

Dynamic Properties of Income Support Receipt in Australia

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Executive Summary

- Using the LDS 1% sample spanning the period January 1995 to June 2002, we examine dynamic properties of income receipt of persons aged 15-64 years, drawing on the following three concepts:
 1. Churning – the process of ending a spell on income support and subsequently commencing a new spell on income support.
 2. Transferring – moving from one payment type to another within a spell on income support.
 3. Total proportion of *Time On* income support (TTO) – the proportion of time on income support in a given period.
- Churning is an important feature of income support receipt in Australia. For example, over one in six income support recipients churn within one year of commencing a spell on income support, and 55% churn within five years of commencing a spell. Repeated churning within short to intermediate time frames is not a common occurrence, however. Less than 2% of income support recipients churn more than once within a year of commencing a spell on income support, and even within five years of spell commencement, less than one-third churn more than once.
- Transferring is less widespread than churning, at least within five years of commencing a spell on income support. Nonetheless, a significant proportion of recipients do transfer between payment types. For example, over one-fifth of recipients transfer from one payment type to another within five years of commencing a spell. Similar to the findings for churning, most recipients who transfer do so only once within the time-frames we examine.
- Transfers to (work) activity-tested payments might be regarded as movements towards (re)integration into the labour market, while transfers from activity-test to non-activity-tested payments may represent a movement towards long-term welfare reliance. We find that one-fifth of all transfers are of the former kind, and one-third of the latter, while the remainder are transfers from one non-tested payment to another.
- Investigation of interactions between churning and transferring suggests there is a negative relationship between the two: transferring makes churning less likely, and vice versa.
- Recipients whose initial payment type is unemployment payments have the highest rate of churning. This is consistent with expectations, since this is the only payment type subject to the work activity-test, and recipients are likely to be more closely engaged with the labour market. Interestingly, parenting payment recipients also have high rates of churning. Transferring is highest for recipients of short-term allowances other than unemployment benefits.
- The association between churning and transferring behaviour and the extent of reliance on income support is examined using the TTO measure of reliance. Transferring is associated with the highest TTOs, possibly implying transferring tends to involve a move to long-term reliance. Churning is not associated with any particular level of reliance on income support, with churners very evenly distributed across almost the entire spectrum of TTO levels. Those who neither churn nor transfer split into two camps: those with a single, very short spell on income support, and those with a single, very long spell (most commonly still in progress at the end of the observation period).

- We also directly investigate the implications of transferring for length of stay on income support by presenting, by type of transfer, the mean TTO in the year following the transfer. TTOs are very high following all types of transfers, but it is notable that the mean TTO for transfers from non-activity-tested to activity-tested payment, at 80%, is significantly lower than the mean TTO for other transfers, which is approximately 94%.
- Examination of the payment type destinations of churns shows that unemployment benefits are the post-churn payment type destination for nearly three-quarters of churns. By contrast, the payment type destinations of transfers are more evenly distributed, although it is notable that parenting payments (single and partnered) are the destination for over one-third of transfers. Most transfers involving parenting payments are between Parenting Payment Single and Parenting Payment Partnered. Also significant is that one-third of transfers from unemployment payments are to the Disability Support Pension.
- Reasons for transfers can in many cases be inferred from differences in payment type eligibility criteria and by changes in family circumstances recorded in the administrative data. We find 16% of transfers attributable to ageing (none of which would be due to movements of males on to the age pension because of our sample selection rules), 18% are (directly) attributable to changes in health, and 38% are attributable to changes in family status (in terms of the presence of a partner and/or dependent children). The majority of the remainder of transfers are between unemployment benefits and other short-term allowances.
- We estimate multinomial logit models to investigate the determinants of churning and transferring behaviour in the three years following commencement of a spell on income support. Five outcomes are distinguished:
 1. Neither churn nor transfer, and TTO is less than 50%
 2. Neither churn nor transfer, and TTO is greater than or equal to 50%
 3. Transfer only
 4. Churn only
 5. Both churn and transfer
- Major findings include:
 - The probability of churning is decreasing in age. For males, we also find that the probability of transferring is increasing in age, while the probability of a single short spell (outcome 1) is decreasing in age.
 - Compared with single men, coupled men are much less likely to churn, irrespective of whether or not the partner is on income support at commencement of the observation window. However, there are important differences between coupled men depending on whether the partner is also initially on income support. Having a partner who is on income support is associated with a higher probability of transferring, whereas having a partner who is not on income support is associated with a substantially higher probability of a single short spell and a lower probability of a long spell on a single payment type. Thus, partnering with a woman who is not on income support appears to decrease the likelihood of long-term welfare receipt, compared with either of the alternatives (remaining single or partnering with a woman on income support).
 - For females, commencing a spell with a partner who is not on income support is also associated with better outcomes in the aggregate. This is because, although the probability of transferring-only is higher than when there is no partner, this is more than outweighed by the decrease in the probability of a single long spell, such that there is a 0.055 increase in the probability of a single short spell on one payment

type. Commencing a spell on income support with a partner also on income support is, like males, associated with a relatively high probability of transferring.

- The presence of dependent children appears to have little impact on churning and transferring behaviour for males or females. That this should be the case for females is somewhat surprising, but possibly derives from the inclusion of initial payment type variables. In particular, a female with dependent children will generally commence on a parenting payment, whereas a similar female without dependent children will generally commence on unemployment benefits.
- An exception to the absence of an impact of dependent children is that females who initially have one or more dependent children, the youngest of whom is at least 13 years of age, have significantly different churning/transferring outcomes than females without dependent children. Compared with females without dependent children, they have a higher probability of transferring, and a lower probability of a long spell on one payment type. This effect reflects ineligibility for parenting payments arising from the youngest child reaching 16 years of age.
- Variables included for initial payment type show individuals who commence a spell on unemployment benefits have a comparatively high probability of single short spells, low probability of single long spells and high probability of churning. Male recipients initially on parenting payments have higher probabilities of transferring (including both churning and transferring) than those initially on unemployment benefits. Somewhat surprisingly, however, females do not have the same pattern of a higher probability of transferring associated with parenting payments.
- Increasing the proportion of the fortnights on income support in which an individual has positive earnings raises the probability of a single short spell and lowers the probability of being in other outcome categories. This is consistent with intuition, since a higher proportion of fortnights with earnings is indicative of greater engagement with the labour market. Interesting, however, is that increasing the average amount of earnings per fortnight in which earnings are positive *lowers* the probability of a single short spell.
- Past churning and transferring behaviour is associated with large effects on individuals' current churning and transferring behaviour, a finding that holds for both males and females. However, it is not simply a matter of current behaviour replicating past behaviour. *Any* recent history of income support receipt is associated with a reduced probability of a single short spell (the most desirable outcome, given a person does receive income support), and an increased probability of churning and/or transferring.

1. Introduction

The dynamic properties of income support receipt are a fundamental dimension of income support receipt behaviour, understanding of which forms a crucial preliminary step to the formulation of appropriate welfare policy. In this context, the current study seeks to further our understanding of the dynamic properties of reliance on income support and the factors that affect these properties. The term ‘dynamic properties’ refers to inter-temporal patterns of receipt of income support – that is, the relationship between receipt of income support by an individual and the passage of time. Dynamic properties of income support include features such as:

- Length of spells on income support
- Frequency of spells on income support
- Movement between payment types
- Interactions between length of spells, frequency of spells and movement between payment types

To examine these features, we utilise the concepts of ‘churning’ and ‘transferring’, as well as drawing on the *Total proportion of Time On payments (TTO)* measure of the extent of reliance that was employed in Tseng and Wilkins (2002). Churning occurs when a person exits and then re-enters income support receipt, while transferring occurs when a person on income support moves from one payment type to another. Measures based on the concepts of churning and transferring, when used in conjunction with TTO measures, can be used to uncover most of the dynamic features of income support receipt that are likely to be of policy interest. For example:

- High rates and levels of churning indicate high levels of income support receipt ‘recidivism’.
- Differences in eligibility requirements across payment types mean that transferring provides information on changes in health, family status and labour market engagement of recipients.
- A high level of churning and a low TTO implies a high frequency of short spells.
- A low level of churning and a high TTO implies few, but long spells.
- If transferrers have a higher TTO than non-transferrers, we might infer transferring leads to more entrenched welfare reliance.

The fundamental motivation for the study is that it is important to understand not only the total extent of reliance on welfare, but also the form or nature of that reliance. For example, with respect to churning, long spells followed by sustained exit have different policy implications to frequently recurring short spells. Similarly, understanding the prevalence and nature of movements between payment types, including whether movements are associated with increased

or decreased likelihood of exiting income support receipt, is also important to policy formulation. Given understanding of the relationships between churning, transferring and reliance, it is then also valuable to identify the characteristics associated with churning and transferring – that is, who are most at risk of churning and/or transferring.

Based on the motivations for the study, and utilising the concepts of churning and transferring, the specific questions this paper seeks attempts to answer include:

- What is the prevalence of churning and transferring?
- What is the extent of churning and transferring among churners/transferrers?
- What is the relationship between churning and transferring?
- How does churning and transferring depend on payment type – specifically, what types of payments are prone to churning and transferring?
- What relationships are there between churning and transferring behaviour and the extent of reliance on income receipt, and do they vary between (initial) payment types?
- What are the popular payment-type routes of churners and transferrers? Are there any underlying characteristics and/or other explanations for such popular routes?
- What are the characteristics of churners and/or transferrers?
- How does an individual's history of income support receipt impact on churning and transferring behaviour?

These lines of inquiry facilitate understanding of the dynamic properties of income support receipt, the implications of different patterns for the extent of reliance on income support, and also the characteristics associated with different dynamic patterns.

The analysis undertaken to investigate these questions comprises both descriptive and multivariate regression components. The descriptive analysis first presents information on the distribution of churning and transferring, including distributions conditional on payment type and year of spell commencement. It then presents TTO estimates by churning and transferring status, also examining these conditional on payment type and year of spell commencement. Pathways of churning and transferring in terms of payment types received are examined, and the potential role played by changes to family structure in affecting churning and transferring is also investigated. The descriptive analysis does not explore in detail how the dynamic properties of IS receipt depend on personal characteristics, since the econometric analysis undertaken in Section 4 is much better suited to investigation along these lines. Not only can regression analysis provide information on the effects of characteristics, *holding all other observed characteristics constant*, but the volume of statistics would also become excessive if extensive

descriptive analysis by personal characteristics was undertaken. Consequently, churning and transferring is examined by sex and age group, but not by any other characteristics.

The multivariate analysis consists of probit and logit analysis of churning and transferring. This analysis provides information on the factors associated with churning and transferring. Factors examined include sex, age, payment type (including whether the payment type is activity-tested) and income support payment history (including past churning and transferring behaviour).

Previous research

Most studies of the dynamic properties of welfare reliance, both in Australia and internationally, focus on either explaining spell duration (e.g. Barrett, 2000) or measuring ‘state dependence’, which is essentially the extent to which welfare receipt itself makes future receipt more likely, independent of factors that led a person to be on welfare in the first place (e.g. Chay et. al., 1999 and Gong, 2004). These approaches do not provide information about a number of important dimensions of welfare receipt, including which individuals move on and off welfare frequently and the paths welfare recipients take in terms of payment types. As discussed, these dimensions are important for understanding the nature of welfare receipt.

Two Australian studies do take an approach more consistent with the current approach: Dawkins et. al. (2000) and Kumar and De Maio (2003). Kumar and De Maio focus on mature age allowance recipients. They classify recipients into four groups according to their number of spells and average length of spells and investigate the characteristics associated with being in each group. The study by Dawkins et. al. (2000) is the closest in spirit to the current paper. The authors examine the extent to which churning is a feature of income support receipt, using FaCS administrative data spanning the period July 1995 to June 1999. The authors also investigate the determinants of churning for unemployment benefit recipients and the relationship between repeated spells on unemployment benefits and total time on payments.

The contributions of the current paper to the existing research, and in particular to Dawkins et. al. (2000), are several. First, we adopt a unified framework for investigating dynamic properties of income support receipt that incorporates an important dynamic property – transferring between payment types – ignored by previous studies. Second, we include all working-age income support recipients in all of our analysis, including the analysis of the determinants of churning and transferring. Third, compared with Dawkins et. al. (2000), we have available a significantly longer time frame – seven years compared with four years – which facilitates investigation of dynamic patterns of individual receipt over longer periods. For example, this

time frame allows us to model three-year dynamic patterns for all individuals who commenced a spell between July 1997 and June 1998, and for all of these individuals investigate the effects of two-year payment *history*.

The arrangement of the paper is as follows. Section 2 describes the data and sample selection criteria, as well as providing details on resolution of issues with respect to defining spells and measuring churning and transferring. Section 3 provides a descriptive analysis of churning and transferring behaviour, including examination of their relationship to the extent of reliance on income support and investigation of payment-type destinations and family situation dynamics of churners and transferrers. Section 4 presents results of multivariate analysis of the determinants of churning and transferring, and Section 5 concludes.

2. Data, sample selection and definitional issues

Data

The dataset used is derived from Centrelink payment administration records, and comprises a one per cent sample of all individuals who received income support or non-income support payments at any stage during the period 1 January 1995 to 30 June 2002. Income support and non-income support payments are paid on a fortnightly basis, and consequently that is the periodicity of the data. Specifically, the data are structured as a panel dataset (a time series of cross-sectional data), whereby each observation comprises information on a single individual in a single fortnight, and the number of fortnights an individual received income support or non-income support payments in the sample period is the number of observations available for that individual. Each observation comprises 235 data items, which contain payment details (such as payment types, duration on benefits and activity-test requirements) and information relevant to determining payment eligibility (such as sex, date of birth, marital status, number and ages of dependent children, value of assets and current income from employment).¹

The population examined consists of persons aged 15-64 years who commenced a spell on income support in the period 1 July 1995 to 30 June 2001.² Although the LDS sample period

¹ See the LDS 1% Sample User Documentation for SAS Format, Version 2.1 (produced by Longitudinal Data Section 22/8/03) for full details of the dataset.

² The period 1 January 1995 to 30 June 1995 is excluded because of some concerns over data quality and its comparability with the remainder of the LDS sample period. Specifically, there is a concern over the sampling process in the first half of 1995, with a large jump in the number of recipients commencing spells in the fortnight commencing 23 June 1995 evident. Moreover, the payment type 'Partner allowance' contained people with dependent children up until June 1995, after which such people were treated as on the 'Parenting Payment Partnered' payment type. It is not clear whether children details are sufficiently reliable to use as a proxy for recoding 'Partner Allowance' to 'Parenting Payment Partnered'.

runs to June 2002, persons for whom the first spell commenced after 30 June 2001 are excluded because the outcomes we examine require at least one year of income support receipt information following commencement of the first observed spell. In contrast to the study by Tseng and Wilkins (2002), we focus on *individual* receipt of income support rather than income unit (or family) receipt. This decision is primarily driven by the dataset, which for the incarnation of the LDS 1 per cent sample used in this paper does not allow identification of income support receipt of the income unit for all persons at all times.

The restriction of the age range examined to 15-64 year olds means that individuals who commenced their first income support spell in the data period at the age of 65 years or older are dropped from the sample. To focus on dynamic patterns associated with receipt by working-age persons, we furthermore exclude persons who turn 65 years of age in the period being examined in order to abstract from payment type transitions associated with moving on to the age pension. This sample restriction depends on the length of the period examined (which is varied in this study). For example, examination of patterns of receipt over one year following spell commencements requires exclusion of persons aged 64 or more years at spell commencement; whereas examination of receipt over five years following spell commencement requires exclusion of persons aged 60 or more years at spell commencement.

Prior to the creation of Centrelink in 1998, payments to full-time students (Austudy) were administered separately to other welfare payments, a consequence of which is that FaCS' administrative database does not contain payments to students prior to 1998. To be consistent across the entire sample period, full-time students receiving Youth Allowance, Youth Training Allowance or Austudy are treated as off all income support payments. In practical terms, this is achieved by excluding from the sample fortnights in which a full-time student was receiving one of these payment types. Similarly, the focus on income support receipt means that fortnights in which an individual was only receiving non-income support payments are also excluded from the sample.

Definition of income support spells

Central to the analysis of the dynamic properties of income support receipt is the definition of a spell on income support – that is, when a stay on income support is deemed to have begun and when it is deemed to have ended. A straightforward approach would be to define a spell start to occur when a fortnight off income support is followed by a fortnight on income support, and to define a spell end to occur when a fortnight on income support is followed by a fortnight off

income support. There are, however, reasons for preferring alternative criteria for defining spells. First, the dataset used is drawn from administrative records, and it is likely that short-term (one or two fortnight) breaks in payments are often connected to payments administration – for example, failure by the recipient to lodge a form correctly or on time.

Second, and perhaps more important, is the view that exit from payments for one or two fortnights is not a sufficient period of time to be regarded as a spell end. While the decision on what constitutes a sufficient passage of time before a spell is deemed to have ended is ultimately arbitrary, this notion is actually contained in the Social Security Act (SSA) 1991 (Section 38B on ‘Notional continuous period of receipt of income support payments’). According to the SSA 1991, for administrative purposes a spell is defined to be a stay on income support in which the longest break in payments is 6 weeks in the first 12 months of the stay on payments, and 13 weeks thereafter. Thus, under the SSA 1991, it is possible to have breaks in payment receipt within a spell, with the maximum break before one spell is deemed to have ended and a new one commenced dependent on the length of the spell.

For the purposes of this study, it is important that the spell definition not depend on the length of the spell, so that measures of dynamic properties of receipt are invariant with respect to spell length. For example, whether a given break from payments is deemed to constitute churning or an unbroken spell should not depend on the length of the spell at the time of the break in payments. Nonetheless, in the absence of a more compelling basis, we do use the SSA 1991 as the basis for defining spells, but use only the 6 week rule. Thus, we define a spell end to occur if a person goes off income support payments for 3 consecutive fortnights (irrespective of spell length). Correspondingly, a spell starts in a given fortnight if an individual is on income support payments in that fortnight and was off income support payments in the three preceding fortnights.

An implication of this spell definition is that a spell is ‘left-censored’ – meaning the date of spell commencement is not known – if a person is first observed on income support in any of the first three fortnights of the data period. Similarly, a spell is ‘right-censored’ – meaning the date of the end of the spell is unknown – if a person is last observed on income support in any of the last three fortnights of the sample period.³

³ Given our restriction to the period after June 1995, left-censoring does not in fact arise in our sample.

Definition of churning

Churning is defined to occur in a given period if a person completes a spell on income support and subsequently commences a new income support spell within that period. Given the definition of spells adopted, a churn occurs only if a person goes off income support payments for at least three fortnights. Implicit in the notion of churning is the idea of failure to completely escape reliance on income support, suggesting there should perhaps also be an *upper* bound on the break in income support payments. To give an extreme example, a person who goes off income support payments at age 15 and does not again receive income support until age 64 is unlikely to be considered a churning. The choice of upper bound is, however, ultimately arbitrary. We choose a fairly conservative upper bound of five years, meaning that entry onto income support within five years of ending the last spell is classified as churning. This is likely to capture all repeat spells regarded as churning, and probably a number of repeat spells that many people would not regard as churning.

The number of churns in a period is therefore equal to the number of ‘completed’ breaks in payments of between 3 and 130 fortnights. In most cases, the number of churns will be equal to the number of spells in the period minus one.

Definition of transferring

Two candidate definitions of transferring were considered:

1. Transferring occurs when a person moves from one payment type to another, with no break in payments (within-spell transfers).
2. Transferring occurs when a person moves from one payment type to another, whether or not the movement involves a period off payments (within and between spell transfers).

We have adopted the first definition for most of the analysis we undertake in this study. This is because it would seem to better capture the notion of moving between payment types that we have in mind, which is that transferring is a change in payment types that does not involve churning.⁴

An important requirement for defining transferring is to classify payment types. At one extreme, any two payment types with different names may be regarded as different payment types – so that even a name change for a payment type will be treated as a transfer for those who remain on

⁴ As an indication of the difference between the two definitions, 15.6 per cent of all churns in the period July 1995 to June 2002 involve a change in payment type.

the payment. At the other extreme, all income support payments could be regarded as one payment type. A sensible classification of payment types for the purposes of identifying transfers will lie somewhere between these two extremes. We choose to adopt a classification system whereby payment types are grouped together only if the nature of the benefits is very similar, with the emphasis being on similarities in eligibility criteria. However, we also group together some payment types with very small numbers of recipients, despite differences in eligibility criteria. This classification of payment types results in eleven different payment types. Details of the income support payments included in each of the payment type categories are provided in Appendix 1, which labels this classification of payment types ‘level 3’, to distinguish it from two other classifications of payment types used in this paper.

