well the casual worker does in

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[9] Weiss (1995) provides an overview of the underlying theory of sorting

employment. On the other hand, if the dual labour market theory is relevant, casual employment might stigmatise the job seeker looking for permanent work.

- Casual employment enlarges the social network of the individual within the working community. This makes it easier for an employer to observe the capability of the employee and the job seeker will be more aware of permanent job vacancies. This assumes that casual and permanent jobs are not in completely separate areas of the labour market. If an industry or occupation is dominated by casual work, a casual job is unlikely to advance permanent job search in this fashion.

We test empirically whether the amount of casual work experience matters. If the amount of casual work experience does not matter then there is no duration dependence in the model for casual to permanent work. However, if the probability to move into permanent work increases with the casual work experience, positive duration dependence is expected.

2.3 Observed and unobserved heterogeneity

To measure the above effects accurately, we need to control for observed and unobserved heterogeneity in our data. The probability of finding permanent employment could be related to individual characteristics (such as age, gender, ethnicity, human capital measured by education and work experience) and household characteristics (such as the presence and age of children). The same characteristics may also affect the probability of finding casual employment. Including these characteristics in the analysis takes care of the observed heterogeneity. The next section explains the approach taken to deal with unobserved heterogeneity. For example, the data does not measure an individual's work ethos. However, work ethos is expected to affect the transition rates to both permanent and casual work.

2.4 Reduced form model

A structural model based on the job search theory involves estimating market wage and reservation wage equations. The reduced form, which is used here, only reflects the transition rates into casual employment or permanent employment. The transition rates are the outcome of a comparison of the offered market wage with the individual's reservation

wage. Therefore, the explanatory variables included in the hazard rate analysis include determinants of both labour demand and labour supply.

3   Econometric model

The question of whether take up of casual employment accelerates the move from unemployment to permanent employment is addressed through analysis of the duration to find a permanent job, controlling for individual characteristics and unobserved heterogeneity. The tool used in this analysis is the hazard rate model[10], which explains the likelihood of exiting from a particular state to another state at time t given that the individual survived up to time t in the first state.

The hazard or transition rate is represented by $\theta_j(t|X)$, j = 0, 1, 2, where j=0 stands for transitions from unemployment to permanent employment, j=1 stands for transitions from unemployment to casual employment and j=2 stands for transitions from casual to permanent employment; t is the duration of unemployment or the duration of casual employment; and X stands for the observed personal and household characteristics.

We estimate a simultaneous model including these three transition rates, following a similar approach to Van den Berg, Holm and Van Ours (1999). They allow the effect of an individual's characteristics on the transition rate into the destination of interest (becoming a junior medical specialist) to change if the individual becomes a medical assistant. Analogously, the time taken by an unemployed person to find a casual or permanent job (from now on 'unemployed to casual time' and 'unemployed to permanent time') is modelled separately from the time taken by a casual worker to find a permanent job (from now on 'casual to permanent time').

A simpler approach is to model only 'unemployed to casual time' and 'unemployed to permanent time', where the latter contains a time-varying dummy variable to indicate when the first casual job was taken up. The latter approach has been used to evaluate the effect of

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[10] See for example Lancaster (1990) for an extensive overview of hazard rate models.

training, labour market programs and sanctions on the transition rate into work from unemployment (for example, Lubyova and Van Ours, 1999). The former more extended approach is preferred, because we want to determine the effect of the length of the casual employment period on the transition rate into permanent work.

The probability of not observing a particular transition in the observation period is represented by the survival rate S_j, which is a function of the associated hazard rate:

$$S_j(t \mid X) = \exp\left(-\int_0^t \theta_j(s)ds\right)$$ (1)

The probability of remaining unemployed up to a duration t is equal to $S_0(t|X)$ times $S_1(t|X)$.

Including unobserved heterogeneity terms v_j, to account for unexplained variation in the dependent variable, is analogous to the inclusion of an error term in a simple regression model. The heterogeneity terms enter the hazard rate functions in a multiplicative way:

$$\theta_j(t|X, v_j) = \theta_j(t|X)v_j = \theta_j(t|X)\exp(v_j')$$ (2)

where v_j has to be positive and is therefore reparameterised as $\exp(v_j')$.

The probability of obtaining a casual job and the probability of obtaining a permanent job are expected to be determined by similar characteristics to some extent at least. This is not a problem for those characteristics that are observed, however there probably also are unobserved characteristics that affect more than one of the hazard rates. The possibility that similar unobserved factors affect each of the transition rates is incorporated by allowing correlation between the three unobserved heterogeneity terms v_j. Ignoring the correlation could lead to attributing more importance to the effect of taking up a casual job on the transition rate into a permanent job than is warranted. An upward bias can be expected when unobserved factors make it more likely for a person to both find a casual job and a permanent job.

The exit rate of interest from unemployment is either into permanent or casual work and from casual employment the exit rate is into permanent employment. The likelihood contribution of this process is:

$$\prod_{i=1}^{n} \left[\theta_0(t_i \mid X_i, v_0)^{d_{0i}}\right]^{1-d_{1i}} \left[\theta_1(t_i \mid X_i, v_1)\theta_2(t_i' \mid X_i, v_2)^{d_{2i}} S_2(t_i' \mid X_i, v_2)\right]^{d_{1i}} \qquad (3)$$
$$S_0(t_i \mid X_i, v_0)S_1(t_i \mid X_i, v_1)$$

where n is the number of observations in the sample, d_0 indicates whether the respondent exits to permanent work (d_0=1, otherwise d_0=0), t is the duration of unemployment until casual or permanent employment, d_1 indicates whether the respondent exits to casual work (d_1=1, otherwise d_1=0 and $d_0 + d_1 \leq 1$), t' is the duration of casual jobs and unemployment after the first casual job, and d_2 indicates whether the respondent exits to permanent work (d_2=1, otherwise d_2=0).