In addition to examining all transfers, we also examine the type of transfer by distinguishing between payment types subject to work activity tests and payment types that do not have these tests. Appendix 1 represents this as a ‘level-1’ classification of payment types. It essentially separates unemployment benefits from all other payment types, and allows us to characterise a transfer as one of three types: a movement from an activity-tested to a non-activity-tested payment type, a movement from a non-activity-tested to an activity-tested payment type, and a movement from a non-activity tested payment type to another non-activity-tested payment type (between non-activity-tested payment types transfer).⁵

The view motivating this characterisation of transfers is that the nature of the transfer differs in an important way across these three types: the first represents a move towards integration into the labour market, the second a move in the opposite direction and the third a ‘sideways’ movement with respect to joining the labour market. Thus, this classification of payment types can be used to examine the fundamental issue of whether transferring tends to be a stepping stone to moving off income support (movements from non-activity tested to activity tested payments) or movement towards more entrenched reliance on income support (movements from activity tested to non-activity tested payments), or neither (movements between non-activity-tested payments).

⁵ No within activity-tested payment type transfers are possible given the level-1 classification of payment types. Note that references in this paper to activity tests mean *work* activity tests. Thus, this does not include requirements of students to be enrolled in full-time education to maintain eligibility for Youth Allowance (student education) and Austudy (who are, in any case, dropped from the sample).

Churning and Transferring Measures

Churning and transferring measures are constructed for an income support recipient by identifying the date of commencement of the first spell on income support in the period being examined, and counting the number of churns/transfers in the t fortnights following that date. We hold t (the ‘observation window’) constant across persons in the sample in order to produce consistent measures of churning and transferring across persons. To illustrate how this approach generates consistent measures, consider an alternative approach, which is to examine the number of churns/transfers in a given period of time of all persons who commenced a spell on income support in that period. Under this approach, a person may have fewer churns/transfers than another person simply because his or her first spell on income support commenced later in the period under study, rather than because patterns of receipt actually differ following commencement of a spell on income support.

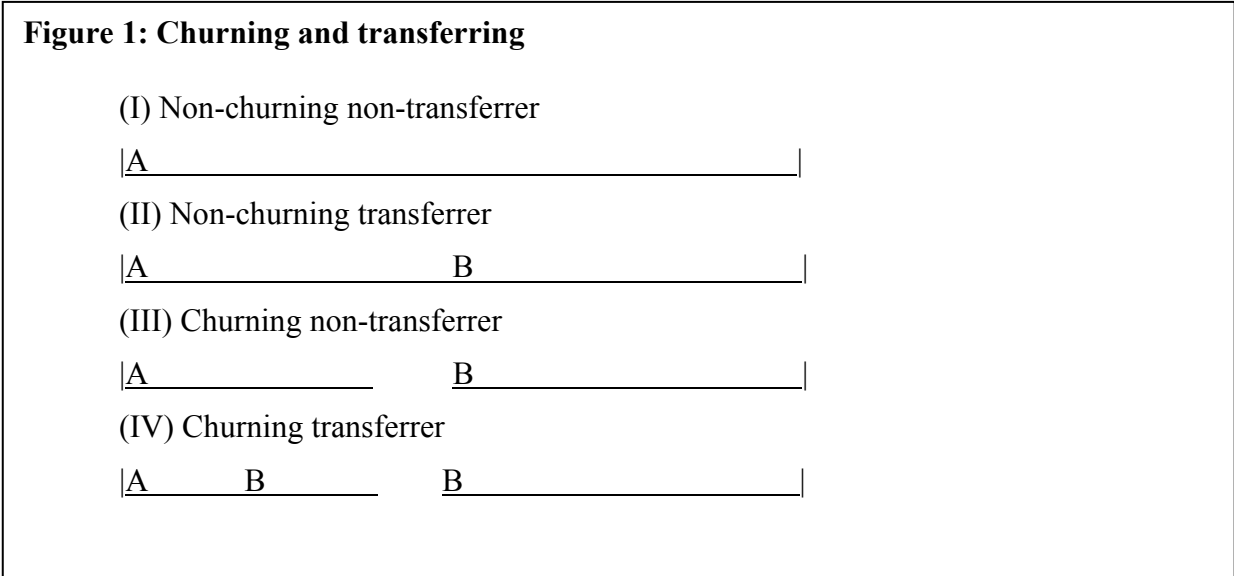
Churning and transferring measures will in general be sensitive to t , which determines the span of time from commencement of the first spell over which we examine churning and transferring. We produce churning and transferring measures for three observation windows: one year ($t = 26$), two years ($t = 78$) and five years ($t = 130$). The one-year window produces measures of short-term dynamic properties of income support receipt, the three-year window produces intermediate-term measures, and the five-year window produces longer-term measures. Although we are conceivably interested in patterns of income support over longer time-frames than five years, the seven-year span of the LDS data is a constraint in this regard. Even with the five-year window, we are limited to studying persons whose first spell commenced prior to June 1997.

For each of the above three windows, we examine both the incidence and level of churning and transferring – that is, whether an individual churns/transfers, and the number of times an individual churns/transfers. Associated with identifying the incidence of churning, a person is classified as a churner for a given period if that person churned at least once during that period. Similarly, a person is a transferrer if he or she transferred between payment types at least once in the period.

We also examine the interaction between churning and transferring by identifying the incidence of four outcomes: neither churns nor transfers (‘non-churning non-transferrer’); does not churn but does transfer (‘non-churning transferrer’); churns but does not transfer (‘churning non-transferrer’); and both churns and transfers (‘churning transferrer’). Figure 1 presents a diagrammatic illustration of the four groups. Periods on income support are defined by

horizontal lines, with gaps corresponding to payment breaks (of at least three fortnights). The letters A and B denote payment types, with a new letter indicating a different payment type from that point forward. The vertical line at the left edge represents the point of commencement of the first spell in the observation period, and the vertical line at the right edge represents the end of the observation window. The distance between these two vertical lines is the same for all persons, since the period of observation from date of commencement of the first spell is held constant across all individuals.

Note that in Case (III), although the individual moves from payment type A to payment type B, this movement between payment types does not constitute a transfer. This is because it does not occur within a spell. As noted above, our preference is to restrict the definition of transfers to within-spell movements between payment types. According to this definition, a movement between payment types is either a transfer (no break in payment spell) or a churn (a break in payment spell), but not both. However, we do also present descriptive analysis (Table 9) contrasting churning that involves a change in payment type (a ‘transferring churn’) with churning that does not.



Note that Figure 1 provides only a stylistic presentation of churning and transferring. In practice, there can be substantial variety in the number and timing of churns within groups (III) and (IV) and in the number and timing of transfers within groups (II) and (IV). Also important is that there can be substantial variety in the total time on income support for all four groups. For example, for non-churning non-transferrers, total time on payments could vary from one

fortnight to the total observation window. The implication is that it is therefore valuable to investigate the relationship between churning, transferring and TTO measures of reliance.

Unit of analysis for measuring churning and transferring

An important issue arises in the analysis of dynamic properties of income support receipt is the appropriate ‘unit of analysis’, or, to put it another way, the appropriate definition of an ‘observation’. In essence, the issue is whether to use the *individual* or the *spell* as the unit of analysis. If the individual is the unit of analysis, then the number of observations in the period under study is equal to the number of individuals commencing a spell on income support in that period. If the spell is the unit of analysis, then the number of observations in the period under study is equal to the number of spells commenced in that period. That is, for each new spell commenced in the period under study, we follow the income support receipt behaviour in the t fortnights following commencement. This means that a person commencing more than one spell in the period will contribute more than one observation. For example, an individual commencing two spells in the period will be followed twice for t fortnights, once from commencement of the first spell, and once from commencement of the second spell.

For the analysis we undertake by financial year, we choose the individual as the unit of analysis. Thus, an observation is generated for each individual who commenced a spell on income support in the relevant financial year. The observation window for each individual is the t fortnights following the date of commencement of the individual’s first spell in that financial year.

However, for the analysis of pooled samples, that is, where we examine the entire LDS sample period at once, problems arise with this approach – namely, we obtain observations towards the end of the LDS sample period only for individuals with no recent income support payment history. This will tend to bias the sample towards relatively over-representing persons with no payment history.

To illustrate the nature of this problem, consider the case where we examine patterns of receipt in the three years following an individual’s first spell commencement in the LDS sample period (so the period being examined is the entire eight-year LDS sample period and $t = 78$). In this situation, income support receipt behaviour towards the end of the LDS sample period will only comprise individuals with no income support receipt in the early stages of the LDS sample period. For example, income support receipt behaviour examined in a three-year observation window from 1999 to 2001 will only be for individuals who did not receive any income support payments in the period 1995 to 1998.

This issue does arise even in the analysis by financial year, but is not of significant proportions in this case because we ‘start the clock running’ only from the beginning of the relevant financial year. That is, for a given financial year, our population is all individuals to commence a spell on income support in that financial year, so individuals with spells on income support in previous years are included. The potential for bias from this source is therefore very limited for the analysis by financial year. For the pooled analysis, by contrast, the bias is likely to be quite significant.

As noted, an alternative to using the individual as the unit of analysis is to use the spell as the unit of analysis, whereby each spell commencement in the period examined enters as a separate observation. However, the problem that arises with this approach is that it will give excessive weight to churners, who by definition have more spells than non-churners.

For the pooled analysis, we therefore adopt an observational unit that is a mixture of individual- and spell-based. Specifically, *a separate observation is generated for an individual in each financial year that a spell is commenced* (and for which the full observation window t is available). That is, we follow an individual for the t fortnights following that individual’s first spell commencement in each financial year. Consequently, an individual can appear as more than one observation, with the number of observations for that individual equal to the number of financial years in the period that she commenced a spell on income support. For example, an individual who commences spells in January 1996, May 1996 and August 1998 contributes two observations: income support receipt behaviour in the t fortnights following commencement of the first spell and income support receipt behaviour in the t fortnights following commencement of the third spell.

While our approach does not completely eliminate either source of bias – that due to under-representation of persons with a recent history of income support receipt and that due to over-representation of churners – we believe it represents a reasonable compromise, given the trade-off between the two that exists. Furthermore, a key advantage of this approach is that the rule for generating an observation is the same for the pooled analysis as that used for the analysis by financial year, making estimates readily comparable irrespective of length of the period being examined.

3. Descriptive analysis of churning and transferring behaviour

In this section we present a descriptive analysis of churning and transferring behaviour, attempting to characterise dynamic behaviour and its implications for the extent of reliance on

income support. We furthermore investigate the dynamic paths of income support receipt in terms of payment types, as well as the extent to which changes in payment receipt are connected to changes in family structure, health changes and ageing. We also present a brief analysis of differences in churning and transferring patterns by sex and age group.

Table 1 provides some preliminary information on the number of recipients of income support aged 15-64 years, presenting the average number of recipients at any one point in time in each financial year. Because the sample represents one per cent of income support recipients, estimates of the total number of recipients can be obtained by multiplying by one hundred. For example, the LDS 1% sample has an average number of recipients in each fortnight of the 1995-96 financial year of 24,336, corresponding to 2,433,600 recipients in the entire population. The estimates imply there has been little change in the average number of income support recipients in each fortnight over the LDS sample period, with the total number on income support 2,463,700 in an average fortnight of 2001-02, compared with a high of 2,491,900 in 1997-98 and a low of 2,433,600 in 1995-96.⁶

Table 1 also presents the proportion of recipients on each of seven payment types, to provide an indication of the relative significance of each payment type. This classification of payment types is used in all of the subsequent descriptive analysis that investigates differences across payment types. It follows the level-3 classification used to define transferring, but further groups together some payment types – specifically, various ‘mature-age’ payments are combined into one group, while miscellaneous short-term payments are combined into another group.⁷ Appendix 1 refers to this grouping as the level-2 classification of payment types and contains details of the income support payments included in each category, and how this classification system relates to the level-1 and level-3 groupings.

⁶ Recall that these estimates do not include full-time students receiving Youth Training Allowance, Youth Allowance or Austudy.

⁷ The label ‘mature age payments’ is not completely accurate, since this group includes payment types not exclusively available to mature-age persons, but is nonetheless used because it accurately characterises most recipients.

Table 1: Average number of recipients of income support payments at any one point in time, and proportion of recipients on each payment type – Persons aged 15-64 years

| | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-00 | 2000-01 | 2001-02 |
|--|---------|---------|---------|---------|---------|---------|---------|
| <i>Average no. of income support recipients in each fortnight</i> | 24,336 | 24,869 | 24,919 | 24,893 | 24,395 | 24,414 | 24,637 |
| <i>Average proportion of recipients on each payment type in each fortnight (%)</i> | | | | | | | |
| Unemployment Benefits | 33.8 | 34.0 | 33.8 | 32.9 | 30.5 | 29.0 | 28.9 |
| Other Short-term Allowances | 2.5 | 1.4 | 0.9 | 0.8 | 0.9 | 0.9 | 1.0 |
| Parenting Payment Partnered | 8.4 | 9.3 | 9.1 | 9.0 | 8.8 | 8.8 | 8.0 |
| Parenting Payment Single | 13.4 | 13.7 | 14.1 | 14.6 | 15.7 | 16.6 | 16.9 |
| Disability Support Pension | 19.7 | 20.3 | 21.4 | 22.6 | 24.4 | 25.1 | 26.0 |
| Mature Age Payments | 14.1 | 13.1 | 12.7 | 12.6 | 12.6 | 12.5 | 12.6 |
| Age Pension | 8.2 | 8.2 | 7.9 | 7.5 | 7.1 | 7.1 | 6.7 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

The largest payment type by recipient numbers at any one point in time is unemployment benefits (UB), although the gap to the next largest payment type, Disability Support Pension (DSP), has narrowed dramatically over the seven-year period. In 1995-96, in an average fortnight, 34 per cent of recipients were on UB and 20 per cent were on DSP. By 2001-02, the corresponding figures were 29 and 26 per cent. Some of the growth in DSP receipt may reflect closing off of other pensions, since the ‘mature age payments’ payment type had recipients at any one point in time fall from an average of 14.1 per cent in 1995-96 to 12.6 per cent in 2001-02. The increase in the minimum age of eligibility for the age pension for females from 60 to 62 over the period may also have contributed to the increase in DSP receipt. Associated with the increase in the minimum age of eligibility, recipients of the age pension declined from 8.2 per cent of all income support recipients to 6.7 per cent.⁸ A further significant payment type is Parenting Payment Single (PPS), growing from 13 per cent of recipients in an average fortnight of 1995-96 to 17 per cent in 2001-02.

Overview of churning and transferring behaviour

Whether churning is to be regarded as undesirable to some extent depends on the perspective adopted. On the one hand, a churner may be viewed as a person who cannot permanently escape reliance on income support, perhaps because that person is only able to obtain short-term employment. On the other hand, a churner could be viewed as someone who is not permanently trapped on income support – that is, churning is preferable to never exiting income support receipt at all. This notwithstanding, it is nonetheless reasonable to characterise churning as sub-

optimal, although the significance accorded the issue depends on both the prevalence of churning and the extent of welfare reliance of churners. These are empirical questions, the first of which this subsection seeks to answer. The latter question is investigated in the following subsection.

The implications of transferring are more ambiguous. Transferring between payment types may represent a step towards exiting income support, or a step towards more entrenched reliance on income support. As with churning, it is therefore important to examine both the extent to which transferring occurs and the relationship between transferring and the extent of reliance on income support.

Considering first churning, Table 2 presents descriptive information on the incidence and level of churning in each observation window, by financial year. That is, in each financial year, the date of commencement of first spell is identified for all individuals who commenced a spell on income support in that year. The churning behaviour of the individual is then observed for t fortnights (T years) from that date. Thus, an ‘observation’ is an individual who commenced a spell on income support in the relevant financial year.⁹ The upper panel of Table 2 gives the incidence of churning, equal to the proportion of individuals who commenced a spell in the relevant period who churned within the observation window. For example, among those who commenced a spell in 1995-96, 18 per cent churned within one year of commencement of the first 1995-96 spell, 46 per cent churned within three years and 56 per cent churned within five years.

Clearly, churning is an important feature of income support receipt in Australia, with over half those on income support exiting and then re-entering income support receipt at least once within five years of commencement of a spell on income support. As might be expected, the incidence of churning is monotonically increasing in the observation window, which in part justifies the decision not to examine all possible time-spans. There are indications that the incidence of churning has increased slightly towards the end of the sample period. For each of the three financial years to June 2001, the proportion of individuals commencing a spell who churned within one year of spell commencement was over 19 per cent, compared with approximately 17.7 per cent for each of the three years to June 1998.

⁸ The minimum age of eligibility for the age pension for females was increased to 60.5 years in 1995 and has increased by half a year every two years since. The restriction in Table 1 to persons aged 15-64 years means that all age pension recipients will be female.

⁹ Note that an individual could commence a spell in more than one financial year, and so can appear more than once in Table 2. For example, a person who commenced a spell in 1995-96 and commenced another spell in 1996-97 would be included in the analysis of churning behaviour for both the first and second columns of Table 1.

The lower panels of Table 2 present the distribution of churning among churners – specifically, the proportions churning once, twice and three or more times in each observation window. The estimates suggest that, although churning is common, when it does occur within one year, it generally does not occur again in that one-year period. Even among those to churn within five years of spell commencement, over three-quarters of churners churn less than three times. Repeated cycling off and on income support payments is therefore not an especially common occurrence in the short to medium term. Having said that, a significant number of individuals – approximately 12.5 per cent of those to commence a spell in 1995-96 and/or 1996-97 – did churn three or more times within the five-year window.

Table 2: Distribution of churning

| | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-00 | 2000-01 | |
|---------------------------------------|---------------------|---------|---------|---------|---------|---------|------|
| <i>No. of observations</i> | 11,234 | 11,232 | 10,827 | 9,933 | 10,190 | 10,336 | |
| Churning incidence (%) | | | | | | | |
| T=1 | 17.7 | 17.7 | 17.8 | 19.4 | 19.1 | 19.5 | |
| T=3 | 45.7 | 43.9 | 44.4 | 46.2 | | | |
| T=5 | 55.7 | 55.6 | | | | | |
| Proportion (%) of churners who churn: | | | | | | | |
| T=1 | Once | 94.1 | 93.0 | 92.6 | 92.7 | 92.0 | 91.8 |
| | Twice | 5.9 | 6.8 | 7.3 | 7.1 | 7.7 | 7.8 |
| | Three or more times | 0.0 | 0.2 | 0.1 | 0.2 | 0.3 | 0.4 |
| T=3 | Once | 65.1 | 64.2 | 64.3 | 62.2 | | |
| | Twice | 25.7 | 25.4 | 24.8 | 26.1 | | |
| | Three or more times | 9.2 | 10.4 | 10.9 | 11.7 | | |
| T=5 | Once | 50.1 | 49.1 | | | | |
| | Twice | 27.7 | 27.8 | | | | |
| | Three or more times | 22.2 | 23.1 | | | | |

Note: T is the length of the observation window in years. In each cell, the sample comprises persons commencing a spell on income support in the financial year (indicated by the column heading) who were aged 15-64 years for the entire observation window (indicated by the row heading).

Table 3 presents statistics for transferring analogous to those presented for churning in Table 2. The definition of transferring used is within-spell movements between Level 3 (the most disaggregated) payment types. Table 3 shows that transferring occurs significantly less frequently than churning, with fewer than 10 per cent of individuals who commence a spell transferring between payment types within one year of spell commencement, and just over 20 per cent transferring within five years of spell commencement. Although fewer income support recipients transfer than churn, the proportion of recipients who transfer is nonetheless sizeable. As with churning, those who transfer do not do it often. Only 11 per cent of transferrers, or about

2 per cent of persons on income support, transfer three or more times within five years of commencing a spell.