The functional form used for the hazard is the Weibull specification. Examples of alternative functional forms are the lognormal or the stepwise specification. In the Weibull hazard rate model, the exit rate from unemployment or casual work monotonically increases or decreases with time spent in these states. For the moment, this specification is sufficiently flexible. The expectation is that the longer someone spends in unemployment the less likely they are to find work. However, it is possible that the exit to casual employment follows a U-shape[11], which would not be captured by the Weibull specification. We will investigate this issue in future research.

The Weibull can be expressed as follows:

$$\theta_j(t_i \mid X_i, v_j') = \exp(X_i\beta_j + v_j')\alpha_j t_i^{\alpha_j-1} \quad \text{with } \alpha_j > 0. \qquad (4)$$

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[11] Similar to exit into permanent work, exit into casual work is expected to be high at first. However, after the initial decline for the people who wanted casual work from the start another influence starts to affect the hazard rate. As time passes, people originally looking for permanent work but unable to find it, are more likely to turn their focus to casual jobs, which might cause an increase in the hazard rate.

β_j and α_j are parameters to be estimated, where α_j is respecified as $\exp(\alpha_j')$ before estimation (α_j' can have any real value). $(\exp(\beta_j)-1)\times 100\%$ is the percentage change in the transition rate as a result of a one-unit change in the explanatory variable.

v_j' is unobserved and needs to be integrated out of the log likelihood function. We allow for two different values of the heterogeneity term. There are eight different combinations if we allow the two points in the three hazard rate functions to be combined in any possible way. For the moment, we only allow two combinations, one occurring with probability p and the other with probability 1-p, where p lies between zero and one. Combination 1 consists of $\{v_{10}, v_{11}, v_{12}\}$ and combination 2 consists of $\{v_{20}, v_{21}, v_{22}\}^{12}$. Together there are seven parameters to estimate: p and all v_{jk}^{13}. The parameter p is respecified as $\dfrac{\exp(\gamma)}{1+\exp(\gamma)}$, where γ can take any real value. The choice for a simple discrete distribution means that integration over the heterogeneity terms translates into summation over the two possible sets of hazard rates and survival rates.

From the hazard rate function the expected duration can be derived:

$$E(t_i) = \exp\left(-\frac{x_i\beta}{\alpha}\right)\Gamma\left(1+\frac{1}{\alpha}\right) \qquad (5)$$

After estimating the model, the predicted hazard rates to permanent work of people who took a casual job can be compared to the predicted hazard rates if they had not taken a casual job. If this hazard rate is higher for people in casual work, then accepting a casual job improves the probability of moving into a permanent job.

Alternatively, the results can be used to simulate the expected duration to find a permanent

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[12] This specification allows us to identify two groups in terms of the influence of their unobserved characteristics on the three transition rates and the relationships between those rates. This is a rather restrictive form, because individuals have to fit one of only two groups. However, the current specification allows for both positive and negative correlation between each of the transition rates. At a later stage, the model can be extended to allow for more groups.

[13] Note that there is no constant left in the $X\beta$ term, since they are no longer identified. The v_j's in a model with one point of support could be interpreted as the constant terms.

job for people with different characteristics. Random drawings from the hazard rate distribution for unemployed people are used to calculate the simulated duration to find a permanent or casual job. If the simulated 'unemployed to casual time' is smaller than the simulated 'unemployed to permanent time', then the 'casual to permanent time' is also calculated, using the equation for casual workers. The simulated effect of taking up casual employment is the difference between the simulated 'unemployed to permanent time' and the sum of the simulated 'unemployed to casual time' and the simulated 'casual to permanent time'. However, if the simulated 'unemployed to permanent time' is smaller than the simulated 'unemployed to casual time', then the take up of casual work is not relevant for that replication and the simulated effect is set to zero. By drawing repeatedly from the hazard rate distribution, an average difference can be calculated. The effect of a casual job is simulated separately for some typical persons and for the population as a whole.

4 The data

The SEUP is the first Australian longitudinal data set to detail the working and job-seeking experiences of the Australian population in general on a continuous basis (Australian Bureau of Statistics, 1997). The three-year period (1994-1997) available for each individual can provide new insights into whether unemployed people who take up a casual job obtain a permanent job more quickly than other unemployed people do.

Although the three-year time span of the survey is still relatively short, this is a reasonable observation period compared to other studies of transitions into permanent work (Hotchkiss, 1999; Alba-Ramírez, 1998). This study follows the experiences of individuals who became unemployed in the first year of the survey. Hence, for most people at least two years of transition data is available. An unemployment period of more than two years is in general classified as long-term, so all but the long-term unemployed should have found employment within this time.

The ABS drew three samples for the SEUP from the population aged 15 to 59 resident in private dwellings: Jobseekers, Population Reference Group (a random sample of the population) and Labour Market Programme participants. Initial socio-demographic data

were collected between April and June 1995. The panel was revisited in September 1995, 1996, and 1997.

The sample used in this analysis comprises respondents from the Population Reference Group and the Jobseeker group who became unemployed in the first year of the survey period. Full-time students and those with more than one job at any time in the survey period were excluded. The first priority of full-time students is study rather than work and individuals with more than one job can be difficult to characterise if they work in a combination of casual and permanent jobs. In addition to these two groups, those who dropped out of the survey before the second interview in September 1996 were excluded.

The SEUP has labour market information on a continuous basis over the three surveyed years. Therefore, we are able to measure accurately the duration of the unemployment spell until the respondent found a casual or a permanent job. For each person the time-line relevant to the analysis commenced on the first day of unemployment. Members of the sample were categorised in terms of their attachment to the paid labour market during the remainder of the three-year survey period, that is those who:

- moved out of the labour force, into self-employment or into other non-casual/non-permanent salaried employment;

- remained unemployed until the end of the three-year survey period;

- found casual employment and moved out of the labour force or into self-employment or other non-casual/non-permanent employment;

- found casual employment and remained in casual employment until the end of the three-year survey period;

- found casual employment and then moved into permanent employment; and

- found permanent employment directly from unemployment.