No dramatic changes in transferring patterns are evident over the LDS sample period. There are, however, indications of a slight increase in the incidence of transfers in the last few years of the sample period, with the incidence of one-year transfers increasing from 7.8 per cent in 1998-99 to 9.7 per cent in 2000-01.

Table 3: Distribution of transferring

| | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-00 | 2000-01 |
|--|---------|---------|---------|---------|---------|---------|
| <i>No. of observations</i> | 11,234 | 11,232 | 10,827 | 9,933 | 10,190 | 10,336 |
| Transferring incidence (%) | | | | | | |
| T=1 | 8.0 | 7.6 | 7.5 | 7.8 | 9.4 | 9.7 |
| T=3 | 15.3 | 14.5 | 14.8 | 16.3 | | |
| T=5 | 20.4 | 20.7 | | | | |
| Proportion (%) of transferrers who transfer: | | | | | | |
| T=1 | | | | | | |
| Once | 88.2 | 89.6 | 90.0 | 90.0 | 88.1 | 87.0 |
| Twice | 9.8 | 9.6 | 6.8 | 7.4 | 9.7 | 10.5 |
| Three or more times | 2.0 | 0.8 | 3.2 | 2.6 | 2.2 | 2.5 |
| T=3 | | | | | | |
| Once | 74.4 | 77.9 | 76.9 | 75.3 | | |
| Twice | 18.5 | 15.4 | 15.8 | 16.7 | | |
| Three or more times | 7.0 | 6.7 | 7.3 | 8.0 | | |
| T=5 | | | | | | |
| Once | 69.5 | 71.4 | | | | |
| Twice | 19.5 | 17.9 | | | | |
| Three or more times | 11.0 | 10.7 | | | | |

Note: T is the length of the observation window in years. In each cell, the sample comprises persons commencing a spell on income support in the financial year (indicated by the column heading) who were aged 15-64 years for the entire observation window (indicated by the row heading).

The interpretation of transfers very much depends on the nature of the transfer. Possibly the most significant characteristic of a transfer is whether it represents a movement to a work activity-tested payment type or to a non-work activity-tested payment type. We therefore present in Table 4 information on the composition of transfers each year in terms of activity-testing. All transfers by 15-64 year olds which occurred in each financial year are included in the sample, irrespective of the date of spell commencement.¹⁰ The table shows that, in recent years, just over 55 per cent of all transfers have been between activity-tested and non-activity-tested payment types, the remainder being between non-activity-tested payments. Of the transfers between activity-tested and non-activity-tested payment types, almost two-thirds were from activity-

¹⁰ We can therefore infer from the first row of Table 4 that 300,000-350,000 transfers by persons aged 15-64 years occur each year.

tested to non-activity-tested payments, and one-third are from non-activity-tested to activity-tested. Thus, only one-fifth of transfers could be characterised as movements towards (re)integration in the labour market. However, it can equally be said that only one-third could be characterised as movements towards more entrenched reliance on income support.

Over the whole LDS sample period, although some degree of volatility is evident in the proportion of transfers of each type from year-to-year, there does appear to have been a trend increase in the share of transfers from activity-tested to non-activity-tested payments. Total transfers from non-activity-tested to activity-tested payments have been relatively stable, however, at 20 per cent of transfers.

Table 4: Distribution of transfer types: Proportion of all transfers of each type in each financial year – Persons aged 15-64 years (%)

| | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-00 | 2000-01 | 2001-02 |
|--|---------|---------|---------|---------|---------|---------|---------|
| <i>No. of transfers</i> | 3,041 | 3,068 | 2,637 | 2,890 | 2,952 | 3,197 | 3,183 |
| Activity-tested to non-activity tested | 30.3 | 30.7 | 37.7 | 37.8 | 37.7 | 34.8 | 38.1 |
| Non-activity-tested to activity tested | 21.5 | 16.2 | 17.0 | 14.9 | 18.4 | 19.9 | 20.6 |
| Within non-activity tested | 48.2 | 53.2 | 45.3 | 47.3 | 43.9 | 45.3 | 41.3 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

For much of the remaining analysis of churning and transferring we focus on an individual's patterns of receipt in the three-year observation window. This is motivated by the view that this observation window represents the optimal trade-off between the competing goals of a reasonable time-frame and reasonably large (and representative) sample sizes. With regard to having a reasonable time frame, Tables 1 and 2 indicate that the incidence of churning and transferring is comparatively low for the one-year window, whereas the three-year window appears to capture much of the churning and transferring, there being a relatively small increase in the incidence of churning and transferring in moving from the three-year to the five-year window. With respect to obtaining large sample sizes, the three-year time frame allows substantially larger sample sizes than a four or five year time frame. It also facilitates inclusion of churning and transferring following on from spells commencing as late as June 1999, compared with a restriction to spells commencing prior to July 1997 for the five-year time frame. Table 5 examines the interaction between churning and transferring by presenting the incidence of each of the four possible outcomes for persons who commence a spell on income support: neither churns nor transfers; transfers only; churns only; and both churns and transfers. The table presents, for each financial year between 1995-95 and 1998-99, the proportion of individuals

commencing a spell in that financial year who are in each of the four groups. This shows the correlation between churning and transferring within three years of commencement of first spell in the financial year. The financial year 1998-99 is the last year shown because we do not have a complete three-year observation window available in the LDS sample for spells commencing after 30 June 1999.

Table 5: Proportion in each churning/transferring group (%)

| | 1995-96 | 1996-97 | 1997-98 | 1998-99 |
|----------------------------|---------|---------|---------|---------|
| <i>No. of observations</i> | 11,106 | 11,106 | 10,684 | 9,788 |
| Neither churn nor transfer | 45.0 | 47.2 | 46.6 | 45.2 |
| Transfer only | 9.3 | 8.9 | 8.9 | 8.7 |
| Churn only | 39.8 | 38.3 | 38.6 | 38.6 |
| Churn & transfer | 5.9 | 5.6 | 5.9 | 7.6 |
| Total | 100 | 100 | 100 | 100 |

Note: The observation window is three years (i.e. T = 3). The sample in each column comprises persons commencing a spell on income support in the financial year who were aged 15-64 years for the entire three-year observation window.

In all four financial years, approximately 45 per cent do not churn or transfer within three years of spell commencement, while approximately 38 per cent churn but do not transfer. Reflecting the relatively low frequency of transferring compared with churning (evident from Tables 2 and 3), less than 10 per cent transfer only. The smallest group is the churning-transferring group, which represents less than six per cent of individuals commencing a spell in 1995-96, 1996-97 and 1997-98, and 7.5 per cent of individuals commencing a spell in 1998-99. The relative infrequency of the churning and transferring combination implies transferrers tend to stay on income support long-term and/or stay off income support long-term once they do go off (that is, given transferring, the probability of not churning is greater than the probability of churning), and churners tend to stay on the one payment type within spells (that is, given churning, the probability of not transferring is greater than the probability of transferring). There is in fact an apparent negative relationship between transferring and churning: the probability of transferring given churning is 0.13, versus 0.17 given no churning; and the probability of churning given transferring is 0.39, versus 0.47 given non-transferring.

Table 6 presents the same information as Table 5 but decomposes it by initial level-2 payment type, and pools together all financial years for which we have full three-year observation windows available (1995-95 to 1998-99). However, as noted in Section 2, an individual will

enter the sample as a separate observation in each financial year in which he or she commences a spell.¹¹

Table 6: Churning and transferring by initial payment type (pooled sample) (%)

| | Neither churn nor transfer | Transfer only | Churn only | Churn & transfer | <i>No. of Obs.</i> |
|------------------------------|----------------------------------|------------------|---------------|---------------------|------------------------|
| <i>Initial payment type:</i> | | | | | |
| Unemployment benefits | 43.4 | 7.0 | 44.2 | 5.4 | 30,015 |
| Other short-term payments | 30.1 | 27.1 | 25.5 | 17.4 | 2,081 |
| Parenting Payment Partnered | 50.2 | 10.2 | 32.8 | 6.8 | 4,721 |
| Parenting Payment Single | 54.3 | 10.1 | 26.4 | 9.2 | 2,890 |
| Disability Support Pension | 78.9 | 4.4 | 14.8 | 1.9 | 1,095 |
| Mature age payments | 55.6 | 22.1 | 18.1 | 4.2 | 1,510 |
| Age Pension | 90.9 | 0.0 | 8.9 | 0.3 | 372 |

Note: The observation window T is three years. An observation comprises the 3-year period following an individual's first spell commencement in each financial year over the period 1995-96 to 1998-99. An individual must be aged 15-64 years for the entire observation window to enter the sample.

The last column of Table 6 shows that unemployment benefits is the dominant initial payment type, with over two-thirds of observations starting on this one payment type. This is despite the fact that most payment recipients are not on unemployment benefits, and derives from the relatively short-term nature of this payment type, and indeed the high rate of churning for recipients of this payment type.

Significant differences in the incidence of churning and transferring by initial payment type are evident. As might be expected, churning tends to be lowest for pensions and 'mature age' payments', reflecting their long-term nature. The incidence of transferring – whether accompanied by churning or not – is high for 'other short-term payments', possibly reflecting the interim nature of some of these payments. The incidence of transferring is also relatively high for 'mature age payments', although in contrast to 'other short-term payments', it is rarely combined with churning.

From here on, we concentrate our attention on whether a person churns and/or transfers rather than the level (frequency) of churning and transferring, primarily motivated by the absence of significant variation in the level of churning and transferring among churners and transfers. This approach also facilitates more straightforward (and readily understood) investigation of the relationship between these properties and the extent of reliance on income support, and the factors associated with churning and transferring.

¹¹ Note that although results are presented by level-2 payment type, all transfers between *level-3* payment types are

Relationship between churning/transferring and length of time on income support

An important dimension of dynamic patterns of income support receipt is the length of time on income support. For example, churning associated with extended periods on income support is fundamentally different from churning associated with very short periods on income support. Furthermore, the policy-significance of specific patterns of churning and transferring depend not only on how widespread are those patterns, but also the extent of reliance on income support associated with those patterns.

We explore the length-of-time dimension using the ‘Total proportion of Time On payments’ (TTO) measure. As the name suggests, the TTO measure gives the total proportion of time over a given period that a person was in receipt of income support payments. It is calculated as the number of fortnights on income support divided by the total number of fortnights in the period. In this study, we focus on the interactions between TTO measures and churning and transferring behaviour. The primary question is how reliance on income support, as measured by TTO, varies with churning and transferring patterns. We restrict attention to the relationships between TTO and the *occurrence* (as opposed to *levels*) of churning/transferring.¹²

Before proceeding to examine TTO estimates, it is useful to place some bounds on the estimates we are likely to obtain. In principle, TTOs can take any value from 0 to 100 for each churning/transferring outcome. However, practical factors limit the range of TTOs that can actually be observed in the data. Specifically, no-one can have a TTO of 0, since a positive TTO is a precondition for entry into the sample, and those who churn cannot, by definition, have TTOs of 100, since churning requires some time off payments.

There are also reasons to further limit our expectations about the TTOs that could be observed. Given that a churner must have at least two spells on income support, and given the requirement that a person go off payments for at least three fortnights before a spell is deemed to have ended, we might expect churners to have intermediate TTO levels. For transferrers, by contrast, we might expect TTOs to be higher, given the sorts of factors that could trigger transfers, such as ageing of recipients, ageing of dependent children and changes in health. The outcome which, *ex ante*, is the least constrained in terms of possible TTO levels, is the single spell on one payment type.

treated as transfers for the purposes of establishing to which group an individual belongs.

¹² However, we do briefly examine the relationship between the level of churning and transferring and TTO. See Appendix 2.

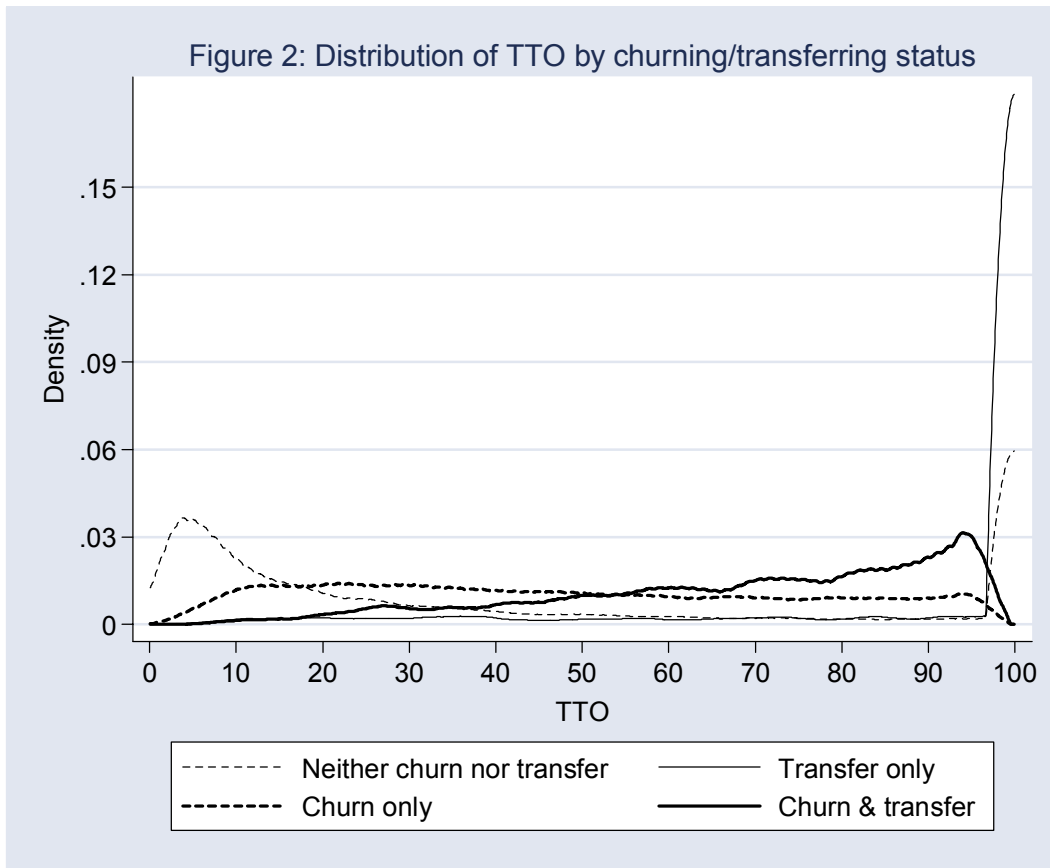
Figure 2 provides a valuable overview of how TTO depends on churning and transferring by presenting the density of the TTO distribution for each of four groups defined according to churning and transferring patterns:¹³

1. Those who neither churn nor transfer within three years of spell commencement.
2. Those who churn but do not transfer within three years of spell commencement.
3. Those who transfer but do not churn within three years of spell commencement.
4. Those who both churn and transfer within three years of spell commencement.

The densities provide very useful insights into the differing nature of payment receipt by churning and transferring status. Those who transfer and do not churn have only one spell on income support in the three-year window. In principle, this single spell could be any length, but Figure 2 shows that for almost all persons the spell is the entire three-year period. Thus, transferring appears to be associated with entrenched long-term income support receipt, at least when it does not also involve churning. The TTO distribution for those who churn but do not transfer appears approximately uniform up to a TTO of roughly 95%, although the density does decline very gradually over the 30-95% TTO range. Churning is therefore not associated with any particular level of reliance on income support since, given churning-only, most TTO-levels are approximately equally likely.¹⁴

¹³ A density essentially presents the proportion of observations with each value of the variable on the horizontal axis (in this case TTO). The higher the density, the higher is the proportion of observations at that point. The densities are derived using kernel density estimation techniques, details about which can be found in Silverman (1986). We adopt an Epanechnikov kernel function with a bandwidth of 1.5%, and evaluate the density at 2,000 TTO levels.

¹⁴ Note that it does not follow from this finding that churning is not associated with an effect on TTO, since it may be that the expected TTO given churning differs from the expected TTO given no churning. (In fact, Table 7 (below) implies the expected TTO given churning-only is lower than the expected TTO otherwise (47% compared with 53%.))



The TTO distribution for those who both churn and transfer appears to reflect the combined influences of the churn and transfer components as measured by the TTO distributions for the churn-only and transfer-only groups. Those who both churn and transfer are distributed across a fairly large part of the TTO spectrum (reflecting the influence of the churn component), but are mostly concentrated in the region where TTO is greater than 50 per cent (reflecting the influence of the transfer component).

Those who neither churn nor transfer, like those who only transfer, have only one spell on income support in the three-year observation window following spell commencement. This single spell could be any length, but in fact most persons have either a very short spell or a very long spell (that is still in progress at the end of the three-year window). This is indicated by the bimodality of the density of the TTO distribution, with a peak at very low TTOs and a (larger) peak at a TTO of 100%. This implies this group can be characterised as comprising two distinct subgroups: those who on a single occasion temporarily depend on income support, and those who are on income support on a long-term basis (of at least three years).

Table 7 elaborates on Figure 2 by presenting the mean TTO and the proportion of all recipients in each TTO-churning/transferring cell, where four TTO levels are distinguished: 0-24%, 25-49%, 50-74% and 75-100%. The statistics confirm the visual impression of the densities. The

mean TTO is highest for the transferring-only group, which has almost all members in the 75-100% TTO group. The mean TTO for the churning-only group is just over half that of the transferring-only group. As implied by the gradual decline in the TTO density over the 30-95% TTO range, the proportion in the 50-74% TTO range is slightly less than the proportion in the 25-49% range, and the proportion in the 75-100% range is in turn slightly less than the proportion in the 50-74% range.

Table 7: Churning, transferring and TTO

| | Neither churn nor transfer | Transfer only | Churn only | Churn & transfer | Total |
|--|-------------------------------|---------------|------------|---------------------|-------|
| Mean TTO (%) | 43.4 | 91.3 | 47.6 | 68.9 | 50.9 |
| <i>Per cent of sample in each churning-transferring-TTO cell</i> | | | | | |
| <i>TTO groups:</i> | | | | | |
| 0-24 % | 23.0 | 0.3 | 9.9 | 0.3 | 33.5 |
| 25-49 % | 5.8 | 0.4 | 11.5 | 1.0 | 18.8 |
| 50-74 % | 3.0 | 0.5 | 9.5 | 2.0 | 14.9 |
| 75-100 % | 14.2 | 7.7 | 8.0 | 3.0 | 32.8 |
| Total | 46.0 | 9.0 | 38.8 | 6.2 | 100 |

Note: An observation comprises the 3-year period following an individual's first spell commencement in each financial year over the period 1995-96 to 1998-99. An individual must be aged 15-64 years for the entire observation window to enter the sample.

As indicated by the density for the 'churn and transfer' group, TTOs are distributed more widely than for the transfer-only group, but in contrast to the churn-only group, the proportion in each TTO group is increasing in TTO – that is, the smallest proportion of this group is in the 0-24% and the largest proportion of this group is in the 75-100% TTO group. Correspondingly, the mean TTO for those who both churn and transfer is approximately halfway between the means for the churn-only and transfer-only groups.

Table 7 also provides information on the relative importance of each churn/transfer combination for each of the four levels of reliance (as measured by TTO). Three broad results emerge from this perspective, corresponding to three broad TTO categories, each category containing approximately one-third of observations: low-level (0-24%), intermediate-level (25-74%) and high-level (75-100%). First, almost all low TTO observations comprise non-churning non-transferrers (69%) or churners-only (30%). Second, the majority of intermediate-level TTO observations comprise churners-only (62%), with non-churning non-transferrers also comprises a significant proportion of this TTO group (26%). Third, the high-TTO group has the most even distribution of churning/transferring outcomes, with 43 per cent non-churning non-transferrers,

23 per cent transferrers only, 24 per cent churners only and 9 per cent both churners and transferrers.

The overall impression from Figure 2 and Table 7 is that transferring is associated with greater total time on income support. Churning is not associated with any particular TTO, which represents an important contrast to non-churners, who tend to have either very high or very low TTOs. The dichotomy between low-TTO and high-TTO non-churning non-transferrers suggests that it is appropriate to treat them as distinct groups of income support recipients in terms of their patterns of receipt. In the econometric analysis undertaken in Section 4, in which we model the determinants of churning/transferring status, we therefore treat ‘low-TTO non-churning non-transferring’ as a distinct outcome from ‘high-TTO non-churning non-transferring’. Specifically, those with a TTO less than 50 per cent are placed in one group, and those with a TTO of 50 per cent or greater are placed in a second group.

Table 8 examines how the relationship between churning/transferring behaviour and TTO varies across payment types. It presents the mean TTO for each churning/transferring group by initial (level-2) payment type. Mean TTOs are somewhat similar across payment types for all groups that churn and/or transfer, with the exception that those who churn only tend to have slightly lower mean TTOs if the initial payment type was unemployment benefits or other short-term payments.¹⁵

Substantial differences in mean TTO by initial payment type do arise among the non-churning non transferring group, with differences broadly consistent with expectations given differences in the nature of the payment types. For example, the mean TTO is 35% for those who commenced on unemployment benefits, compared with 88% for those who commenced on DSP. This suggests that, to some extent, the two distinct TTO groups identified in Figure 2 and Table 7 are divided according to payment type: low-TTO non-churning non-transferrers predominately comprise recipients of unemployment benefits and other short-term payment types, and high-TTO non-churning non-transferrers predominately comprise recipients of pensions, mature age payments and parenting payment single.¹⁶

¹⁵ There are, of course, significant differences in the proportions in each churning/transferring group across payment types, as Table 6 demonstrates.

¹⁶ Appendix 3 presents some evidence that the bimodality is not entirely driven by different payment type compositions at the lower at upper ends of the TTO distribution. It contains a table that replicates Tables 7 for those whose initial payment type was Parenting Payment Single or Parenting Payment Partnered. While those who neither churn nor transfer are more likely to have a high TTO for this group, bimodality in the TTO distribution is nonetheless still evident within these two payment types.

Table 8: Mean TTO by initial payment type and churning/transferring status (%)

| | Neither churn nor transfer | Transfer only | Churn only | Churn & transfer | All |
|-----------------------------|-------------------------------|------------------|---------------|---------------------|------|
| <i>Initial payment type</i> | | | | | |
| Unemployment benefits | 35.0 | 93.6 | 46.5 | 69.3 | 46.1 |
| Other short-term payments | 12.1 | 82.5 | 37.7 | 63.5 | 46.6 |
| Parenting Payment Partnered | 45.6 | 89.2 | 50.3 | 69.5 | 53.2 |
| Parenting Payment Single | 69.6 | 89.1 | 55.3 | 71.3 | 67.9 |
| Disability Support Pension | 87.8 | 98.2 | 70.3 | 71.5 | 85.3 |
| Mature age payments | 73.3 | 95.9 | 64.6 | 76.6 | 76.9 |
| Age Pension | 96.5 | - | 77.3 | 94.9 | 94.8 |

Note: TTOs are for a 3-year observation window, with an observation comprising the 3-year period following an individual's first spell commencement in each financial year over the period 1995-96 to 1998-99. An individual must be aged 15-64 years for the entire observation window to enter the sample.

Destinations of churns and transfers

A further important aspect of churning and transferring behaviour that can be investigated using the LDS is the paths taken in terms of payment types. Specifically, we can examine the 'destination' payment type for each churn and each transfer, and how this depends on the 'origin' payment type.

Table 9 provides this information for churning, showing the proportion of churns ending at each payment type, by origin payment type and in total. That is, for each movement off payments followed by a move back on to payments (at least 3 fortnights later and at most 130 fortnights later), the payment type prior to the move off payments (origin payment type) and the payment type after the move back on payments (destination payment type) are recorded. This information is then used to calculate the proportion of churns ending in each payment type destination, by origin payment type and in total.¹⁷

The last row of Table 9 shows that unemployment benefits, predominately comprising Newstart Allowance, dominate as the destination payment type for churns. In the period July 1995 to June 2002, persons in our sample had 42, 178 churns, corresponding to a population figure of 4,217,800 churns. For 73 per cent of these churns, unemployment benefits was the post-churn payment type. Parenting Payment Partnered and Parenting Payment Single are also relatively common destination payment types, but combined still only amount to less than one quarter of the churns ending on unemployment payments.

¹⁷ Note that the sample selection process differs from that adopted for previous analysis, since, for all persons who commenced a spell prior to July 2001, all movements within the LDS sample period that satisfy the definition of churning are included.

Table 9: Pre- and post-churning payment types – Proportion of churns ending at each payment type, by origin payment type (%)

| | <i>Post-churning payment types</i> | | | | | | | <i>No. of obs.</i> |
|-----------------------------------|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------|
| | UB | OS | PPP | PPS | DSP | MAP | AP | |
| <i>Pre-churning payment types</i> | | | | | | | | |
| Unemployment benefits (UB) | 91.8 | 4.3 | 1.7 | 1.2 | 0.3 | 0.7 | 0.1 | 31,600 |
| Other short-term payments (OS) | 54.7 | 32.8 | 4.1 | 3.1 | 3.5 | 1.6 | 0.2 | 1,340 |
| Parenting Payment Partnered (PPP) | 7.8 | 0.8 | 73.4 | 15.9 | 0.5 | 1.6 | 0.0 | 4,234 |
| Parenting Payment Single (PPS) | 10.9 | 2.5 | 15.3 | 70.5 | 0.4 | 0.5 | 0.0 | 2,948 |
| Disability Support Pension (DSP) | 6.0 | 5.0 | 0.0 | 1.0 | 85.8 | 1.4 | 0.8 | 797 |
| Mature age payments (MAP) | 17.9 | 1.9 | 2.0 | 1.1 | 3.2 | 65.8 | 8.2 | 1,103 |
| Age Pension (AP) | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.6 | 98.7 | 156 |
| Total | 72.6 | 4.6 | 9.9 | 7.5 | 2.2 | 2.5 | 0.6 | 42,178 |

Note: A churn is defined to occur when an individual who commenced a spell on income support payments in the period July 1995 to June 2001 is observed to resume receipt of an income support payment after a break in payments of at least 3 fortnights and at most 130 fortnights (i.e. T = 5). Only individuals aged less than 65 years at the completion of the churn are included in the sample.

The breakdown of payment type destinations by origin payment types shows that most churning involves moving back on to the same payment type as the one that was previously exited. This is reflected by the bold diagonal, which is well in excess of 50 per cent for all payment types except ‘other short-term payments’, which is for special temporary circumstances that are relatively unlikely to recur. The most common post-churn payment type when ‘other short-term payments’ is the pre-churn payment type is unemployment benefits, which is in fact the post-churn payment type for a significant proportion of churns for all pre-churn payment types. Note that such churns (first column of Table 9) involve a movement from a non-activity-tested payment to an activity-tested payment.

Churns involving a movement from an activity-tested payment to a non-activity-tested payment are given by the top row of Table 9. While over ninety per cent of churns originating with an activity-tested payment do not have a non-activity-tested payment as the destination, the relatively large number of these churns means that the total number of churns involving a movement from an activity-tested to a non-activity-tested payment exceeds, by 61 per cent, the number involving a movement in the reverse direction. Specifically, Table 9 implies that 259,100 churns were from an activity-tested to a non-activity-tested payment type, compared with 160,900 churns from a non-activity-tested payment type to an activity-tested payment type.

Also notable from Table 9 is that a significant proportion of all churns – 17 per cent – originate with Parenting Payments, and roughly one in six of these involves a movement from Parenting Payment Single to Parenting Payment Partnered, or vice versa. These churns are likely to be connected to changes in family status.

Table 10 provides similar information to Table 9, but for transfers instead of churns. Specifically, the proportion of all transfers in the LDS sample period with each payment type as the destination is presented, by origin payment type and in total.¹⁸ Some elements of the diagonal in bold are non-zero because some level-2 payment types contain more than one level-3 payment type. Within-payment type transfers can therefore occur for these level-2 payment types. Analogous to Table 9, the first column gives transfers from non-activity-tested to activity-tested payments, while the first row gives transfers in the reverse direction.

Table 10: Pre- and post-transfer payment types – Proportion of transfers ending at each payment type, by origin payment type (%)

| <i>Origin payment types</i> | <i>Destination Payment types</i> | | | | | | | <i>No. of obs.</i> |
|-----------------------------------|----------------------------------|------------|-------------|-------------|-------------|-------------|-------------|--------------------|
| | UB | OS | PPP | PPS | DSP | MAP | AP | |
| Unemployment Benefits (UB) | 0.0 | 8.2 | 14.2 | 19.9 | 33.5 | 23.6 | 0.5 | 7,387 |
| Other Short-term Allowances (OS) | 56.2 | 1.1 | 5.3 | 14.7 | 20.3 | 2.2 | 0.2 | 2,908 |
| Parenting Payment Partnered (PPP) | 16.9 | 1.5 | 0.0 | 71.0 | 2.5 | 8.1 | 0.0 | 3,114 |
| Parenting Payment Single (PPS) | 35.4 | 4.8 | 54.3 | 0.0 | 2.8 | 2.7 | 0.2 | 3,623 |
| Disability Support Pension (DSP) | 13.5 | 8.6 | 0.6 | 1.6 | 0.0 | 2.7 | 73.0 | 814 |
| Mature Age Payments (MAP) | 10.0 | 0.9 | 2.0 | 3.7 | 10.3 | 19.3 | 53.9 | 3,103 |
| Age Pension (AP) | 0.0 | 0.0 | 0.0 | 0.0 | 5.3 | 94.7 | 0.0 | 19 |
| Total | 18.4 | 4.6 | 15.4 | 20.2 | 17.0 | 13.3 | 11.1 | 20,968 |

Note: Sample comprises all transfers in the LDS observation period by persons aged less than 65 years as at the time of the transfer.

As noted with respect to Tables 2 and 3, there are substantially fewer transfers than churns, but with approximately 2.1 million transfers in the LDS sample period, they are nonetheless an important feature of income support receipt. The most common origin payment type is unemployment benefits, accounting for one third of transfers, and the most common destination for transfers from unemployment benefits is the Disability Support Pension (34%), followed by ‘other short-term payments’ (24%) and Parenting Payment Single (20%). A significant number of transfers originate with parenting payments – 32 per cent – with most transfers being between Parenting Payment Single and Parenting Payment Partnered, although also significant is that 35 per cent of transfers originating with Parenting Payment Single are to unemployment benefits. The significant share of transfers that involve parenting payments suggests many transfers are connected to changes in family circumstances. This relationship between family dynamics and transferring is further explored in the next subsection.

¹⁸ Similar to churning, we include all transfers in the LDS sample period of persons who commenced a spell prior to July 2001.

Table 11 directly investigates the question of whether transfers represent a movement to more entrenched welfare reliance, a stepping stone to exit, or neither. The first row presents the proportion of all transfers of each type, classified according to whether the transfer can be characterised as moving towards more entrenched reliance (from activity-tested to non-activity tested), reintegration with the labour market (non-activity tested to activity-tested) or *staying* entrenched in welfare reliance (non-activity-tested to non-activity tested).¹⁹ This essentially reiterates Table 4, but for the entire LDS sample period as a whole.

Table 11: TTO following transfers, by type of transfer

| | Activity-tested to non-activity tested | Non-activity-tested to activity tested | Between non-activity-tested | All |
|---|--|--|-----------------------------|------|
| Proportion of transfers (%) | 35.0 | 18.4 | 46.6 | 100 |
| Mean TTO in the year following transfer | 92.9 | 80.1 | 94.1 | 91.1 |

Note: Sample comprises all transfers by persons aged 15-64 years in the period July 1995 to June 2001. The number of observations is 17,507.

As noted with respect to Table 4, most transfers are to non-activity-tested payments, most commonly from another non-activity-tested payment. Therefore, as suggested by the TTO distribution examined in Figure 2 and Table 7, transferring appears to be primarily associated with either remaining in a state of long-term income support receipt, or moving towards that state.

The second row of Table 11 presents the mean TTO in the year following the transfer, by type of transfer, to investigate the implications of the different types of transferring for total time on income support. Consistent with intuition, the mean TTO is indeed lower for movements to activity tested payments, at 80 per cent compared with in excess of 90 per cent for other transfers. However, this TTO is still very high, such that it would be difficult to argue these transfers possess a significant ‘stepping-stone-to-exit’ function.

The reasons for transfers

There are a number of potential reasons for churning and transferring, but the nature of the income support system implies that many, if not most, churns and transfers will be driven by changes in employment status, health or family circumstances, or by ageing. Clearly, the policy implications of churns and transfers depend on the source of the churns and transfers. For

¹⁹ Recall that the level-1 payment type categories created mean that a movement from one activity-tested payment

example, transfers induced by family changes have different implications to transfers brought about by changes in health. It is therefore valuable to examine the role played by changes to employment status, age, health and family status in affecting churning and transferring.

The LDS data do not allow us to investigate the reasons for churning, because we do not observe individuals – and therefore their circumstances – when they are not receiving income support payments. While reasonable guesses could be made in some situations about the causes of churns based on the pre- and post-churn payment types, in many cases this is not possible. For example, a churn by a sole parent, where the pre-and post-churn payment type is PPS, could be driven by changes in family status, employment status, or both. We can, however, make reasonable inferences on the reasons for transfers, using information on personal characteristics in the LDS data as well as the differences in eligibility criteria across payment types to identify the nature of the change in circumstances. Given the information available in the LDS and the nature of the eligibility requirements of each payment type, we focus on changes in age, health and family circumstances. The specific question we ask is ‘what proportion of transfers can be (reasonably) attributed to each type of change, and how does this differ according to the type of transfer?’²⁰

We define age-related transfers to be all movements on to the Age Pension from other payment types as well as movements from unemployment benefits to Mature Age Allowance. Health-related transfers comprise all movements on to DSP from other payments and all movements from DSP to payments other than the Age Pension.

For family circumstances, we focus on two types of family changes that can be identified in the data and that are also likely to precipitate transfers: the presence of dependent children and the presence of a partner. A change in the presence of children is defined as a movement from having no dependent child to having a least one dependent child, or vice versa. Partner status changes if partner details appear or disappear from one fortnight to the next. All transfers that are accompanied by at least one of these changes and that are not already classified as age or health related transfers are attributed to family changes. To allow for administrative lags in updating

type to another does not constitute a transfer.

²⁰ There are, of course, many other issues that could be explored on the interaction between the income support system and changes in circumstances, given a different focus. This is particularly the case with respect to family changes. We examine this issue only briefly given the focus of the current study on churning and transferring. Also note that the econometric analysis in the following section does not investigate the effects of changes in family status, because covariates are generally based on ‘initial characteristics’. The problem with time-varying covariates (such as ‘family status in the current fortnight’) is that a duration analysis methodology would be required, which would then be modelling duration on income support rather than the churning and transferring behaviour. An

family changes or payment type, we define a transfer to be associated with a family change if the change occurs within a two fortnight band around the fortnight in which the transfer occurred.²¹

The upper panel of Table 12 presents the proportions of transfers that can be attributed to age changes, health changes, changes in the presence of dependent children, changes in the presence of a partner, changes in the presence of both children and partner and ‘other factors’. This last category is more accurately described as transfers that cannot be attributed to one of the other changes in circumstances. This information is presented for all transfers and also decomposed by the type of the transfer in terms of changes to activity-testing status.

The last column indicates that 16 per cent of transfers can be attributed to ageing, while 18 per cent can be attributed to changes in health. Family changes account for 38 per cent of transfers, of which 59 per cent involved a change only in the presence of a partner, 31 per cent a change only in the presence of children and 11 per cent a change in both. This leaves us with 29 per cent of transfers for which we cannot infer the cause. It should be emphasised that inferred causes do not necessarily correspond to actual causes of transfers. Furthermore, while many of the transfers attributed to ‘other factors’ may indeed be due to other factors, many could be driven by age, health or family changes that we cannot (unambiguously) discern from the information in the LDS or eligibility criteria of payment types.

Examination of panel A of Table 12 by type of transfer shows, as might be expected, that ageing and health changes account for very few of the transfers to activity-tested payments – only 3 per cent, compared with 47 per cent of transfers from activity-tested to non-activity-tested payments and 36 per cent of within non-tested payment transfers. By contrast, changes in family status account for 39 per cent of transfers from non-activity-tested to activity-tested payments, 50 per cent of transfers between non-activity-tested payments and 29 per cent of transfers from activity-tested to non-activity-tested payments. ‘Other factors’ were responsible for 62 per cent of transfers to activity-tested payments, compared with only 31 per cent of transfers from activity-tested to non-activity tested payment types and 14 per cent of transfers between non-tested payment types.

Also notable is that most of the transfers between activity-tested and non-activity-tested payments associated with family changes involve only a change in the presence of children, whereas most of the transfers between non-activity-tested payment types involve only a change

alternative approach may be available, but is unlikely to be easily nested within the framework adopted for this study.

in the presence of a partner. Indeed, these estimates together imply that almost all transfers associated with changes to partner status are from one non-activity-tested payment type to another, while most transfers associated with changes to the presence of dependent children are between activity-tested and non-activity-tested payment types. This probably reflects outcomes for females – specifically, the presence of dependent children may determine whether UB or PPS applies (with only UB being activity-tested), while partner status may determine, for females with dependent children, whether PPS or PPP applies (neither of which is activity tested).

Panel B of Table 12 disaggregates the causes of changes further by identifying the proportion of transfers, in aggregate and by transfer type, accounted for by each ‘direction’ of change in health and family status. That is, health can improve or deteriorate and partners and dependent children under 16 years of age can be gained or lost.²² The distribution of each transfer type by cause within each type of change (health, partner and dependent children) is broadly consistent with expectations. Notable is that acquiring a partner is associated with transfers from tested to non-tested payment types, while losing a partner is associated with transfers from non-tested to tested payment types.

Panels A and B of Table 12 naturally raise questions about the nature of transfers attributed to ‘other factors’, which account for nearly one third of transfers from activity-tested to non-activity-tested payment types and nearly two thirds of transfers from non-activity-tested to activity-tested payment types. To attempt to shed more light on the matter, Panel C presents the proportion of these transfers with each level-2 pre- and post-transfer payment type combination. Most of these transfers originate with unemployment benefits or other short-term payments, and are to unemployment benefits or mature age payments, although approximately one quarter are to parenting payments.

²¹ We investigated the sensitivity of inferences to the size of the band, experimenting with a four fortnight band. We found very minimal changes in results.

²² In Table 12, an arrow followed by a given status for presence of children and/or partner denotes the *destination* status, that is, the status after the change.