The unemployment spells of individuals in the first two groups and the casual employment spells of individuals in the third and fourth groups are incomplete or censored.

Three dependent variables are constructed - the duration of the unemployment spell until the respondent found a permanent job, the duration of the unemployment spell until the respondent found a casual job, and the duration of the spell in casual work until the respondent found a permanent job[14]. All individuals were included in the equations explaining the duration of the unemployment spells, but only those who entered casual work were included in the equation explaining the casual work spell.

The dependent variables are explained by personal and household characteristics (such as age, education or marital status). Some information (such as marital status and education) was measured at the time of each of the interviews. We use the information that is current at the start of unemployment. Other information was collected for each episode of labour market activity during the year preceding the interview. For example, we included a set of dummy variables indicating in which labour market states people have been in the six months preceding the current unemployment spell in an attempt to identify churners.

It has been argued that the ABS definition of casual employment exaggerates the number of 'truly' casual jobs because owner managers of incorporated businesses who do not pay themselves holiday or sick leave are recorded as casual workers (Wooden and Hawke, 1998). The SEUP unit record files provide no information on who amongst the casual workers is an owner manager of an incorporated business. However the ABS is able to identify those people and we were informed that none of the casual workers in this sample was an owner manager of an incorporated business. Wooden and Hawke also argue that some permanent workers have 'cashed-in' holiday- and sick leave entitlements for wage increases. However, if permanent workers cash in their leave entitlements then other conditions may have changed as well and at least it is one step in the direction of making their job more like a casual job.

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[14] The duration of the casual work spell is calculated as the time between the commencement of the first casual job and the commencement of the first subsequent permanent job. The casual work spell may include subsequent unemployment spells and casual work spells. ACCIRT (1998) notes how many casual workers are caught in a cycle of unemployment and a succession of casual jobs. We realise that a casual spell including unemployment spells is quite different from a casual spell without unemployment spells. However, for the moment we ignore this difference. In future research, we will extend the model to include an additional exit destination by distinguishing between the two types of casual spells.

Table 1 presents the mean values of the durations and the transition rates for four groups. The first column presents the averages for the whole sample, the second column shows those who move into casual work, the third column shows those who move into permanent work directly and the last column presents those who move from casual to permanent work. The last three columns do not add up to the total sample (in the first column), because those with a censored unemployment spell do not appear in any of the last three columns.

Table 1: Durations (in days) and transition rates of the sample

Variable	Everyone in sample	Unemployed to casual	Unemployed to permanent	Unemployed to casual to permanent
	Mean	Mean	Mean	Mean
Dependent variables:				
duration in days of:				
unemployment	246.215	201.523	214.754	150.886
casual work:		384.188		265.378
days in casual		232.451		147.565
days in intermittent unempl.		151.737		117.813
transition rate:				
into permanent	0.206	0.284		
into casual	0.430			
into self-employment	0.046	0.035		
into other work	0.024	0.042		
into nilf	0.236	0.251		
Number of observations	2017	867	415	246

Table 1 shows that more than a quarter (28.4 percent) of people who took up a casual job after a spell of unemployment found a permanent job before the end of the survey period. This means that at least for some of the 43 percent of unemployed people who take up a casual job, it was not a dead-end job. Comparing this to the 20.6 percent of people moving into permanent employment directly, there is a suggestion that casual work might be a better starting point to find permanent work than unemployment is. However, to analyse whether taking up casual work has led to permanent work more quickly than would otherwise have been the case, a more in-depth analysis of the respective durations is needed. This is discussed in the next section.

It is interesting to note that the outflow from casual employment to self-employment, other employment and out of the labour force is similar to these outflows from unemployment. About a quarter of both groups move out of the labour force during the observation period.

Respondents taking up casual work find employment more quickly on average than respondents who moved into permanent work directly (202 days versus 215 days). Casual jobs may be easier to find than permanent jobs and the financial pressure of unemployment may induce people to take up casual work rather than wait for a permanent job. Those who move into permanent work from a casual job had shorter unemployment duration than other casual workers. This is partly explained by the limited duration of the observation period, making shorter spells more likely to be completed within that time. An additional explanation is that people able to find casual work quickly are also more likely to find permanent work quickly. Although casual work is found more quickly than permanent work, the casual workers who then move on to permanent work take more time to get there than people moving directly into permanent work from unemployment (417 days versus 215 days).

The mean values of some personal and household characteristics are presented in table 2. Appendix A defines the variables. The sample has been broken down into the same four groups that appeared in table 1.

Many variables are available for this analysis. Some of the more interesting observations are briefly described in the following. Women form about 48 percent of the total sample and are slightly less likely than men to move into permanent or casual work. This effect seems strongest for women with children and those with a partner. The average age is about 33 years in the total sample and younger people are overrepresented in the outflow to casual and permanent work. The group that exits to permanent work directly is the youngest on average. Respondents living in a capital city are more likely to move into permanent work. Disabled people are more likely to move into casual than into permanent work. The most educated people are more likely to move directly from unemployment to permanent work, whereas the least educated are more likely to move via casual employment.

It is interesting to note that people who had casual spells interspersed with unemployment spells seem slightly more likely to move on to a permanent job than those who had continuous spells of casual work. This is opposite to what one would expect. In future

research, the model will be extended to allow for two exit destinations into casual work: casual work interspersed with unemployment and continuous casual work.

Table 2: Characteristics of the sample (personal and household characteristics as they were in September 1995)

Variable	Everyone in sample	Unemployed to casual	Unemployed to permanent	Unemployed to casual to permanent
	Mean	Mean	Mean	Mean
Independent variables:				
jobseeker	0.944	0.955	0.918	0.955
woman	0.477	0.435	0.434	0.407
age	32.58	31.52	29.46	30.09
work experience	11.51	11.11	9.76	10.55
% of past looking for work	0.176	0.183	0.152	0.154
working partner	0.259	0.228	0.224	0.191
non-working partner	0.201	0.191	0.145	0.167
woman*working partner	0.176	0.157	0.135	0.114
woman*non-working partner	0.048	0.027	0.027	0.020
child 0-5yrs	0.230	0.212	0.210	0.154
woman*child 0-5yrs	0.121	0.104	0.084	0.069
no. of children	0.763	0.732	0.619	0.553
woman*no. of children	0.411	0.371	0.251	0.228
capital city	0.529	0.481	0.624	0.557
urban	0.329	0.353	0.272	0.297
tertiary ed.	0.072	0.068	0.092	0.089
diploma	0.058	0.047	0.099	0.041
basic vocational	0.065	0.066	0.067	0.041
skilled vocational	0.176	0.160	0.166	0.150
secondary ed.	0.191	0.209	0.219	0.264
NESB	0.174	0.136	0.207	0.146
English prof. bad	0.091	0.070	0.087	0.085
migrated before 1981	0.143	0.130	0.128	0.126
migrated after 1980	0.119	0.100	0.149	0.122
disabled	0.233	0.217	0.152	0.191
unemployment after 1st casual		0.656		0.691
recent casual job	0.469	0.543	0.383	0.565
recent permanent job	0.539	0.519	0.614	0.516
recent unemployment	0.252	0.269	0.198	0.175
recently nilf	0.463	0.390	0.424	0.386
recent other job	0.183	0.178	0.159	0.183
recent casual and unempl.	0.176	0.213	0.135	0.134
recent casual and nilf	0.159	0.157	0.108	0.191
recent permanent and unempl.	0.131	0.130	0.116	0.077
recent permanent and nilf	0.213	0.165	0.205	0.163
Number of observations	2017	867	415	246

Recent labour market status shows the expected patterns. Someone who had a casual job in the six months before the start of unemployment is more likely to take up a casual job and

someone who had a permanent job is more likely to take up a permanent job. People who were unemployed in those six months are less likely to move into permanent work and slightly more likely to move into casual work. People who were out of the labour force are less likely to move into permanent work although to a lesser extent than unemployed people. In addition, this group is also less likely to move into casual employment.

5   The results

In this section, the results of the model set out in section 3 are presented first. Then the estimation results of this model are used to simulate the expected effect of taking up casual work.

5.1 The estimated coefficients

Table 3 shows that gender in itself, after taking into account the interaction terms, does not affect transition probabilities into permanent or casual work. In terms of the probability of moving from non-regular to regular jobs, Dekker (1999) finds a similar lack of effect for German women, although he finds an effect for Dutch women as does Alba-Ramíraz (1998) for Spanish women. However, the interaction terms combining gender with other characteristics show several interesting effects. An increase in work experience improves the probability of moving from casual to permanent work to a larger extent for women than for men. In contrast, women who have a working spouse are less likely to move from casual to permanent work than other women, while for men the opposite is true. Women with a non-working spouse are less likely than other people (including men with a non-working spouse) to obtain a casual job. Finally, women with a larger number of children are less likely to obtain a permanent job. However, the age of the children seems irrelevant.

From the above, we conclude that women do not seem more likely to move into casual work, but they are perhaps less likely to move out of casual work once they entered a casual job (in particular, if they have a working spouse). Therefore, the higher proportion of women in the casual work force may be due to women staying in casual work for a longer time rather than women being more likely to take up casual work.

Table 3 Three-equation hazard rate model with correlated unobserved heterogeneity terms

	From unemployment to permanent job		From unemployment to casual job		From casual to permanent job	
	Coefficient	t-value	coefficient	t-value	coefficient	t-value
woman	0.0953	0.57	-0.1947	-1.48	0.0167	0.06
age/10	0.5268	3.79	-0.1843	-1.71	1.4585	8.45
age squared/100	-0.1645	-6.18	-0.0185	-0.98	-0.2750	-6.55
jobseeker	-0.8942	-3.77	-0.3823	-1.80	0.7253	1.63
tertiary ed.	0.4932	2.10	0.4534	2.36	0.5279	1.35
diploma	0.7522	3.43	0.2891	1.33	-0.5124	-0.93
basic vocational	0.3194	1.24	0.2600	1.37	-0.5119	-0.75
skilled vocational	0.4134	2.19	0.0492	0.37	-0.0686	-0.19
secondary ed.	0.2011	1.28	0.1437	1.23	0.7603	2.99
work experience/10	0.1921	1.23	0.1505	1.48	0.2122	0.76
woman*workexperience/10	-0.0050	-0.04	0.0670	0.72	0.5960	2.90
% of past looking for work	-1.4304	-4.62	-0.6678	-3.01	-0.7973	-1.21
recent casual job	-0.1557	-0.87	0.6485	4.60	0.0848	0.30
recent permanent job	0.5376	2.86	0.0385	0.27	0.5093	1.76
recent other job	0.1203	0.69	0.2301	1.91	0.3769	1.39
recent unemployment	0.0465	0.17	0.0014	0.01	0.1222	0.25
recently nilf	-0.1196	-0.57	-0.2366	-1.43	-0.4807	-1.35
recent casual and unemp.	-0.0033	-0.01	-0.0319	-0.15	-0.7416	-1.39
recent perm. job and unemp.	-0.0710	-0.25	-0.1802	-0.91	-0.8157	-1.50
recent casual and nilf	-0.0669	-0.27	-0.0790	-0.43	0.5618	1.35
recent perm. job and nilf	-0.2093	-0.90	-0.0001	0.00	0.2462	0.61
disabled	-0.4299	-2.56	0.0334	0.30	-0.4340	-1.61
migrated after 1980	0.5421	2.13	-0.2560	-1.36	0.9569	2.12
migrated before 1981	0.1272	0.63	0.0578	0.40	0.1403	0.43
NESB	0.2570	1.17	-0.3962	-2.08	-0.6308	-1.50
English prof. bad	-0.7309	-2.22	0.1834	0.72	0.6527	1.10
capital city	0.3894	2.06	-0.2244	-1.80	0.5423	1.89
urban	0.1548	0.78	-0.1086	-0.86	-0.1470	-0.50
working partner	0.0827	0.34	-0.1432	-0.76	1.2497	3.05
woman*working partner	0.0708	0.23	0.2975	1.26	-2.5361	-4.88
non-working partner	-0.6980	-2.93	0.0557	0.33	0.4112	1.10
woman*non-wrk. partner	0.2031	0.40	-0.6949	-2.05	-0.2664	-0.30
no. of children	-0.0015	-0.02	0.0152	0.20	-0.2565	-1.50
woman*no. of children	-0.2896	-1.92	0.0360	0.35	-0.1382	-0.54
child 0-5yrs	0.1165	0.42	-0.2659	-1.26	-0.5500	-1.11
woman*child 0-5yrs	-0.4323	-1.16	0.0392	0.15	0.8265	1.22
unemployment duration					-0.0045	-5.64
$(\alpha_1', \alpha_2', \alpha_3')$	0.0654	1.45	0.0177	0.47	0.5029	9.04
γ	-0.6680	-4.76				
$(v_{10}', v_{11}', v_{12}')$	-∞	.	-4.4562	-14.22	-15.3199	-24.28
$(v_{20}', v_{21}', v_{22}')$	-6.5762	-12.13	-5.9656	-17.92	-11.6305	-24.17