Table 12: Inferred reason for transfer by type of transfer – Persons aged 15-64 years (%)

| | Activity-tested to non- activity-tested | Non-activity- tested to activity-tested | Between non- activity-tested | All transfers | | | | |
|---|---|---|---------------------------------|------------------|-----|------|-----|-------|
| <i>No. of transfers</i> | 7,386 | 3,861 | 9,716 | 20,963 | | | | |
| A. Transfers by type of reason | | | | | | | | |
| Age related | 13.2 | 0.0 | 23.5 | 15.5 | | | | |
| Health related | 33.5 | 2.9 | 12.4 | 18.1 | | | | |
| Family dynamics | | | | | | | | |
| Children presence | 15.5 | 24.2 | 3.5 | 11.5 | | | | |
| Partner presence | 2.7 | 6.0 | 42.9 | 22.0 | | | | |
| Both Children and partner presence | 4.1 | 4.7 | 3.8 | 4.1 | | | | |
| Other factors | 30.9 | 62.2 | 14.0 | 28.8 | | | | |
| Total | 100 | 100 | 100 | 100 | | | | |
| B. Transfers by detailed reason | | | | | | | | |
| Age related | 13.2 | 0.0 | 23.5 | 15.5 | | | | |
| Health related | | | | | | | | |
| Health improved | 0.0 | 2.9 | 1.1 | 1.1 | | | | |
| Health worsened | 33.5 | 0.0 | 11.2 | 17.0 | | | | |
| Family dynamics | | | | | | | | |
| <i>Children presence</i> | | | | | | | | |
| → dep. child | 15.3 | 0.6 | 2.1 | 6.5 | | | | |
| → no dep. child | 0.2 | 23.6 | 1.4 | 5.1 | | | | |
| <i>Partner presence</i> | | | | | | | | |
| → partnered | 0.8 | 3.2 | 18.3 | 9.4 | | | | |
| → single | 2.0 | 2.9 | 24.6 | 12.6 | | | | |
| <i>Both child and partner presence</i> | | | | | | | | |
| → partnered, dep. child | 2.6 | 0.5 | 0.4 | 1.2 | | | | |
| → single, no dep. child | 0.2 | 3.1 | 0.3 | 0.8 | | | | |
| → partnered, no dep. child | 0.0 | 1.2 | 1.5 | 0.9 | | | | |
| → single, dep. child | 1.3 | 0.0 | 1.6 | 1.2 | | | | |
| Other factors | 30.9 | 62.2 | 14.0 | 28.8 | | | | |
| Total | 100 | 100 | 100 | 100 | | | | |
| C. Transfers due to ‘other factors’ – Proportion with each pre- and post-transfer payment type combination (%) (6,041 observations) | | | | | | | | |
| | <i>Destination Payment types</i> | | | | | | | |
| | UB | OS | PPP | PPS | DSP | MAP | AP | Total |
| <i>Origin payment types</i> | | | | | | | | |
| Unemployment Benefits (UB) | 0.0 | 9.3 | 9.5 | 6.3 | 0.0 | 12.7 | 0.0 | 37.8 |
| Other Short-term Allowances (OS) | 25.8 | 0.5 | 1.1 | 4.3 | 0.0 | 1.0 | 0.0 | 32.6 |
| Parenting Payment Partnered (PPP) | 5.5 | 0.2 | 0.0 | 0.3 | 0.0 | 2.8 | 0.0 | 8.7 |
| Parenting Payment Single (PPS) | 4.9 | 2.5 | 1.5 | 0.0 | 0.0 | 0.8 | 0.0 | 9.7 |
| Disability Support Pension | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Mature Age Payments (MAP) | 3.6 | 0.2 | 0.8 | 0.3 | 0.0 | 6.1 | 0.0 | 11.0 |
| Age Pension (AP) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.3 |
| Total | 39.8 | 12.7 | 12.9 | 11.1 | 0.0 | 23.6 | 0.0 | 100 |

Transfers to mature age payments could loosely be considered age-related, but reasons for other transfers are unclear, and possibly quite varied. Particularly perplexing are transfers between parenting payments and unemployment benefits, which account for most of the transfers involving parenting payments that are attributed to ‘other factors’. Since these transfers are not associated with a change in family circumstances affecting eligibility for parenting payments, they would seem to be by persons eligible for parenting payments. It is not clear why a person eligible for parenting payments would ever choose to receive unemployment payments, although availability of employment assistance may be a factor.

Differences in churning and transferring patterns by sex and age

How churning and transferring behaviour varies with characteristics of recipients is investigated in the econometric modelling undertaken in Section 4. Descriptive analysis along these lines is restricted to comparisons of churning and transferring patterns by sex and age group. Table 13 presents the proportion of persons commencing a spell in each financial year in each churn/transfer group, the mean number of churns among churners and the mean number of transfers among transferrers, where a three-year observation window is used. The age groups correspond to the person’s age at the time of commencement of the first spell in the three-year window.²³

Males have higher rates of both churning and transferring than females, which is likely to be connected to a higher rate of receipt of non-activity-tested payments for females, in particular because of greater rates of receipt of parenting payments (see Tseng and Wilkins, 2002). The incidence of churning is decreasing in age for both males and females, declining from 59 per cent for males aged 15-19 and 44 per cent for females aged 15-19 to less than 12 per cent for both males and females aged 60-64 years. This probably reflects differences in the payment type composition by age, in turn reflecting the different nature of income support receipt at different points in the life cycle.

²³ As in earlier analysis, an individual enters as a separate observation for each financial year in which the individual commences a spell on income support (up until the 1998-99 financial year). We also require an individual to be under 65 years of age for the entire observation window, implying the 60-64 years group is in fact aged 60-62 at time of first spell commencement.

Table 13: Churning-transferring distribution by sex and age group (%)

| | Neither churn nor transfer | Transfer only | Churn only | Churn & transfer | Churners: Mean no. of churns | Transferrers: Mean no. of transfers | No. of obs. |
|-------------------|----------------------------------|------------------|---------------|---------------------|------------------------------------|---|----------------|
| Males | | | | | | | |
| <i>Age group:</i> | | | | | | | |
| 15-19 | 36.5 | 1.3 | 58.7 | 3.4 | 1.7 | 1.4 | 3,412 |
| 20-24 | 43.1 | 2.4 | 50.5 | 4.1 | 1.6 | 1.4 | 4,591 |
| 25-34 | 43.6 | 4.0 | 46.3 | 6.2 | 1.6 | 1.4 | 6,444 |
| 35-44 | 49.2 | 6.9 | 38.2 | 5.7 | 1.5 | 1.3 | 4,185 |
| 45-54 | 50.3 | 10.4 | 34.5 | 4.8 | 1.5 | 1.1 | 2,638 |
| 55-59 | 44.5 | 28.4 | 18.7 | 8.5 | 1.3 | 1.1 | 1,039 |
| 60-64 | 36.1 | 42.4 | 11.2 | 10.2 | 1.2 | 1.1 | 410 |
| All | 44.1 | 6.3 | 44.3 | 5.3 | 1.6 | 1.3 | 22,719 |
| Females | | | | | | | |
| <i>Age group:</i> | | | | | | | |
| 15-19 | 34.9 | 10.5 | 44.2 | 10.4 | 1.5 | 1.6 | 2,969 |
| 20-24 | 46.0 | 8.8 | 37.1 | 8.1 | 1.4 | 1.5 | 3,821 |
| 25-34 | 49.9 | 10.2 | 32.4 | 7.6 | 1.4 | 1.5 | 5,512 |
| 35-44 | 53.9 | 9.5 | 31.4 | 5.2 | 1.4 | 1.3 | 3,858 |
| 45-54 | 52.3 | 16.2 | 25.2 | 6.3 | 1.3 | 1.3 | 2,335 |
| 55-59 | 43.1 | 34.9 | 16.1 | 5.9 | 1.2 | 1.2 | 969 |
| 60-64 | 69.3 | 19.0 | 9.8 | 2.0 | 1.3 | 1.1 | 501 |
| All | 48.1 | 12.0 | 32.6 | 7.3 | 1.4 | 1.5 | 19,965 |

Also evident for males is a pattern with respect to transferring, with the incidence of transferring increasing in age. Transferring is especially prevalent among males aged 60-64 at the time of spell commencement: over 50 per cent transfer to another payment type within three years of spell commencement. Note that none of these transfers is to the age pension, and so must be to payment types such as mature age allowance and DSP. For females, the transferring incidence peaks for those in the 55-59 age range at first spell commencement, probably because of the lower age of eligibility for the age pension. Also notable is that the proportion of males who both churn and transfer in the three-year window is increasing in age, whereas it is decreasing in age for females.

4. Multinomial logit analysis of churning and transferring behaviour

In this section we investigate the determinants of churning and transferring behaviour using information on recipient characteristics available in the LDS 1% sample. These characteristics include sex, age, indigenous status, country of birth, family status, earned income, state of residence and initial payment type. We also examine the impact of recent (2-year) churning and transferring history, on the basis that past churning and transferring behaviour is likely to be

relevant to current behaviour, and for the related reason that inclusion of such history variables represent good controls for unobserved characteristics.

Outcome variable

We focus attention on modelling five distinct churning/transferring outcomes:

1. Neither churn nor transfer, and TTO is less than 50%
2. Neither churn nor transfer, and TTO is greater than or equal to 50%
3. Transfer only
4. Churn only
5. Both churn and transfer

This approach essentially restricts attention to identifying *whether* an individual churns and/or transfers, rather than the level of churning and/or transferring. The basis for this focus is the finding in Section 3 of little variation in the extent of churning among churners and transferring among transferrers. Most interest is therefore in identifying the predictors of the *incidence* of churning and transferring.

We do, however, distinguish low-TTO non-churning non-transferrers from high-TTO non-churning non-transferrers, on the basis of evidence in Section 3 (e.g. Figure 2) that these are two distinct groups of income support recipients, who differ in the dynamic properties of their income support receipt in important ways. Specifically, the former group represents short-term ‘non-recidivist’ recipients (who successfully exit payments on a long-term basis), while the latter group represents long-term recipients, who for the most part never make it off payments. Using an arbitrary cut-point of 50% (which in practice is not important, since most single-spell recipients have a TTO close to either 0 or 100%), we therefore distinguish between these two outcomes.

Sample selection

Decision rules on sample selection follow those adopted in the core parts of the descriptive analysis undertaken in Section 3. Churning and transferring behaviour is defined with respect to a three-year observation window – that is, an individual is classified as a churner/transferrer if that person churns/transfers within three years of commencement of the first spell in the period under study. Given the LDS sample period, this implies the first spell in the observation window must commence prior to 1 July 1999 for the full three-year window to be available. The sample that can be examined is further reduced by the requirement of two years churning and

transferring history prior to the commencement of the observation window. This implies that the observation window must commence after 30 June 1997. We are therefore restricted to observation windows commencing in the period 1 July 1997 to 30 June 1999, which is only a two-year period.²⁴

The number of observations is equal to the number of individuals who commence a spell in 1997-98 plus the number of individuals who commence a spell in 1998-99 – thus an individual who commences spells in both the 1997-98 and 1998-99 financial years will generate two observations. As in the core descriptive analysis, an individual must be under 65 years of age for the entire observation window to entire our sample.

Model specification

The dependent variable for churning/transferring behaviour that we seek to model has five distinct ‘values’ which have no natural ordering. An appropriate technique for modelling such a variable is multinomial logit. The multinomial logit model is identified by normalising the parameters β to zero for one outcome (the base category), and is described by the system of equations:

$$\Pr(y = 1) = \frac{1}{1 + \sum_{j=2}^J e^{X\beta_j}}$$

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

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

Coefficient estimates are not readily interpretable for logit models, and the effects of individual explanatory variables on the outcome variable depend on the values of the explanatory variables at which they are evaluated. Consequently, rather than report coefficient estimates, ‘mean marginal effects’ of the explanatory variables are reported.²⁵

²⁴ This provides the reason why we do not consider longer time-frames for both the churning/transferring history variables and the observation window. Although we could increase one or both by further reducing the sample period examined, this would be at the expense of sample sizes.

²⁵ Coefficients estimates are in fact reported in Appendix 5.

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

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

while the *mean* marginal effect is given by:

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

where $MME_{m,k}$ is the mean marginal effect of variable x_k on the predicted probability $\Pr(y = m | x)$, and the summation is over the n individuals in the sample. This is, as the name suggests, the mean marginal effect of the explanatory variable on the predicted probability a person is in category m , evaluated over all individuals in the sample, and holding all other explanatory variables constant at their actual values. Its interpretation is ‘the average effect on the probability of outcome m per unit increase in x_k ’.

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

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

where \mathbf{x}_{-k}^i represents the vector of characteristics of person i for all variables other than x_k . The *mean* marginal effect is as defined by Equation (3).²⁶ This is obtained by changing the explanatory variable x_k from zero to one for every individual, holding all other explanatory variables at their actual values, and calculating the mean change in the predicted probability.

However, an important issue that arises for the binary variables used in this study is that there are a number of ‘groups’ of binary variables, which implies a slight modification to Equation (4) may be appropriate. For example, we use seven dummy variables for age (with ‘aged 15-19’ the omitted dummy). Calculation of the marginal effect of changing an age dummy from zero to one is not entirely sensible if we do not account for the implications of this change for the other age dummies. For instance, if the 20-24 age dummy is equal to one, then all other age dummies should be zero, since a person cannot simultaneously be in two age groups. We resolve this issue

²⁶ *Marginal* effect is actually a misnomer for binary variables, since equation (4) gives the effect of a discrete change in the binary variable from 0 to 1. However, for expositional convenience, I will persist with using the term ‘marginal’ to describe the effect captured by (4).

by comparing the predicted probability when all dummy variables in the group are zero (the ‘base’ case) with the predicted probability when only the variable of interest in the group is set equal to one. For example, for the age dummies, the marginal effect for the 20-24 dummy is obtained by first calculating the predicted probability of the outcome when all age dummies are zero and then calculating the predicted probability when only the 20-24 age dummy equals one. This gives the effect of changing a person’s age from 15-19 (the omitted dummy) to 20-24.

The correspondingly modified version of Equation (4) is therefore:

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

where \mathbf{x}_o^i comprises a vector of characteristics of person i for all variables other than those in the group of dummy variables to which variable x_k belongs, and \mathbf{x}_g is the vector of other dummy variables in the group to which x_k belongs.²⁷

Note that the mean marginal effect of a variable sums to zero across the J possible outcome categories, i.e. $\sum_{j=1}^J MME_{j,k} = 0$. This implies that the MME can be inferred for one category if the

MMEs are known for all other categories. However, all outcome categories are reported, since the standard errors for the omitted outcome cannot be inferred from the other outcomes.²⁸

Multinomial logit models allow flexibility in terms of the nature of the effects of characteristics on outcomes when compared with alternatives such as ordered probit. However, it is necessary to invoke the ‘Independence of Irrelevant Alternatives’ (IIA) assumption. This requires the probability of one outcome relative to another to be insensitive to the existence of another possible outcome.²⁹

Two commonly employed tests of the IIA assumption are the Hausman test and the Small-Hsiao test. Both involve estimation of restricted models in which one or more of the outcome categories (and observations in those categories) are eliminated. Coefficient estimates from the

²⁷ Groups of dummy variables have been clearly indicated in both the discussion of the variables and presentation of the results.

²⁸ Studies in which qualitative dependent variable models are estimated commonly report marginal effects evaluated at *mean values* of the explanatory variables. A problem with this approach is that no-one is actually at the mean when we have binary explanatory variables and, furthermore, marginal effects can vary substantially, and in a non-linear fashion, with characteristics. Mean marginal effects are therefore more likely to produce representative estimates of the effects of characteristics. Another common approach for multinomial logit models is to present ‘odds ratios’, which give the effect of the explanatory variable on the likelihood of the outcome relative to the likelihood of the base outcome. While invariant with respect to the values of other characteristics, this is not necessarily informative with respect to the likelihood (probability) of the outcome. For example, an increase in an explanatory variable could increase the probability of both the outcome of interest and the base outcome. Also, large changes in the odds ratio could translate into small changes in probability, or vice versa.

restricted models are then compared with coefficient estimates from the full model, with large differences between the estimates implying violation of the IIA assumption. The Hausman and Small-Hsiao test statistics are both distributed chi-squared, large values implying violation of the IIA assumption. These test statistics were estimated for all models, with the Hausman tests implying, for all models, that the IIA assumption was not violated, and the Small-Hsiao tests giving inconsistent results (as is often the case). Individual tests results are not reported, however, since the tests actually provide little guidance to violations of the IIA assumption. In practice, the validity of the IIA assumption depends on modelling outcomes that are sufficiently distinct from each other.

A further set of tests employed in this study concern with whether the determinants of any two outcomes are similar, to the point that the outcomes can be regarded as indistinguishable. That is, if none of the independent variables significantly affect the odds of outcome m versus n , the two outcomes can be combined, resulting in more efficient estimates, with no loss of information. This amounts to a test of the hypothesis:

$$H_0 : \beta_{1,m|n} = \beta_{2,m|n} = \dots = \beta_{K,m|n} = 0 \quad (6)$$

where $\beta_{i,m|n}$ is the coefficient estimate of explanatory variable i for outcome m when the base outcome category is n . Both likelihood ratio (LR) and Wald tests can be used to test (6). The LR test of combining m and n involves estimating the unrestricted model and then a restricted model with base outcome m and with coefficient estimates for outcome n constrained to 0 (with the exception of the constant). The difference in the estimated log likelihood of the two models is distributed chi-squared with K degrees of freedom. The Wald test requires estimation of the unrestricted model only. It involves comparing the coefficient estimates for outcomes m and n , and the Wald statistic is also distributed chi-squared with K degrees of freedom.

Wald and LR tests for combining outcomes were conducted for all outcome combinations of all multinomial logit models. The results of the Wald and LR tests are not reported individually for each logit model, however, since the null hypothesis that two outcomes can be combined was rejected at the 1% level for all outcome combinations in all equations.

²⁹ See Long and Freese (2001) for further discussion of the IIA assumption.

Rather than attempt to derive analytic standard errors (which may not actually exist), standard errors for the estimates of mean marginal effects are derived from 400 bootstrap samples. The standard error of any statistic M is computed from the bootstrap distribution as:

$$SE_M = \sqrt{\left(\frac{1}{B-1}\right) \sum_{i=1}^B \left[\hat{M}^i - \left(\frac{1}{B}\right) \sum_{i=1}^B \hat{M}^i \right]^2} \quad (7)$$

where B is the number of bootstrap iterations and \hat{M}^i is the value of M in the i th bootstrap sample.

Models are estimated separately for males and females, on the basis that the determinants of churning and transferring behaviour are likely to be quite different for males compared with females. The core results are for models estimated over all observations in the 1997-98 and 1998-99 financial years. Models are also estimated separately by financial year to examine whether there are significant differences in individuals' churning and transferring behaviour between the two years. We find estimates of mean marginal effects are quite similar for the two individual years (see Appendix 6), and so we focus our discussion on the results from the models estimated over the full sample.

Although we do focus on the models estimated on the pooled sample, there is an issue that arises from the rule used for generation of an observation – that a separate observation is generated for an individual in each financial year that individual commences a spell on income support. This rule results in the sample containing some individuals with two observations. There are 2,366 individuals in the LDS 1% sample who commenced income support spells in both the 1997-98 and 1998-99 financial years, corresponding to 12.8 per cent of the individuals who commenced a spell in the two-year period, and therefore 22.7 per cent of the 20,822 observations. The occurrence of two observations for some individuals means that standard errors of the estimates should be adjusted to reflect the higher probability of appearing twice for churners who commence a spell in the 1997-98 financial year. This adjustment is made by treating the two observations for the one individual as a *cluster*, within which the assumption of independence of the error term is relaxed. That is, we assume that any two observations in different clusters are independent, but not any two observations within the one cluster.³⁰

Even after adjusting the standard errors, a further problem that persists with the adopted econometric model is that it ignores the potential consequences of unobserved individual heterogeneity. Specifically, there may be unobserved characteristics which are correlated with

³⁰ This is implemented in Stata using the 'cluster' option.

both the outcome variable and the explanatory variables, which will result in cross-sectional multinomial logit models producing inconsistent estimates. A potential alternative approach to overcome this problem is to fully utilise the panel structure of the data and apply the ‘random effects multinomial logit’ model, which can control for unobserved individual heterogeneity. We do not, however, use the random effects model, for two reasons. First, the proportion of individuals with two observations is fairly small. Second, and more importantly, we employ variables for past churning and transferring behaviour (see below), and these variables will actually control for a significant proportion of individual heterogeneity (see, for example, Le and Miller (2001) and Moffitt (2001) for evidence of the effectiveness of such ‘history’ variables in controlling for unobserved heterogeneity). Consequently, estimation of random effects models does not appear warranted, particularly given the need for extensive programming and the very high computational requirements of such models.