Log likelihood = -11503.964
Number of obs = 2016

Unlike women, men with a working spouse are more likely to move from casual to permanent work. Having a non-working spouse, however, decreases the probability of directly moving into permanent work for men and into permanent and casual work for women. This effect of a non-working spouse on women has been found by other researchers as well, such as Bradbury (1995), Bingley and Walker (1997) and Dex et al. (1995).

Unemployed people are more likely to obtain a permanent job the younger they are and casual workers have the highest probability of obtaining a permanent job at an age of about 27 years. Younger and older casual workers have lower probabilities. The negative effect of age on the transition into permanent work from both casual work and unemployment illustrates the difficulties that older people are currently experiencing in the labour market. The effect of age on transition into casual work is smaller and only significant at the 10-percent level, because it is a linear rather than a quadratic relationship. This means that the probability of obtaining a casual job is less dependent on age than the probability of obtaining a permanent job. Although a significant proportion of casual workers are young people (Dawkins and Norris, 1990; Wooden and Hawke, 1998; Gaston and Timcke, 1999), the results here suggest that it is easier for younger people to move into permanent employment from casual employment than it is for older workers[15].

The dummy variable "jobseeker" distinguishes between respondents from the two samples included in this analysis, the Population Reference Group and the Jobseekers. The negative effect of being in the Jobseeker sample on transition rates into permanent and casual work is as expected, since this group is disadvantaged with respect to the labour market[16] when compared to the general population. The effect on transitions into permanent work is the larger (and more significant) of the two. However, it appears that transitions from casual to permanent work are not negatively affected by the fact they are from this disadvantaged group.

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[15] Note that we have left full-time students out of the analysis. They probably form a large proportion of the group of young casual workers. One would expect them to move more slowly into permanent work, because they are likely to prefer casual work in combination with their study.

[16] The Jobseeker group comprises those who were unemployed, underemployed (working less than ten hours per week and looking for a job with more hours), discouraged from job search and those not in the labour force but likely to enter the labour force in the near future at the time of recruitment (April-June 1995).

Table 3 also shows that people with a higher education level move into permanent work from unemployment more easily than people with lower education levels. Education has similar, but smaller and often insignificant, effects on the probability of obtaining casual work. Once a casual job has been obtained, the effect of education on the probability of finding a permanent job is nearly non-existent, except for the high positive effect of having a secondary education level.

Years of work experience seem to increase the probability of finding a permanent or casual job, although the effect is not significant. The proportion of time spent looking for work since leaving full-time education has a strong negative effect on the probability of finding permanent and casual employment, with the former effect the largest. The negative effect on the casual worker's probability of finding a permanent job is not significant. People who had a casual job or another type of job (neither casual nor permanent) in the six months before becoming unemployed are more likely to move into casual work. Those who were in a permanent job in the period before unemployment are more likely to re-enter permanent work both from unemployment and casual employment, although the latter is only significant at the 10-percent level. There is no effect on the transition rates of having been both in out-of-work episodes and in employment episodes during the six months before unemployment.

A negative effect resulting from a disability, which impedes employment, is most evident for the transition into permanent work directly from unemployment. The negative effect of disability for casual workers is similar in size (in relative terms), but just below the 10-percent significance level. However, having a disability does not seem to affect the probability of moving into a casual job.

Migrants who arrived in Australia after 1980 are more likely to obtain permanent employment than others. This might be caused by the selection criteria imposed on potential immigrants before being admitted to Australia. This means that those with good labour market prospects, for example people with skills that are scarce in Australia, are more likely to immigrate. People with bad English proficiency skills are less likely to move

into permanent employment directly from unemployment, whereas people with a non-English speaking background only seem less likely to move into a casual job.

People living in capital cities are more likely than people from rural areas or urban centres to move into a permanent job from unemployment and from casual employment. In addition, they seem less likely to move into casual work. This may be explained by the lower levels of 'high-quality' jobs and the importance of seasonal jobs like fruit picking (which are likely to be casual) for rural labour markets. Such jobs are also unlikely to lead to a permanent job.

The duration of the unemployment spell before obtaining a casual job adversely affects the probability of moving from casual to permanent employment, but there is no significant duration dependence for transition rates out of unemployment to permanent or casual work. That is, α_1' and α_2' are not significantly different from zero. This suggests that there is no stigmatisation involved with unemployment. A positive duration dependence for transition rates from casual to permanent employment is found (α_3' equals 0.50). This means that transition rates improve with time after accepting the first casual job. This could be an indication that work experience obtained in the casual job helps to find a permanent job. This is supported by the findings of Dekker (1999) and Alba-Ramíraz (1998), that tenure in the non-regular/temporary job increases the probability of moving into regular/permanent jobs. An alternative explanation is that through their employment casual workers build up a network of people, which can be helpful in the search for a permanent job.

Finally, the unobserved heterogeneity parameters indicate that there is a group of about 34 percent of the sample, who are very unlikely to find a permanent job directly[17]. The same group is slightly more likely to move into casual job and less likely to move into permanent work from casual work. It should be noted that the group less likely to find permanent work probably contains people, who prefer casual work over permanent work and are therefore unlikely to accept a permanent job even if it were available. The fact that the model only has two supports may make it difficult to distinguish between the different types of groups.

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[17] v10' is very large negative and can be driven to -∞ without affecting the likelihood value or affecting the other parameters to a large extent. The exponential of -∞ goes to 0, which means the probability of moving into permanent work from unemployment directly goes to 0.

In further research, we will explore the sensitivity of the model to an extension of the number of supports.

To show the effect of omitting unobserved heterogeneity (and as a result the omitted correlation between the three equations), the models without unobserved heterogeneity are presented in the appendix. Comparing the results of table 3 with those of table A.1, we find that there are considerable differences between the two models. This is in particular the case in the equation for the transition from casual to permanent work (for example the variables on the spouse) and in the duration dependence parameters α_i'.

The results in table 3 suggest that some people might indeed benefit from taking up casual work. The group who is very unlikely to move from unemployment to permanent work directly seems to have a better chance of moving into casual work and then on to permanent work. Even if their probability of moving from casual work into permanent work is not so large at first, the presence of positive duration dependence should improve this probability over time. On the other hand, other people may be better off waiting for a permanent job if the time taken until a permanent job is found is the only criterion.

5.2 Simulated effects

It is difficult to infer directly from table 3 what the effect of taking up casual work is. The effect depends on several factors, such as the characteristics of the unemployed individual, which determine the probability of finding casual and permanent work respectively and the point in time when casual work is taken up. In order, to understand better what the above results imply for the effect of taking up casual work, the results of simulations for the whole sample and for some typical respondents are presented.

Table 4 presents simulated expected values for the difference in duration until finding permanent work through casual work and finding permanent employment directly. The advantage of simulating over just calculating the expected durations is that a simulation accounts for the variability in outcomes of duration given the hazard rate distribution.

Values are repeatedly drawn from the hazard rate distribution for each (typical) person. Within the bounds of a three-year period, we calculate whether taking up casual work

shortens the total duration until permanent work. Durations are bounded to keep the

Table 4 The effect of casual employment on duration until permanent employment for the whole sample and some typical persons

Simulated value for	'duration via casual' minus 'duration direct into permanent work'					
	average in days	negative	positive	zero		
				still unempl.	direct into perm.	casual but not perm.
		%	%	%	%	%
whole sample (100 draws per observation)	-76.3539	20.3	5.8	11.9	29.4	32.6
type A: baseline person[a]	-14.8212	11.0	8.3	0.7	49.8	30.3
type B: men	-114.6983	29.6	2.4	1.1	50.9	16.0
type C: higher educ.	-8.4444	8.0	7.5	0.2	54.7	29.7
type D: no work exp.	19.5719	6.6	11.8	3.3	43.5	34.9
type E: casual before	-29.1941	20.1	15.0	0.8	31.4	32.7
Sole mother[b]	-50.7136	16.3	7.2	6.5	37.5	32.5
Man aged 55[c]	-83.6612	18.8	4.1	18.0	15.8	43.2
Disabled man[d]	-39.6701	14.1	5.2	2.8	49.8	28.0
Disabled man[e]	-44.6879	15.8	8.1	7.1	31.9	37.1
Man with unempl. hist.[f]	-62.1244	21.0	11.5	4.0	25.8	37.7
Single man of 21[g]	-48.5299	16.8	7.9	6.1	35.0	34.2
Man good prospects[h]	3.8849	6.2	8.1	0.0	55.3	30.4

Note a: For each typical person 2025 values are drawn. The base line person (type A) is a woman aged 35, who is a jobseeker, has basic vocational qualifications, 10 years work experience, has never been looking for work since leaving school, was in a permanent job in the 6 months preceding the start of unemployment, is not disabled nor an immigrant, lives in a capital city, has a working partner and no children. Type B is like A, but a man. Type C is like A but more educated, she has a diploma. Type D is like A but without work experience. Type E is like A but was in a casual job in the six months preceding the start of unemployment and not in a permanent job.

b: A sole mother has the same characteristics as type A, but has no partner and one child over five years old. Her total work experience is five years and she was not in a permanent or casual job in the six months preceding the start of unemployment.

c: This man has similar characteristics as the woman of type A, but is older, has 35 years work experience, has been looking for work 5 % of the time since leaving school and his partner is not working.

d: This man has similar characteristics as the woman of type A, but he has a disability that impedes employment and two children with the youngest child between zero and five.

e: This man is similar to the previous disabled man, but he is single, has been looking for work 10 % of the time since leaving school and was not in a permanent job in the 6 months preceding the start of unemployment.

f: This man has similar characteristics as the woman of type A, but he is single, has been looking for work 30 % of the time since leaving school, was in a casual job and in unemployment in the 6 months preceding the current unemployment spell.

g: This man has similar characteristics as the woman of type A, but he is younger, single, has no work experience at all, has been looking for work half of the time since leaving school and had another unemployment spell in the 6 months preceding the current unemployment spell.

h: This man has similar characteristics as the woman of type C, but is 30 years old, has one child between 0 and 5 years old, has 6 years work experience and has a non-working partner.

simulations within the observed time frame. Extending the period beyond that would imply the results can be extrapolated beyond the observed time span.