Explanatory variables

The explanatory variables were chosen, given the available data items in the LDS 1% sample, on the basis of characteristics thought likely to affect churning/transferring behaviour and/or of interest for their implications for churning and transferring behaviour. This decision process led to use of the following explanatory variables in the models estimated:

- Age group at time of commencement of the observation window. Seven dummy (binary) variables are used:
 1. 15-19 (the omitted category);
 2. 20-24;
 3. 25-34;
 4. 35-44;
 5. 45-54;
 6. 55-59; and
 7. 60-64.
- Country of birth and indigenous status. Four dummy variables are used for this group:
 1. Aboriginal, Torres Strait Islander or South Sea Islander (ATSI);
 2. Immigrant born in one of the main English-speaking countries (ESC);
 3. Immigrant born in another country (NESC); and
 4. Non-ATSI Australian-born (the omitted category).
- Partner status at commencement of the observation window. Three dummy variables:

1. No partner (the omitted dummy);
 2. Have a partner and that partner is also in receipt of income support (Partner – IS); and
 3. Have a partner and that partner is not in receipt of income support (Partner – not IS).
- Presence of children. Five dummy variables for whether the individual has dependent children and, if so, the age of the youngest child:
 1. No dependent children (the omitted category);
 2. Youngest dependent child aged 0-2 (Youngest 0-2);
 3. Youngest dependent child aged 3-5 (Youngest 3-5);
 4. Youngest dependent child aged 5-12 (Youngest 5-12); and
 5. Youngest dependent child aged 13 or over (Youngest ≥ 13).
 - Initial payment type. We use five dummy variables for initial payment type, which correspond to the level-2 classification of payment types, but with Parenting Payment Single and Parenting Payment Partnered combined into one category (because of collinearity with the partner status variable for recipients of parenting payments) and the Age Pension incorporated into the mature age payments category (because there will be no observations for males, and for females this will probably be captured by the 60-64 years age dummy). This results in the following five dummy variables:
 1. Unemployment benefits (the omitted category);
 2. Other short-term payment (OS);
 3. Parenting payments (PP);
 4. Disability Support Pension (DSP); and
 5. Mature-age payments (incorporating Age Pension) (MAP).
 - Earned income. Two continuous variables are employed for income earned in the observation window:
 - Average earned income in each fortnight on income support that the individual had positive earnings (expressed in units of one hundred dollars)
 - Proportion of fortnights on income support in which the individual had positive earned income.
 - Churning and transferring history. Six dummy variables are used for churning and transferring behaviour in the two years immediately preceding commencement of the observation window:

1. Did not receive income support (the omitted dummy);
 2. Neither churned nor transferred and $TTO < 50\%$ (Neither, low TTO);
 3. Neither churned nor transferred and $TTO \geq 50\%$ (Neither, high TTO);
 4. Transferred only (Transferred);
 5. Churned only (Churned); and
 6. Both churned and transferred (Both).
- State or territory of residence. Eight dummy variables:
 1. New South Wales (NSW);
 2. Victoria (the omitted dummy);
 3. Queensland (QLD);
 4. South Australia (SA);
 5. Western Australia (WA);
 6. Tasmania (TAS);
 7. Northern Territory (NT); and
 8. Australian Capital Territory (ACT).
 - Housing status. Six dummy variables:
 1. Own home outright (Owner – outright);
 2. Purchasing home, i.e. paying off mortgage (Owner – purchasing);
 3. Other owner (Owner – other);
 4. Renter with non-government landlord, i.e. renting privately (omitted category);
 5. Renter in public housing (Public renting); and
 6. Other non-owner (Other non-owner).

Means of the explanatory variables, by financial year and sex, are presented in Appendix 4.

As the itemisation of the explanatory variables indicates, most variables are defined with respect to their values at or prior to commencement of the observation window. While this is not problematic for characteristics that do not change over time (such as country of birth), or that change in a predictable fashion (such as age), for other characteristics we potentially exclude valuable information. For example, partner status and the presence of dependent children can change over time, and are likely to be important for churning and transferring behaviour. For these characteristics, we do not, however, include variables for values after commencement of the observation window. The primary reason for this is that to *explain* churning and transferring behaviour, we should examine characteristics that *pre-date* the behaviour. For example, it is not reasonable to attribute explanatory power for a payment type transfer to a change in partner

status that occurs after the transfer. Thus, if variables are to be defined to pre-date the dynamic behaviour we are modelling, only the values at or prior to the commencement of the observation window can be used.³¹

Two of the sets of dummy variables warrant further comment. First, with respect to the variables for churning and transferring history, these variables identify the same five outcomes that are modelled for the observation window (but for a two-year rather than a three-year period). There is, however, an additional category created for those who did not receive income support at all in the two years prior to commencement of the observation window. Although these individuals might be considered similar to the ‘neither, low TTO’ group, we consider non-receipt of income support a distinct outcome from any receipt, even if it is only a single short spell. As such, it would seem appropriate to allow churning and transferring to depend on whether any income support receipt has occurred in the two preceding years.

The second set of variables warranting further comment is the ‘initial payment type’ group. The variables in this group are likely to capture effects of factors reflecting the different eligibility requirements of the payment types. Some of these factors we explicitly include variables for, namely age, partner status and presence of dependent children. This suggests that the full impact of the characteristics will not be captured by the variables employed to measure them, since the initial payment type variables will in part pick up the effects of these characteristics.

To the extent possible, we have tried to address this problem by combining the parenting payments into one group and combining the age pension with other mature age payments. These steps eliminate distinctions between initial payment types that deliver little new information. We could, of course, completely eliminate all the payment type variables. While this would eliminate completely the problem of these variables picking up part of the effects properly attributable to personal characteristics for which we have variables, such an approach is not optimal. This is because the initial payment type variables we include contain important information about the characteristics of the recipient that is not captured by the available variables for personal characteristics. For example, a partnered female with dependent children could receive the disability support pension or parenting payment partnered, and clearly it is likely to matter which payment type it is for subsequent patterns of income support receipt.

³¹ We have, notwithstanding this issue, included variables for earned income which contain information on earnings after commencement of the observation window. There is in fact a case for including other variables for characteristics after commencement of the observation window, which is that they may reflect the nature of the recipient (e.g. prone to partnering and separating). However, we have not attempted this because it is not clear what these variables should be.

In light of the above considerations, our preferred approach is to include the initial payment type variables. At the same time, the potential for these variables to pick up effects of other included variables should be taken into account when interpreting the estimates we obtain, particularly for characteristics with a close connection to payment eligibility.

Regression results

Table 14 presents mean marginal effects of characteristics on the predicted probability of being in each outcome category, for males and females separately. For example, the mean marginal effect that appears in the first column, first row of Table 14a is 0.015. This estimate implies that a change from commencing the observation window in the 1998-99 financial year to commencing it in the 1997-98 financial year is associated with an average increase in the probability of being in the group ‘neither churn nor transfer, TTO<50%’ of 0.015. Such a change is also associated with an average decrease in the probability of being in the ‘churn and transfer’ group of 0.021, as indicated by the second last column of the same row. As mentioned earlier, the mean marginal effects for a given explanatory variable must sum to zero across all of the outcomes – thus, if one or more outcomes have positive mean marginal effects, at least one outcome must have a negative mean marginal effect.

The second panel of Table 14 presents the mean marginal effects for the group of age dummies. Age effects will reflect differences in the nature of payment receipt by age due to lifecycle factors and also due to differences across birth cohorts. For males, the probability of churning-only is decreasing in age – that is, the mean marginal effect estimate is lower for each successive age group from the 15-19 through to the 60-64 age groups – and the probability of transferring-only is increasing in age. There is also a pattern by age evident for the probability of having a single short spell over the 20-64 years age range, which is that the probability of this outcome is decreasing in age. The youngest age group (15-19 years old) does not follow this pattern, however, with the mean marginal effect on the probability of a single short spell approximately the same as for 35-44 year-old men.

Also evident from the estimates for the age group variables is that men in the 25-54 years age range have a significantly higher probability of a single long spell, given a spell is commenced (and holding other characteristics constant), than younger men. Older men (aged 55-64 years) in turn have a higher probability of a single long spell than men aged 35-54, but this is brought about by a large increase in the likelihood of transferring-only for this group. A further finding for men aged 35-54 is that they are, all else equal, the least likely of all age groups to both churn

and transfer – men aged 55-64 are less likely to churn than men aged 35-54, but it appears that the effect of their much higher rate of transferring dominates, leading to a higher rate of being in the churn and transfer group.

The findings suggest that young males are more likely to exit income support receipt, either long-term (as indicated by the higher probability of single short spells for males around the 20-34 age range) or temporarily (as indicated by the mean marginal effect on the probability of churning decreasing in age). This finding is not surprising given the comparative stage of the lifecycle of young males. For example, incentives to take lower-paying jobs would be greater for younger workers, since such jobs may increase future earnings through on-the-job training or learning.

For females (Table 14b), age effects are not as strong as are evident for males, but general patterns are broadly similar. The smaller differences by age may be partially explained by a greater likelihood of child-rearing responsibilities, which applies across a fairly wide range of ages.

The third panel of Table 14 presents the mean marginal effects estimates for country-of-birth and indigenous status group of dummy variables. For both males and females, country of birth and indigenous status appear to have little influence on churning and transferring behaviour.

The effects of family status are presented in the fourth and fifth panels of Table 14. Considering first males, compared with a single man, a coupled man is less likely to churn-only, whether or not his partner is on income support at commencement of the observation window. However, there do exist important differences between coupled men depending on whether the partner is also initially on income support. Having a partner who is on income support is associated with a higher probability of transferring (compared with both being single or having a partner who is not on income support). By contrast, commencing on income support with a partner who is not on income support is associated with a substantially higher probability of a single short spell and a lower probability of a long spell on a single payment type. Thus, partnering with a woman who is not on income support appears to decrease the likelihood of long-term welfare receipt, compared with either of the alternatives (being single or partnered with a woman on income support).

For females, commencing a spell on income support with a partner who is also on income support is not associated with a significant effect on the probability of churning-only compared with being single, but it is associated with a large increase in the probability of transferring at the

expense of a long spell on one payment type. This may reflect an increased likelihood of transferring for women with children caused by separation from the partner. Commencing a spell with a partner who is not on income support is associated with a moderate increase in the probability of transferring-only and – like males – a substantial increase in the probability of a single short spell on one payment type. These increases are largely at the expense of a single long spell on one payment type, although a significant decrease in the probability of churning-only is also evident compared with commencing the spell without a partner.

The important inference for females is that, like males, commencing the observation window with a partner who is not on income support is associated with better outcomes in the aggregate. This is because, although the probability of transferring-only is higher than when commencing without a partner, this is more than outweighed by the decrease in the probability of a single long spell, such that there is a 0.055 increase in the probability of a single short spell on one payment type. Also similar to males is that commencing with a partner also on income support is not associated with a significantly different probability of a single short spell than is the case for commencing without a partner. However, the increased probability of transferring associated with a partner on income support, compared with having no partner, is much larger for females than males.³²

In interpreting these results – and indeed all of the results we obtain – we should remain cognisant of potential ‘selection effects’. For example, a partnered female on income support will likely be the partner of low-income person, whereas some single women who commence spells on income support may subsequently partner with high-income males and exit the income support system. The women who commence the observation window with a partner are therefore likely to on average differ in ways that affect patterns of income support receipt from women who commence the observation window without a partner. Such differences could in part drive the observed association between partner presence at commencement of first spell and subsequent patterns of income support receipt.

Perhaps somewhat counter-intuitively, the presence of dependent children appears to have little impact on churning and transferring behaviour for both males and females. While for males this might simply reflect a true absence of effects of dependent children, a potential explanation for females is that the effects of dependent children are largely captured by the initial payment type variable ‘parenting payments’. It should also be noted that effects of dependent children are, in

any case, not completely absent for females. First, the point estimates for females do imply that the presence of a dependent child under 13 years of age increases the probability of a long spell on a single payment type at the expense of a single short spell – and indeed this effect is statistically significant if the youngest child is under 3 years of age.

The second notable exception with respect to the absence of statistically significant effects for the dependent children variables is that females who initially have one or more dependent children, the youngest of whom is at least 13 years of age (but under 16), do have significantly different probabilities of each churning/transferring outcome than females without dependent children. Compared with other females, this group of females has a higher probability of transferring (whether with or without churning), which no doubt is closely connected to eligibility requirements of payments, with recipients of parenting payments becoming ineligible once the youngest child reaches 16 years of age. The estimates also provide some evidence that ineligibility for parenting payments arising from ageing of the youngest dependent child increases exit from payments, with a positive (but statistically insignificant) mean marginal effect on the probability of a short spell on one payment type associated with the youngest child being aged 13 years or older.³³

Turning our attention to the ‘initial payment type’ group of variables, as expected, unemployment benefits (the omitted category) are associated with a higher probability of single short spells and a lower probability of single long spells than all other initial payment types, with the exception of other short-term payments. Also consistent with expectations (and the findings in Table 6), individuals who commence the observation window on unemployment payments are more likely to churn than those who commence on other payment types, with the exception for females of those who commence on parenting payments.

Male recipients initially receiving parenting payments have higher probabilities of transferring (including both churning and transferring) than those with an initial payment type of unemployment benefits. This likely reflects the effects of changes in partner status, which necessarily generate a transfer if the payment type is a parenting payment. Somewhat

³² It should be noted that partnered males are likely to have a similar risk of separation as females, but this would not trigger a payment transfer as often as it would for females (for example, as it would if the family has dependent children).

³³ Similar to the issue of selection effects raised with respect to partnered women, it should be noted that women with dependent children who actually *commence* a spell on income support when the youngest child is aged 13 or more years may be quite different to other women on income support with a youngest dependent child aged 13 or more.

unexpected, however, is that females do not have the same pattern of a higher probability of transferring associated with parenting payments compared with unemployment benefits.

Since our observation window is a medium-term period (three years), it is not surprising that disability support pension recipients tend to have long spells on that payment. For males, the probability of such an outcome is on average 0.513 higher for Disability Support Pension recipients compared with unemployment benefit recipients, and for females it is on average 0.509 higher. The likelihood of churning and transferring is also very low for the Disability Support Pension compared with other payment types, with the exception of mature age payments, which also tend to have low probabilities of churning and transferring.

An interesting finding with respect to earned income while on income support is that the proportion of fortnights with positive earnings works in the opposite direction to the average value (amount) of earnings in those fortnights with positive earnings. Increasing the average amount of earnings by 100 dollars per fortnight in which earnings are positive lowers the probability of a short spell on one payment by 0.021 for males and 0.027 for females, at the same time increasing the probability of all four other outcomes. In contrast, increasing the proportion of the fortnights on income support in which an individual has positive earnings raises the probability of a single short spell and lowers the probability of being in other outcome categories. This result is perhaps more consistent with intuition, since a higher proportion of time on income support with earnings suggests greater attachment to the labour market while on income support. One possible explanation of the ‘adverse’ effect of average earnings is that when we compare two individuals with the same proportion of time with positive earnings, the one with higher average earnings could conceivably be more content to remain on income support.

The bottom panels of Tables 14a and 14b present estimates of mean marginal effects for churning and transferring history. Past churning and transferring behaviour has a large influence on individuals’ current churning and transferring behaviour, a finding that holds for both males and females. For example, males who were churners in the two years preceding commencement of the observation window have a 0.142 higher probability of being in the churning group and a 0.061 higher probability of being in the ‘both churn and transfer’ group than those with no payment history. Similarly, for those with a single long spell in the two years prior to the observation window, the probability of have another single long spell is higher than for those with no payment history. Interestingly, however, it is not simply a matter of current behaviour replicating past behaviour. Any payment history (in the two-year period) is associated with a

reduced probability of a single short spell (the most desirable outcome from the perspective of minimising reliance on income support, given a person does receive income support), and an increased probability of churning and/or transferring. Indeed, any recent history of income support receipt increases the probability of an individual *both* churning and transferring in the observation window (i.e. being in the ‘churn and transfer’ group).

Table 14 also contains mean marginal effects estimates for state or territory of residence and for housing status. Both groups of variables are included primarily to control for their effects in order to estimate other effects, rather than for innate interest in their effects. Nonetheless, it is notable that, for males, living in Victoria, New South Wales or the ACT is associated with a higher probability of a single short spell, and a lower probability of churning. With respect to housing status, as might be expected, residing in public housing is, compared with renting privately, associated with a decreased probability of a single short spell and an increased probability of a single long spell. By contrast, home ownership (outright or not) is associated with an increased likelihood of a single short spell.

Table 14a: Multinomial logit mean marginal effects – Individuals commencing spells in 1997-98 and individuals commencing spells in 1998-99 – Males

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|---|--|-------|--|-------|---------------|-------|------------|-------|---------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| Year – 1997-98 | 0.015* | 0.009 | 0.024** | 0.006 | 0.005 | 0.004 | -0.022** | 0.009 | -0.021** | 0.004 |
| <i>Age group</i> | | | | | | | | | | |
| 20-24 | 0.067** | 0.017 | 0.011 | 0.013 | 0.046* | 0.025 | -0.114** | 0.016 | -0.011 | 0.008 |
| 25-34 | 0.039** | 0.017 | 0.028** | 0.013 | 0.062** | 0.024 | -0.124** | 0.016 | -0.005 | 0.007 |
| 35-44 | 0.000 | 0.019 | 0.055** | 0.017 | 0.123** | 0.033 | -0.164** | 0.017 | -0.014* | 0.008 |
| 45-54 | -0.052** | 0.021 | 0.084** | 0.022 | 0.184** | 0.044 | -0.204** | 0.020 | -0.013 | 0.009 |
| 55-59 | -0.163** | 0.023 | 0.011 | 0.023 | 0.443** | 0.059 | -0.319** | 0.020 | 0.028 | 0.018 |
| 60-64 | -0.260** | 0.015 | -0.031 | 0.020 | 0.641** | 0.052 | -0.372** | 0.020 | 0.023 | 0.025 |
| <i>Country of birth & indigenous status</i> | | | | | | | | | | |
| ESC | -0.010 | 0.013 | 0.017* | 0.010 | 0.000 | 0.006 | -0.002 | 0.015 | -0.005 | 0.007 |
| NESC | 0.018 | 0.012 | -0.014 | 0.009 | -0.010* | 0.005 | 0.007 | 0.012 | -0.002 | 0.006 |
| ATSI | 0.018 | 0.024 | 0.008 | 0.016 | -0.026** | 0.009 | 0.015 | 0.025 | -0.014 | 0.010 |
| <i>Partner status</i> | | | | | | | | | | |
| Partner on IS | 0.028 | 0.017 | -0.002 | 0.011 | 0.018** | 0.008 | -0.049** | 0.018 | 0.005 | 0.009 |
| Partner not on IS | 0.099** | 0.019 | -0.041** | 0.010 | -0.010 | 0.007 | -0.062** | 0.019 | 0.013 | 0.011 |
| <i>Presence of children</i> | | | | | | | | | | |
| Youngest 0-2 | -0.016 | 0.020 | 0.017 | 0.017 | -0.008 | 0.009 | -0.002 | 0.023 | 0.009 | 0.013 |
| Youngest 3-5 | -0.036 | 0.027 | 0.002 | 0.020 | 0.014 | 0.014 | 0.023 | 0.031 | -0.002 | 0.016 |
| Youngest 5-12 | -0.017 | 0.022 | 0.009 | 0.014 | -0.018** | 0.008 | 0.013 | 0.025 | 0.013 | 0.014 |
| Youngest ≥13 | 0.025 | 0.029 | -0.014 | 0.016 | -0.006 | 0.009 | 0.003 | 0.031 | -0.008 | 0.013 |
| <i>Initial payment type</i> | | | | | | | | | | |
| OS | 0.049** | 0.020 | -0.117** | 0.008 | 0.078** | 0.014 | -0.122** | 0.023 | 0.111** | 0.017 |
| PP | -0.078** | 0.024 | 0.092** | 0.024 | 0.052** | 0.017 | -0.129** | 0.029 | 0.063** | 0.021 |
| DSP | -0.196** | 0.020 | 0.513** | 0.029 | -0.062** | 0.003 | -0.219** | 0.025 | -0.036** | 0.008 |
| MAP | -0.060 | 0.059 | 0.291** | 0.061 | -0.019 | 0.016 | -0.197** | 0.063 | -0.016 | 0.026 |
| <i>Earned Income</i> | | | | | | | | | | |
| Amount | -0.021** | 0.003 | 0.007** | 0.001 | 0.004** | 0.001 | 0.007** | 0.002 | 0.003** | 0.001 |
| Time | 0.121** | 0.021 | -0.044** | 0.014 | -0.036** | 0.011 | -0.021 | 0.021 | -0.020* | 0.010 |
| <i>Churning & transferring history</i> | | | | | | | | | | |
| Neither, low TTO | -0.075** | 0.010 | -0.010 | 0.008 | -0.015** | 0.005 | 0.090** | 0.012 | 0.011 | 0.007 |
| Neither, high TTO | -0.189** | 0.010 | 0.079** | 0.011 | 0.027** | 0.008 | 0.029* | 0.015 | 0.054** | 0.011 |
| Transferred | -0.123** | 0.030 | 0.027 | 0.026 | 0.025 | 0.021 | -0.037 | 0.040 | 0.107** | 0.033 |
| Churned | -0.188** | 0.010 | -0.010 | 0.009 | -0.004 | 0.007 | 0.142** | 0.013 | 0.061** | 0.010 |
| Both | -0.163** | 0.038 | -0.035 | 0.032 | 0.015 | 0.029 | 0.030 | 0.059 | 0.153** | 0.052 |

Table 14a continued: Multinomial logit mean marginal effects – Individuals commencing spells in 1997-98 and individuals commencing spells in 1998-99 – Males

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|--|--|-------|--|-------|---------------|-------|------------|-------|---------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| <i>State or territory of residence</i> | | | | | | | | | | |
| NSW | -0.006 | 0.011 | -0.010 | 0.008 | 0.000 | 0.006 | 0.015 | 0.013 | 0.000 | 0.006 |
| QLD | -0.037** | 0.012 | -0.038** | 0.008 | 0.007 | 0.006 | 0.066** | 0.014 | 0.002 | 0.006 |
| SA | -0.047** | 0.017 | 0.002 | 0.012 | 0.019* | 0.010 | 0.031 | 0.019 | -0.005 | 0.009 |
| WA | -0.044** | 0.014 | -0.031** | 0.010 | -0.021** | 0.007 | 0.093** | 0.016 | 0.002 | 0.008 |
| TAS | -0.031 | 0.026 | 0.008 | 0.018 | 0.006 | 0.014 | 0.031 | 0.029 | -0.014 | 0.013 |
| NT | -0.093** | 0.032 | 0.002 | 0.024 | -0.037** | 0.011 | 0.090** | 0.035 | 0.039* | 0.021 |
| ACT | 0.010 | 0.044 | -0.027 | 0.026 | 0.036 | 0.027 | 0.010 | 0.046 | -0.029 | 0.018 |
| <i>Housing status</i> | | | | | | | | | | |
| Owner-outright | 0.037** | 0.017 | -0.005 | 0.010 | -0.002 | 0.006 | -0.006 | 0.018 | -0.024** | 0.006 |
| Home-purchasing | 0.063** | 0.024 | -0.021 | 0.015 | -0.006 | 0.010 | -0.032 | 0.025 | -0.003 | 0.011 |
| Owner-other | -0.030 | 0.045 | 0.016 | 0.027 | -0.003 | 0.017 | 0.026 | 0.053 | -0.010 | 0.019 |
| Public renting | -0.099** | 0.028 | 0.083** | 0.025 | 0.019 | 0.015 | 0.001 | 0.031 | -0.003 | 0.014 |
| Other non-owner | -0.019* | 0.011 | 0.011 | 0.008 | 0.001 | 0.006 | 0.004 | 0.012 | 0.004 | 0.006 |

Note: SE: Standard errors derived from 400 bootstrap samples. ** and * indicate significance at the 5% and 10% level respectively.