Comparisons of the time taken to find permanent work were only relevant for those persons who are predicted to move into casual work before permanent work, and then move into permanent work within the three years. We compare the simulated time taken to move into permanent work directly, with the time taken via casual work. For those who had not moved into permanent work via one of the routes within the three-year period, we take the minimum difference. That is "the time taken to go via casual work minus three years" for those who are simulated not to find permanent work via the direct route within the three years. For those who are simulated not to find permanent work via casual work within the three years it is "three years minus the time taken to move into permanent work directly from unemployment". The difference in time taken is set to zero for three types of simulated events:

- if someone is simulated to exit to permanent work before exiting to casual work,
- if someone is simulated to remain unemployed for the three-year survey period, and
- if someone is simulated to move into casual work and not to move into permanent work in the three-year survey period.

The simulations for the whole sample in table 4 show that there is on average a beneficial effect from taking up casual work. Around 20 percent are expected to benefit from taking up casual employment and about 6 percent are expected to be better off in terms of time taken until permanent work if they do not take up casual work. Note that there is an overprediction of people moving into casual and permanent work whereas there is an underprediction of people remaining unemployed. Part of this difference can be explained by the fact that people in the sample have an observation period of between one and three years, whereas the simulation is performed over the full three-year period.

For each typical person in table 4, one characteristic is changed compared to the base line person, type A. For example, type B is a man instead of a woman. From the simulations, one can see that men with working partners are much more likely to benefit from taking up casual work than similar women are. The average value is about ten times as large and it is

expected that in a group of "type A"-people more men will have shorter durations as a result of accepting casual work than in a group of similar women, whereas fewer men will have longer durations as a result of taking up casual work. This difference is possibly caused by the fact that married women are more likely to prefer casual work or alternatively that they prefer jobs in which casual employment is prevalent.

For the typical persons analysed, it seems that women without work experience benefit the least from taking up casual work, followed by women with a higher education level. Women without work experience might need more time than three years to benefit from taking up casual work. This group of women (type D) has the largest number remaining unemployed or in casual work. Higher educated women are more likely to find permanent work directly from unemployment and as a result taking up casual work is less beneficial for them.

Women who had a casual job in the six months before unemployment seemed to benefit most from taking up another casual job. Fewer people in this group move directly into permanent work and a larger number remain in casual work. The fact that a previous casual job resulted in unemployment may indicate the person is someone who is less likely to find a permanent job.

The next six rows in table 4 represent typical persons, who might be particularly disadvantaged in the labour market. Of these persons, older men seem to benefit on average most from taking up casual work. From the large number of older men remaining unemployed or in casual work after three years and the low number moving into permanent work directly, it is obvious that it is very difficult for this group to find permanent work (even through casual work). This is more or less true for single men with a history of unemployment as well. Men with good employment prospects, on the other hand, are unlikely to benefit from taking up casual work.

6   Conclusion

The main empirical result from this analysis is that accepting casual work is beneficial for some unemployed people in their search for permanent work. In particular, disadvantaged

people seem to benefit from taking up casual work. This group is unlikely to find permanent work directly. However if they take up casual work, the positive duration dependence in the transition from casual to permanent work means that the probability of moving into permanent work from casual work improves over time even if it is low to begin with. This makes casual work effective, in particular for those with low probabilities of moving into permanent work directly from unemployment. Notwithstanding the beneficial effect of casual work, disadvantaged people are still much more likely to remain for a longer period in unemployment and in casual work, and are less likely to obtain permanent work.

These results were obtained from models that took into account unobserved heterogeneity in individual transition rates. From other simulations using the estimated models we find, for example, that the benefit of taking up casual work is greater for men, those with more work experience and the less educated. Although certain characteristics are associated with an increased likelihood of benefiting from casual work, the simulations of section 5 show that there is a large variability in outcomes.

From the estimated duration dependence pattern of the transition rate from casual work to permanent work, we infer that casual work seems to provide human capital that is recognised in permanent employment and/or a network of people useful in job search. Transition rates from unemployment into casual and permanent work proved not to be duration dependent. This finding is in line with Chapman and Smith (1993), but seems in conflict with the finding of other Australian researchers that there is negative duration dependence (see for example Brooks and Volker, 1986; Stromback, Dockery and Ying, 1998). However, unlike them we have included a fuller set of explanatory variables, in addition to accounting for unobserved heterogeneity. Excluding these would bias findings towards negative duration dependence.

Plans to extend the model include adding another exit destination to account for casual work with and without intermittent unemployment spells. Alternatively, part-time and full-time casual work could be distinguished in a similar extension of the model to explore the differences between part-time and full-time casual jobs (and the workers in them).

To test the sensitivity of simulations and policy implications to the specification of the hazard rate function and the unobserved heterogeneity terms, we should use a stepwise function instead of the Weibull for the hazard rate and increase the number of support points for the unobserved heterogeneity.

Appendix

List of variables used in the analysis:

Continuous variables

Unemployment duration = duration of unemployment spell.

Casual work duration = duration of first casual work spell and subsequent casual work and unemployment spells until first permanent job.

Age/10 = age of individual at the start of the survey divided by 10.

work experience/10 = years of work experience divided by 10.

% of past looking for work = proportion of time spent looking for work since the individual left full-time education.

no. of children = number of children in the household.

woman*no. of children = interaction term of dummy variable indicating gender and number of children.

Dummy Variables

Jobseeker = 1 if individual is a member of the Jobseeker sample.

Woman = 1 if individual is a woman.

working partner = 1 if the individual has a working partner.

non-working partner = 1 if the individual has a non-working partner.

woman*working partner = interaction term of woman and working partner.

woman*non-working partner = interaction term of woman and non-working partner.

child 0-5yrs = 1 if children between 0 and 5 years old are present in the household.

woman*child 0-5yrs = interaction term of woman and child 0-5yrs.

capital city = 1 if the individual lived in a capital city.

Urban = 1 if the individual lived in a major urban centre.

NESB = 1 if the individual's first language is not English.

english prof. bad = 1 if the individual speaks English badly.

migrated before 1981 = 1 if the individual is an immigrant who arrived before 1980.

migrated after 1980 = 1 if the individual is an immigrant who arrived after 1980.

Disabled = 1 if the individual has a disability which impedes employment.

unemployment within casual = 1 if individual became unemployed again after first casual job.

Highest education level attained

tertiary ed. = 1 if individual has a tertiary degree.

Diploma = 1 if individual has a diploma.

basic vocational = 1 if individual has a basic vocational qualification.

skilled vocational = 1 if individual has a skilled vocational qualification.

secondary ed. = 1 if individual has finished secondary school or has another post-secondary qualification.

Work undertaken during the last six months before the unemployment spell

recent casual job = 1 if individual was in a casual job.

recent permanent job = 1 if individual was in a permanent job.

recent unemployment = 1 if individual was unemployed.

recently nilf = 1 if individual was out of the labour force.

recent other job = 1 if individual was in a job that was neither casual nor permanent.

recent casual and unempl. = 1 if individual was in a casual job and unemployed.

recent casual and nilf = 1 if individual was in a casual job and out of the labour force.

recent permanent and unempl. = 1 if individual was in a permanent job and unemployed.

recent permanent and nilf = 1 if individual was in a permanent job and out of the labour force.

Transitions

into permanent = 1 if individual moved into a permanent job.

into casual = 1 if individual moved from unemployment into a casual job.

Transitions that indicate censored spells

into self-employment = 1 if individual moved into self-employment.

into other work = 1 if individual moved into other employment.

into nilf = 1 if individual moved outside the labour force.

Table A.1 Three-equation hazard rate model without unobserved heterogeneity terms

	From unemployment to permanent work		From unemployment to casual work		From casual to permanent work	
	coefficient	t-value	coefficient	t-value	coefficient	t-value
woman	-0.0228	-0.15	-0.1256	-1.13	-0.0943	-0.47
age/10	0.3920	2.88	-0.0641	-0.63	0.6652	4.27
age squared/100	-0.1478	-5.82	-0.0318	-1.88	-0.1497	-4.55
jobseeker	-0.9685	-4.80	-0.2918	-1.65	0.2704	0.81
tertiary ed.	0.6278	2.99	0.3534	2.24	0.3483	1.18
diploma	0.9301	4.66	0.1468	0.82	-0.0530	-0.13
basic vocational	0.3802	1.63	0.2415	1.56	-0.4130	-1.03
skilled vocational	0.3558	2.21	0.1315	1.22	0.1738	0.80
secondary ed.	0.2809	1.98	0.1366	1.43	0.4445	2.51
work experience/10	0.2222	1.55	0.1380	1.61	0.1898	0.96
woman*workexperience/10	0.0483	0.41	0.0282	0.36	0.2324	1.51
% of past looking for work	-1.3470	-4.70	-0.6765	-3.83	-0.4417	-1.14
recent casual job	0.0539	0.32	0.4116	3.49	0.3392	1.60
recent permanent job	0.4908	2.75	0.0740	0.62	0.1821	0.84
recent other job	0.1418	0.90	0.1733	1.71	0.2118	1.07
recent unemployment	0.0798	0.30	0.0434	0.24	0.0361	0.09
recently nilf	-0.0587	-0.29	-0.2703	-1.89	-0.1517	-0.56
recent casual and unemp.	-0.0484	-0.17	0.0112	0.06	-0.6554	-1.69
recent perm. job and unemp.	-0.1584	-0.60	-0.1709	-1.04	-0.4127	-1.08
recent casual and nilf	-0.1388	-0.59	0.0351	0.23	0.4061	1.44
recent perm. job and nilf	-0.2127	-0.98	-0.0121	-0.08	0.0522	0.18
disabled	-0.3699	-2.44	-0.0594	-0.66	-0.0478	-0.26
migrated after 1980	0.0978	0.49	-0.0181	-0.11	0.1650	0.55
migrated before 1981	0.0029	0.02	0.0570	0.47	0.0797	0.32
NESB	0.2031	1.14	-0.2809	-1.81	-0.1531	-0.49
English prof. bad	-0.4719	-1.75	0.0054	0.02	0.2836	0.69
capital city	0.3386	1.91	-0.1986	-1.91	0.3455	1.62
urban	0.1021	0.55	-0.0998	-0.95	-0.0568	-0.26
working partner	0.1363	0.59	-0.1027	-0.62	0.3448	1.10
woman*working partner	0.0529	0.18	0.2434	1.19	-0.6139	-1.53
non-working partner	-0.5613	-2.42	-0.0485	-0.33	0.2570	0.90
woman*non-wrk. partner	0.0471	0.11	-0.4902	-1.70	-0.7512	-1.12
no. of children	-0.0071	-0.07	0.0347	0.55	-0.1017	-0.85
woman*no. of children	-0.2488	-1.75	-0.0188	-0.22	-0.1517	-0.80
child 0-5yrs	0.0903	0.34	-0.2684	-1.51	-0.3318	-0.93
woman*child 0-5yrs	-0.4093	-1.16	0.0869	0.39	0.3889	0.76
unemployment duration					-0.0013	-2.73
constant	-6.7618	-13.85	-5.0885	-14.94	-8.6595	-12.10
$(\alpha_1', \alpha_2', \alpha_3')$	0.0829	2.02	-0.0673	-2.36	0.0664	1.07

Number of obs = 2017

Log likelihood = -11525.805

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