Table 14b: Multinomial logit mean marginal effects – Individuals commencing spells in 1997-98 and individuals commencing spells in 1998-99 – Females

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|---|--|-------|--|-------|---------------|-------|------------|-------|---------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| Year – 1997-98 | -0.019** | 0.009 | 0.007 | 0.008 | 0.006 | 0.006 | 0.019** | 0.009 | -0.013** | 0.005 |
| <i>Age group</i> | | | | | | | | | | |
| 20-24 | 0.122** | 0.017 | 0.016 | 0.016 | -0.033** | 0.010 | -0.072** | 0.014 | -0.033** | 0.006 |
| 25-34 | 0.109** | 0.017 | 0.046** | 0.016 | -0.022** | 0.011 | -0.084** | 0.015 | -0.049** | 0.007 |
| 35-44 | 0.098** | 0.019 | 0.076** | 0.019 | -0.029** | 0.012 | -0.088** | 0.016 | -0.057** | 0.007 |
| 45-54 | 0.009 | 0.020 | 0.115** | 0.024 | 0.033** | 0.017 | -0.127** | 0.017 | -0.030** | 0.009 |
| 55-59 | -0.149** | 0.023 | 0.069** | 0.031 | 0.307** | 0.038 | -0.193** | 0.020 | -0.034** | 0.013 |
| 60-64 | -0.242** | 0.017 | 0.191** | 0.044 | 0.306** | 0.050 | -0.204** | 0.026 | -0.051** | 0.014 |
| <i>Country of birth & indigenous status</i> | | | | | | | | | | |
| ESC | 0.010 | 0.015 | 0.015 | 0.012 | 0.000 | 0.010 | -0.012 | 0.016 | -0.012 | 0.009 |
| NESC | -0.011 | 0.012 | 0.002 | 0.011 | 0.000 | 0.009 | 0.009 | 0.013 | 0.000 | 0.007 |
| ATSI | -0.047* | 0.025 | 0.045* | 0.025 | 0.018 | 0.021 | -0.002 | 0.026 | -0.015 | 0.015 |
| <i>Partner status</i> | | | | | | | | | | |
| Partner on IS | -0.002 | 0.013 | -0.094** | 0.009 | 0.063** | 0.011 | 0.006 | 0.013 | 0.027** | 0.010 |
| Partner not on IS | 0.055** | 0.015 | -0.077** | 0.009 | 0.035** | 0.012 | -0.028* | 0.014 | 0.015 | 0.011 |
| <i>Presence of children</i> | | | | | | | | | | |
| Youngest 0-2 | -0.063** | 0.025 | 0.057** | 0.028 | 0.017 | 0.022 | -0.038 | 0.027 | 0.026 | 0.020 |
| Youngest 3-5 | -0.047* | 0.028 | 0.036 | 0.028 | 0.036 | 0.028 | -0.074** | 0.028 | 0.048* | 0.027 |
| Youngest 5-12 | -0.012 | 0.026 | 0.033 | 0.026 | 0.006 | 0.022 | -0.041 | 0.026 | 0.013 | 0.019 |
| Youngest ≥13 | 0.037 | 0.028 | -0.049** | 0.022 | 0.043* | 0.023 | -0.082** | 0.027 | 0.050** | 0.024 |
| <i>Initial payment type</i> | | | | | | | | | | |
| OS | -0.051** | 0.024 | -0.173** | 0.016 | 0.176** | 0.031 | -0.076** | 0.028 | 0.124** | 0.024 |
| PP | -0.101** | 0.024 | 0.176** | 0.025 | -0.046** | 0.016 | -0.009 | 0.024 | -0.021 | 0.013 |
| DSP | -0.198** | 0.020 | 0.509** | 0.032 | -0.079** | 0.010 | -0.186** | 0.024 | -0.046** | 0.011 |
| MAP | -0.097** | 0.020 | 0.388** | 0.024 | -0.087** | 0.008 | -0.163** | 0.019 | -0.041** | 0.009 |
| <i>Earned Income</i> | | | | | | | | | | |
| Amount | -0.027** | 0.003 | 0.008** | 0.002 | 0.006** | 0.001 | 0.009** | 0.003 | 0.004** | 0.001 |
| Time | 0.129** | 0.020 | -0.051** | 0.017 | -0.029** | 0.014 | -0.032 | 0.026 | -0.017 | 0.012 |
| <i>Churning & transferring history</i> | | | | | | | | | | |
| Neither, low TTO | -0.059** | 0.011 | -0.012 | 0.009 | 0.007 | 0.009 | 0.046** | 0.013 | 0.017** | 0.008 |
| Neither, high TTO | -0.137** | 0.011 | 0.069** | 0.014 | 0.021* | 0.012 | 0.014 | 0.017 | 0.033** | 0.011 |
| Transferred | -0.138** | 0.019 | -0.031 | 0.020 | 0.137** | 0.026 | -0.022 | 0.027 | 0.054** | 0.020 |
| Churned | -0.116** | 0.012 | -0.044** | 0.014 | -0.008 | 0.012 | 0.116** | 0.018 | 0.051** | 0.012 |
| Both | -0.175** | 0.029 | -0.090** | 0.029 | 0.109** | 0.044 | -0.009 | 0.049 | 0.164** | 0.045 |

Table 14b continued: Multinomial logit mean marginal effects – Individuals commencing spells in 1997-98 and individuals commencing spells in 1998-99 – Females

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|--|--|-------|--|-------|---------------|-------|------------|-------|---------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| <i>State or territory of residence</i> | | | | | | | | | | |
| NSW | -0.004 | 0.013 | -0.004* | 0.010 | 0.010 | 0.009 | -0.008 | 0.013 | 0.006 | 0.008 |
| QLD | -0.022 | 0.013 | -0.029** | 0.010 | 0.001 | 0.010 | 0.022 | 0.014 | 0.028** | 0.009 |
| SA | -0.027 | 0.018 | -0.002 | 0.015 | 0.005 | 0.014 | 0.018 | 0.020 | 0.006 | 0.013 |
| WA | -0.005 | 0.016 | -0.039** | 0.012 | -0.010 | 0.012 | 0.024 | 0.018 | 0.031** | 0.013 |
| TAS | -0.022 | 0.028 | -0.038* | 0.021 | 0.030 | 0.023 | 0.007 | 0.031 | 0.023 | 0.020 |
| NT | -0.072** | 0.035 | 0.015 | 0.036 | -0.011 | 0.028 | 0.033 | 0.042 | 0.035 | 0.029 |
| ACT | 0.060 | 0.044 | -0.061* | 0.032 | -0.013 | 0.029 | -0.007 | 0.046 | 0.022 | 0.032 |
| <i>Housing status</i> | | | | | | | | | | |
| Owner-outright | 0.045** | 0.015 | 0.019* | 0.011 | -0.032** | 0.008 | -0.008 | 0.015 | -0.024** | 0.007 |
| Home-purchasing | 0.068** | 0.023 | -0.005 | 0.016 | -0.040** | 0.013 | 0.004 | 0.022 | -0.027** | 0.011 |
| Owner-other | -0.032 | 0.038 | 0.011 | 0.024 | -0.042** | 0.020 | 0.096** | 0.043 | -0.033* | 0.018 |
| Public renting | -0.059** | 0.027 | 0.032 | 0.022 | 0.000 | 0.018 | 0.011 | 0.030 | 0.015 | 0.016 |
| Other non-owner | 0.015 | 0.012 | 0.013 | 0.010 | -0.017** | 0.008 | -0.004 | 0.012 | -0.008 | 0.007 |

Note: SE: Standard errors derived from 400 bootstrap samples. ** and * indicate significance at the 5% and 10% level respectively.

5. Conclusion

This study has produced a number of important insights, not only into the extent of churning and transferring, but also the nature of churning and transferring patterns, how patterns depends on payment type, the implications of different patterns for reliance on income support, and the determinants of churning and transferring behaviour. First and foremost of the findings is that churning and transferring are important features of income support receipt in Australia. Interestingly, to some extent they are non-intersecting events, at least in the short to intermediate term – that is, churning makes transferring less likely, and transferring makes churning less likely.

Churning is generally associated with ‘intermediate’ levels of reliance, and in fact most people with intermediate levels of reliance are churners. While churning is therefore preferable to permanent reliance on income support, it is clear that churners are a disadvantaged group who cannot completely escape reliance on welfare. Churning is primarily associated with unemployment payments, the implication being that churners are not completely successful participants in the labour market. Churning is also more prevalent among younger people.

We find transferring is generally associated with long-term reliance on income support, even in the relatively infrequent cases where a transfer is from a non-activity-tested payment type to an activity-tested payment type. The conclusion is that transfers are rarely of the kind that could be

considered a ‘stepping stone’ to exit from income support, and even when they are of that kind (from non-tested to tested payment types), the stepping stone function is very limited.

A number of interesting findings emerge from estimation of the determinants of churning and transferring behaviour. Age, family status, initial payment type, earnings while on income support and recent churning and transferring history all have significant effects on the relative likelihood of the five outcomes modelled. A particularly notable finding is that *any* recent receipt of income support increases the likelihood of churning and/or transferring, and does not necessarily increase the likelihood of a single long spell on income support.

Among the many possibilities for further research, three perhaps warrant specific mention. First is that it would be valuable to formally investigate the implications of churning and transferring history for reliance on welfare (as measured by TTO). In this study, we have only investigated this association informally via descriptive statistics. Second, an important extension of the work undertaken in this study would be to examine the impact of labour market changes – such as changes in the unemployment rate, the part-time/full-time composition of employment and wage rates – on income support receipt patterns, and how these effects differ across different groups of recipients.

A third valuable line of inquiry is to estimate the extent of ‘state’ or ‘duration’ dependence of income support receipt. For example, does income support receipt itself make future income support receipt more likely? This issue is of fundamental interest for its implications for the nature of welfare reliance and therefore the policies required to reduce reliance. While some attempts have been made in this regard in Australia (in particular, by Gong (2004), who examines single mothers), we are not completely convinced that the methods used in this research to identify state/duration dependence effectively control for individual heterogeneity. We therefore see a need for further research on this issue.

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Appendix 1: Classification of payment types

| Category | | | Payment type (LDS name) | No of obs [*] | | |
|---|------------------------------------|-----------------------------|--|--------------------------|-------------------------------------|--------|
| Level 1 | Level 2 | Level 3 | | | | |
| Work activity- tested | Unemployment benefits | Unemployment benefits | Newstart Allowance (NSA) | 1,165,907 | | |
| | | | Job Seeker Allowance (JSA) | 142,789 | | |
| | | | Youth Training Allowance (YTA) | 24,048 | | |
| | | | Youth Allowance (YAL) | 95,919 | | |
| | Other short-term Allowances | Special & Crisis Payment | Bereavement Allowance (BVA) | 29 | | |
| Crisis Payment (NSC) | | | 653 | | | |
| Crisis Payment (PNC) | | | 308 | | | |
| Drought Relief Payment (DR) | | | 5,726 | | | |
| Drought Relief Payment (DRP) | | | 352 | | | |
| Emergency and General Assistance (EMG) | | | 653 | | | |
| Exceptional Circumstances Payment (ECP) | | | 1,444 | | | |
| Farm Family Restart Scheme (FFR) | | | 852 | | | |
| Special Benefit (SPB) | | | 5,263 | | | |
| Special Benefit (SPL) | | | 5,613 | | | |
| | | | Sickness Allowance | | Sickness Allowance (SA) | 18,915 |
| | | | | | Sickness Allowance (SKA) | 13,294 |
| Mature Age Payments | | | Mature Age Allowance | Mature Age Allowance | Newstart Mature Age Allowance (NMA) | 46,956 |
| | Mature Age Allowance (MAA) | 35,075 | | | | |
| | Partner Allowance (PA) | 52,005 | | | | |
| | Mature Age Partner Allowance (MPA) | 8,710 | | | | |
| | Widow Allowance | Widow Allowance | Widow Allowance | Partner Allowance (PTA) | 96,294 | |
| | | | | Widow Pension (WID) | 29,461 | |
| | | | | Widow Allowance (WA) | 9,924 | |
| | | | Widow Allowance (WDA) | 33,486 | | |
| | Carer Payment | Carer Payment | | Carer Payment (CAR) | 71,527 | |
| | | | | Wife's Pension Age (WFA) | 57,590 | |
| Wife's Disability Support Pension (WFD) | | | | 136,555 | | |
| Age Pension | Age Pension | Age Pension (AGE) | 337,571 | | | |
| Parenting Parent Single | Parenting Payment Single | | Sole Parent Pension (SPP) | 240,399 | | |
| | | | Parenting Payment Single (PPS) | 432,490 | | |
| Parenting Payment Partnered | Parenting Payment Partnered | | Partner of Newstart (NMA, NSA, SKA, AUS) (PGN) | 203,916 | | |
| | | | Partner of Pension (AGE, DSP, PEN) (PGP) | 28,487 | | |
| | | | Partner of person on low income (PGL) | 160,523 | | |
| | | | Parenting Basic (PGA) | 4 | | |
| | | | Partner of dependent YA recipient (PGY) | 84 | | |
| | | | Crisis Payment (PGC) | 6 | | |
| DSP | DSP | | Disability Support Pension (DSP) | 1,021,090 | | |
| | | | Disability Wage Supplement (DWS) | 154 | | |

* An observation is a payment record for a single fortnight. The number of observations is evaluated over all persons in the LDS aged less than 65 years in the sample period.

Appendix 2: Mean total proportion of time on income support by level of churning and transferring

| <i>No. of churns</i> | | <i>No. of transfers</i> | | | | Total |
|----------------------|-------------|-------------------------|-------|-------|---------------|--------|
| | | None | One | Two | Three or more | |
| None | Mean TTO | 0.43 | 0.90 | 0.95 | 0.97 | 0.51 |
| | S.E | 0.40 | 0.23 | 0.15 | 0.11 | 0.41 |
| | No. of. Obs | 19,819 | 2,937 | 648 | 288 | 23,692 |
| One | Mean TTO | 0.47 | 0.71 | 0.78 | 0.83 | 0.51 |
| | S.E | 0.29 | 0.24 | 0.18 | 0.12 | 0.30 |
| | No. of. Obs | 10,633 | 1,374 | 286 | 121 | 12,414 |
| Two | Mean TTO | 0.49 | 0.61 | 0.65 | 0.80 | 0.50 |
| | S.E | 0.23 | 0.20 | 0.17 | 0.10 | 0.23 |
| | No. of. Obs | 4,318 | 487 | 115 | 38 | 4,958 |
| Three or more | Mean TTO | 0.49 | 0.57 | 0.61 | 0.64 | 0.50 |
| | S.E | 0.17 | 0.16 | 0.15 | 0.14 | 0.18 |
| | No. of. Obs | 1,784 | 198 | 41 | 32 | 2,055 |
| Total | Mean TTO | 0.45 | 0.81 | 0.86 | 0.90 | 0.51 |
| | S.E | 0.34 | 0.26 | 0.20 | 0.15 | 0.36 |
| | No. of. Obs | 36,554 | 4,996 | 1,090 | 479 | 43,119 |

Appendix 3: Churning, transferring and TTO for those whose initial payment type is a parenting payment

| | Neither churn nor transfer | Transfer only | Churn only | Churn & transfer | Total |
|--|-------------------------------|---------------|------------|---------------------|-------|
| Mean TTO (%) | 55.1 | 89.1 | 51.9 | 70.3 | 58.8 |
| <i>Per cent of sample in each churning-transferring-TTO cell</i> | | | | | |
| <i>TTO groups:</i> | | | | | |
| 0-24 % | 18.9 | 0.4 | 6.2 | 0.2 | 25.6 |
| 25-49 % | 6.5 | 0.7 | 8.4 | 1.0 | 16.5 |
| 50-74 % | 4.4 | 0.7 | 8.2 | 2.8 | 16.2 |
| 75-100 % | 21.9 | 8.4 | 7.6 | 3.6 | 41.6 |
| Total | 51.7 | 10.16 | 30.4 | 7.7 | 100 |

Note: An observation comprises the 3-year period following an individual's first spell commencement in each financial year.

Appendix 4: Sample means by sex and financial year

| Variable name | 1997-98 | | 1998-99 | | Total |
|---|---------|--------|---------|--------|--------|
| | Male | Female | Male | Female | |
| <i>Age group</i> | | | | | |
| 15-19 | 14.9 | 14.6 | 14.5 | 15.2 | 14.8 |
| 20-24 | 19.8 | 18.3 | 19.8 | 18.4 | 19.1 |
| 25-34 | 28.9 | 28.3 | 28.6 | 25.8 | 28.0 |
| 35-44 | 18.1 | 19.6 | 18.4 | 19.9 | 19.0 |
| 45-54 | 12.4 | 11.6 | 11.6 | 12.8 | 12.1 |
| 55-59 | 4.2 | 5.1 | 4.9 | 4.5 | 4.7 |
| 60-64 | 1.8 | 2.4 | 2.1 | 3.4 | 2.4 |
| <i>Country of birth & indigenous status</i> | | | | | |
| ESC | 9.8 | 10.7 | 10.7 | 11.1 | 10.6 |
| NESC | 16.9 | 15.4 | 16.1 | 16.2 | 16.2 |
| ATSI | 3.9 | 3.2 | 3.2 | 2.4 | 3.2 |
| Non-ATSI Australian-born | 69.4 | 70.7 | 70.0 | 70.3 | 70.1 |
| <i>Partner status</i> | | | | | |
| Single | 68.1 | 60.5 | 68.6 | 62.6 | 65.2 |
| Partnered | 31.9 | 39.6 | 31.4 | 37.4 | 34.9 |
| <i>Presence of dep. children</i> | | | | | |
| No dep. child | 80.4 | 64.2 | 80.0 | 63.6 | 72.6 |
| Youngest 0-2 | 6.6 | 12.0 | 7.7 | 14.0 | 9.8 |
| Youngest 3-5 | 3.2 | 6.5 | 2.9 | 5.3 | 4.4 |
| Youngest 5-12 | 6.1 | 10.9 | 5.9 | 10.7 | 8.2 |
| Youngest ≥13 | 3.8 | 6.5 | 3.5 | 6.4 | 5.0 |
| <i>Initial payment type</i> | | | | | |
| Unemployment benefits | 87.5 | 50.3 | 86.9 | 52.2 | 70.4 |
| Other short-term Allowance | 5.5 | 3.3 | 5.0 | 2.9 | 4.3 |
| Parenting Payments | 3.1 | 35.0 | 3.8 | 33.6 | 17.8 |
| Disability Support Pension | 3.3 | 2.4 | 3.7 | 2.4 | 3.0 |
| Mature Age /Age Pension | 0.7 | 9.0 | 0.7 | 9.0 | 4.5 |
| <i>Earned income</i> | | | | | |
| Amount (\$) | 113.8 | 114.3 | 127.8 | 152.1 | 126.1 |
| Time (percentage) | 12.2 | 11.7 | 13.2 | 14.3 | 12.8 |
| <i>Churning & transferring history</i> | | | | | |
| No history | 46.7 | 52.5 | 48.6 | 55.7 | 50.6 |
| Neither, low TTO | 22.4 | 20.0 | 22.2 | 20.1 | 21.3 |
| Neither, high TTO | 12.3 | 12.5 | 11.5 | 10.5 | 11.8 |
| Transferred | 1.6 | 3.6 | 1.2 | 3.2 | 2.4 |
| Churned | 16.2 | 10.2 | 15.9 | 9.5 | 13.2 |
| Both | 0.7 | 1.2 | 0.6 | 0.9 | 0.8 |
| <i>State or territory of residence</i> | | | | | |
| NSW | 30.9 | 31.5 | 30.3 | 29.6 | 30.6 |
| VIC | 21.6 | 23.9 | 21.7 | 23.8 | 22.7 |
| QLD | 23.3 | 21.4 | 22.8 | 22.1 | 22.5 |
| SA | 7.6 | 7.2 | 8.3 | 8.0 | 7.8 |
| WA | 11.1 | 10.2 | 11.3 | 11.4 | 11.0 |
| TAS | 2.8 | 3.0 | 3.2 | 2.8 | 2.9 |
| NT | 1.5 | 1.7 | 1.7 | 1.2 | 1.5 |
| ACT | 1.2 | 1.1 | 0.8 | 1.2 | 1.1 |
| <i>Housing status</i> | | | | | |
| Owner-outright | 32.6 | 32.0 | 35.1 | 33.5 | 33.3 |
| Home-purchasing | 17.5 | 23.8 | 16.4 | 24.2 | 20.3 |
| Owner-other | 3.9 | 5.4 | 4.3 | 5.3 | 4.7 |
| Private renting | 1.2 | 2.2 | 1.1 | 1.6 | 1.5 |
| Public renting | 2.5 | 4.0 | 2.4 | 3.4 | 3.0 |
| Other non-owner | 42.3 | 32.6 | 40.8 | 32.0 | 37.3 |
| <i>Observations</i> | 5,722 | 4,905 | 5,167 | 4,594 | 20,388 |

Appendix 5a: Multinomial logit coefficient estimates – Individuals commencing spells in 1997-98 and individuals commencing spells in 1998-99 – Males

| Variable Name | <i>Neither churn nor transfer: TTO ≥ 50%</i> | | <i>Transfer only</i> | | <i>Churn only</i> | | <i>Churn & transfer</i> | |
|-------------------|--|-------|----------------------|-------|-------------------|-------|-----------------------------|-------|
| | Coef. | S.E | Coef. | S.E | Coef. | S.E | Coef. | S.E |
| Year – 1997-98 | 0.162** | 0.069 | 0.036 | 0.093 | -0.107** | 0.047 | -0.412** | 0.081 |
| 20-24 | -0.109 | 0.132 | 0.529* | 0.301 | -0.538** | 0.080 | -0.411** | 0.174 |
| 25-34 | 0.137 | 0.127 | 0.870** | 0.291 | -0.477** | 0.079 | -0.215 | 0.174 |
| 35-44 | 0.495** | 0.138 | 1.635** | 0.295 | -0.473** | 0.092 | -0.211 | 0.195 |
| 45-54 | 0.872** | 0.151 | 2.196** | 0.300 | -0.433** | 0.106 | 0.032 | 0.213 |
| 55-59 | 0.972** | 0.205 | 3.626** | 0.318 | -0.536** | 0.170 | 1.267** | 0.259 |
| 60-64 | 1.638** | 0.301 | 5.127** | 0.389 | -0.079 | 0.305 | 2.311** | 0.406 |
| ESC | 0.181* | 0.109 | 0.043 | 0.148 | 0.030 | 0.078 | -0.042 | 0.168 |
| NESC | -0.196** | 0.097 | -0.288** | 0.133 | -0.044 | 0.064 | -0.102 | 0.128 |
| ATSI | -0.006 | 0.185 | -0.727** | 0.323 | -0.023 | 0.128 | -0.349 | 0.261 |
| Partner on IS | -0.108 | 0.126 | 0.246* | 0.149 | -0.218** | 0.091 | 0.001 | 0.172 |
| Partner not on IS | -0.738** | 0.137 | -0.507** | 0.179 | -0.465** | 0.097 | -0.122 | 0.187 |
| Youngest 0-2 | 0.202 | 0.170 | -0.088 | 0.223 | 0.054 | 0.117 | 0.206 | 0.221 |
| Youngest 3-5 | 0.154 | 0.226 | 0.374 | 0.265 | 0.184 | 0.155 | 0.117 | 0.315 |
| Youngest 5-12 | 0.138 | 0.163 | -0.334 | 0.227 | 0.096 | 0.126 | 0.253 | 0.235 |
| Youngest ≥13 | -0.220 | 0.203 | -0.210 | 0.227 | -0.078 | 0.145 | -0.245 | 0.292 |
| OS | -2.296** | 0.389 | 0.919** | 0.154 | -0.487** | 0.110 | 0.992** | 0.148 |
| PP | 0.972** | 0.185 | 1.158** | 0.242 | -0.050 | 0.160 | 1.109** | 0.254 |
| DSP | 2.960** | 0.201 | -2.048** | 0.635 | 0.366 | 0.224 | 0.085 | 0.458 |
| MAP | 1.635** | 0.349 | -0.100 | 0.524 | -0.374 | 0.440 | -0.075 | 0.678 |
| Earnings Amount | 0.143** | 0.017 | 0.150** | 0.022 | 0.088** | 0.014 | 0.129** | 0.021 |
| Earnings Time | -0.845** | 0.171 | -1.159** | 0.234 | -0.471** | 0.108 | -0.803** | 0.210 |
| Neither, low TTO | 0.186** | 0.092 | -0.061 | 0.130 | 0.488** | 0.058 | 0.459** | 0.120 |
| Neither, high TTO | 1.475** | 0.109 | 1.381** | 0.145 | 0.939** | 0.088 | 1.622** | 0.145 |
| Transferred | 0.790** | 0.285 | 1.027** | 0.352 | 0.451** | 0.229 | 1.659** | 0.298 |
| Churned | 0.758** | 0.112 | 0.765** | 0.154 | 1.140** | 0.075 | 1.654** | 0.133 |
| Both | 0.464 | 0.485 | 1.123* | 0.574 | 0.868** | 0.337 | 2.169** | 0.471 |
| NSW | -0.069 | 0.093 | 0.008 | 0.131 | 0.055 | 0.065 | 0.024 | 0.135 |
| QLD | -0.236** | 0.105 | 0.246* | 0.137 | 0.283** | 0.070 | 0.168 | 0.143 |
| SA | 0.198 | 0.137 | 0.504** | 0.176 | 0.242** | 0.099 | 0.108 | 0.197 |
| WA | -0.158 | 0.129 | -0.337* | 0.198 | 0.370** | 0.086 | 0.188 | 0.169 |
| TAS | 0.184 | 0.203 | 0.207 | 0.271 | 0.181 | 0.146 | -0.146 | 0.324 |
| NT | 0.396 | 0.282 | -0.684 | 0.578 | 0.588** | 0.207 | 0.892** | 0.324 |
| ACT | -0.304 | 0.351 | 0.509 | 0.425 | -0.022 | 0.224 | -0.684 | 0.776 |
| Owner-outright | -0.183 | 0.115 | -0.191 | 0.137 | -0.141* | 0.083 | -0.612** | 0.163 |
| Home-purchasing | -0.412** | 0.190 | -0.339 | 0.239 | -0.280** | 0.128 | -0.277 | 0.236 |
| Owner-other | 0.245 | 0.294 | 0.049 | 0.399 | 0.171 | 0.259 | -0.072 | 0.457 |
| Public renting | 1.006** | 0.219 | 0.760** | 0.275 | 0.409** | 0.192 | 0.377 | 0.310 |
| Other non-owner | 0.164* | 0.086 | 0.083 | 0.126 | 0.074 | 0.056 | 0.130 | 0.109 |
| Constant | -1.731** | 0.144 | -3.683** | 0.301 | 0.346** | 0.094 | -2.171** | 0.196 |
| Pseudo R2 | 0.110 | | | | | | | |
| No. of obs. | 10,889 | | | | | | | |

Note: 'Neither churn nor transfer: TTO<50%' is the base outcome for which coefficient estimates are normalised to zero. SE: Standard error. **and * indicate significance at the 5% and 10% level respectively.

Appendix 5b: Multinomial logit coefficient estimates – Individuals commencing spells in 1997-98 and individuals commencing spells in 1998-99 – Females

| Variable Name | <i>Neither churn nor transfer:</i> | | <i>Transfer only</i> | | <i>Churn only</i> | | <i>Churn & transfer</i> | |
|-------------------|------------------------------------|-------|----------------------|-------|-------------------|-------|-----------------------------|-------|
| | <i>TTO ≥ 50%</i> | | | | | | | |
| | Coef. | S.E | Coef. | S.E | Coef. | S.E | Coef. | S.E |
| Year – 1997-98 | 0.117* | 0.066 | 0.121 | 0.075 | 0.131** | 0.054 | -0.098 | 0.082 |
| 20-24 | -0.330** | 0.139 | -0.764** | 0.137 | -0.674** | 0.091 | -0.964** | 0.144 |
| 25-34 | -0.112 | 0.137 | -0.607** | 0.140 | -0.686** | 0.094 | -1.177** | 0.153 |
| 35-44 | 0.091 | 0.150 | -0.625** | 0.160 | -0.656** | 0.109 | -1.378** | 0.188 |
| 45-54 | 0.605** | 0.163 | 0.273* | 0.162 | -0.507** | 0.126 | -0.527** | 0.195 |
| 55-59 | 1.210** | 0.233 | 2.231** | 0.232 | -0.101 | 0.225 | 0.231 | 0.339 |
| 60-64 | 2.841** | 0.389 | 3.361** | 0.406 | 0.922** | 0.401 | 0.844 | 0.611 |
| ESC | 0.055 | 0.104 | -0.036 | 0.121 | -0.076 | 0.089 | -0.222 | 0.155 |
| NESC | 0.052 | 0.093 | 0.043 | 0.105 | 0.070 | 0.076 | 0.039 | 0.125 |
| ATSI | 0.467** | 0.198 | 0.363 | 0.226 | 0.187 | 0.176 | -0.023 | 0.313 |
| Partner on IS | -0.654** | 0.100 | 0.494** | 0.112 | 0.030 | 0.082 | 0.371** | 0.132 |
| Partner not on IS | -0.742** | 0.098 | 0.069 | 0.126 | -0.288** | 0.085 | 0.001 | 0.152 |
| Youngest 0-2 | 0.611** | 0.203 | 0.444* | 0.230 | 0.143 | 0.167 | 0.591** | 0.266 |
| Youngest 3-5 | 0.426** | 0.217 | 0.514** | 0.253 | -0.062 | 0.187 | 0.730** | 0.292 |
| Youngest 5-12 | 0.255 | 0.200 | 0.119 | 0.234 | -0.084 | 0.164 | 0.221 | 0.272 |
| Youngest ≥13 | -0.458** | 0.211 | 0.206 | 0.219 | -0.418** | 0.175 | 0.420 | 0.259 |
| OS | -1.920** | 0.593 | 1.201** | 0.183 | -0.045 | 0.169 | 1.285** | 0.199 |
| PP | 1.467** | 0.193 | 0.010 | 0.202 | 0.372** | 0.149 | 0.089 | 0.239 |
| DSP | 3.035** | 0.262 | 0.205 | 0.323 | 0.369 | 0.289 | 0.218 | 0.443 |
| MAP | 1.986** | 0.167 | -0.605** | 0.195 | -0.242 | 0.167 | -0.373 | 0.302 |
| Earnings Amount | 0.159** | 0.018 | 0.161** | 0.019 | 0.132** | 0.018 | 0.159** | 0.020 |
| Earnings Time | -0.834** | 0.158 | -0.781** | 0.178 | -0.594** | 0.143 | -0.738** | 0.199 |
| Neither, low TTO | 0.162* | 0.088 | 0.304** | 0.099 | 0.378** | 0.070 | 0.470** | 0.112 |
| Neither, high TTO | 1.046** | 0.111 | 0.862** | 0.130 | 0.689** | 0.100 | 1.048** | 0.145 |
| Transferred | 0.532** | 0.210 | 1.561** | 0.200 | 0.623** | 0.188 | 1.296** | 0.236 |
| Churned | 0.224* | 0.133 | 0.455** | 0.143 | 0.846** | 0.096 | 1.096** | 0.146 |
| Both | 0.346 | 0.416 | 1.745** | 0.384 | 0.998** | 0.352 | 2.277** | 0.381 |
| NSW | -0.006 | 0.088 | 0.100 | 0.101 | -0.012 | 0.074 | 0.098 | 0.132 |
| QLD | -0.103 | 0.099 | 0.090 | 0.111 | 0.155* | 0.080 | 0.442** | 0.136 |
| SA | 0.092 | 0.137 | 0.149 | 0.155 | 0.161 | 0.113 | 0.191 | 0.195 |
| WA | -0.254** | 0.122 | -0.081 | 0.141 | 0.094 | 0.098 | 0.388** | 0.162 |
| TAS | -0.165 | 0.213 | 0.326 | 0.221 | 0.112 | 0.169 | 0.381 | 0.280 |
| NT | 0.406 | 0.302 | 0.230 | 0.348 | 0.416* | 0.248 | 0.719* | 0.375 |
| ACT | -0.666** | 0.322 | -0.357 | 0.347 | -0.230 | 0.252 | 0.047 | 0.423 |
| Owner-outright | -0.063 | 0.098 | -0.476** | 0.116 | -0.194** | 0.089 | -0.554** | 0.153 |
| Home-purchasing | -0.289** | 0.146 | -0.675** | 0.198 | -0.228* | 0.130 | -0.703** | 0.241 |
| Owner-other | 0.179 | 0.254 | -0.345 | 0.344 | 0.385 | 0.236 | -0.470 | 0.535 |
| Public renting | 0.444** | 0.196 | 0.270 | 0.218 | 0.283 | 0.176 | 0.447* | 0.238 |
| Other non-owner | 0.019 | 0.094 | -0.215** | 0.100 | -0.072 | 0.069 | -0.172 | 0.110 |
| Constant | -1.556** | 0.146 | -1.189** | 0.146 | 0.225** | 0.106 | -1.254** | 0.172 |
| Pseudo R2 | 0.101 | | | | | | | |
| No. of obs. | 9,499 | | | | | | | |

Note: 'Neither churn nor transfer: TTO<50%' is the base outcome for which coefficient estimates are normalised to zero. SE: Standard error. **and * indicate significance at the 5% and 10% level respectively. level respectively.

Appendix 6a: Multinomial logit mean marginal effects – Individuals commencing spells in 1997-98 – Males

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|---|--|-------|--|-------|---------------|-------|------------|-------|---------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| <i>Age group</i> | | | | | | | | | | |
| 20-24 | 0.096** | 0.025 | -0.009 | 0.016 | 0.029 | 0.030 | -0.109** | 0.021 | -0.006 | 0.010 |
| 25-34 | 0.047* | 0.024 | 0.014 | 0.017 | 0.048 | 0.031 | -0.115** | 0.022 | 0.006 | 0.010 |
| 35-44 | 0.013 | 0.027 | 0.021 | 0.020 | 0.121** | 0.044 | -0.159** | 0.024 | 0.003 | 0.011 |
| 45-54 | -0.036 | 0.030 | 0.037 | 0.026 | 0.179** | 0.058 | -0.172** | 0.028 | -0.009 | 0.011 |
| 55-59 | -0.179** | 0.030 | -0.027 | 0.027 | 0.441** | 0.075 | -0.289** | 0.029 | 0.054 | 0.033 |
| 60-64 | -0.283** | 0.016 | -0.047* | 0.025 | 0.673** | 0.064 | -0.384** | 0.023 | 0.040 | 0.039 |
| <i>Country of birth & indigenous status</i> | | | | | | | | | | |
| ESC | 0.004 | 0.020 | 0.018 | 0.015 | -0.014* | 0.008 | 0.001 | 0.022 | -0.010 | 0.009 |
| NESC | 0.042** | 0.016 | -0.019* | 0.011 | -0.009 | 0.008 | -0.009 | 0.016 | -0.004 | 0.007 |
| ATSI | 0.001 | 0.030 | 0.012 | 0.024 | -0.028** | 0.012 | 0.027 | 0.033 | -0.012 | 0.011 |
| <i>Partner status</i> | | | | | | | | | | |
| Partner on IS | 0.022 | 0.024 | 0.009 | 0.015 | 0.022** | 0.011 | -0.049** | 0.025 | -0.004 | 0.010 |
| Partner not on IS | 0.083** | 0.027 | -0.041** | 0.014 | -0.026** | 0.009 | -0.032 | 0.027 | 0.016 | 0.014 |
| <i>Presence of children</i> | | | | | | | | | | |
| Youngest 0-2 | -0.043 | 0.029 | 0.005 | 0.024 | -0.013 | 0.012 | 0.019 | 0.034 | 0.032 | 0.021 |
| Youngest 3-5 | -0.071** | 0.034 | -0.004 | 0.027 | 0.010 | 0.019 | 0.079* | 0.041 | -0.015 | 0.017 |
| Youngest 5-12 | -0.042 | 0.030 | 0.011 | 0.022 | -0.023** | 0.010 | 0.049 | 0.035 | 0.006 | 0.017 |
| Youngest ≥13 | 0.003 | 0.040 | -0.013 | 0.025 | -0.015 | 0.011 | 0.041 | 0.043 | -0.015 | 0.016 |
| <i>Initial payment type</i> | | | | | | | | | | |
| OS | 0.080** | 0.028 | -0.126** | 0.011 | 0.099** | 0.020 | -0.171** | 0.028 | 0.118** | 0.022 |
| PP | -0.114** | 0.031 | 0.098** | 0.036 | 0.052* | 0.027 | -0.107** | 0.040 | 0.072** | 0.029 |
| DSP | -0.187** | 0.028 | 0.533** | 0.040 | -0.067** | 0.003 | -0.255** | 0.033 | -0.024* | 0.013 |
| MAP | -0.045 | 0.083 | 0.312** | 0.080 | -0.027 | 0.022 | -0.231** | 0.080 | -0.008 | 0.040 |
| <i>Earned income</i> | | | | | | | | | | |
| Amount | -0.018** | 0.003 | 0.008** | 0.002 | 0.004** | 0.001 | 0.003 | 0.003 | 0.003** | 0.001 |
| Earnings Time | 0.135** | 0.028 | -0.065** | 0.022 | -0.042** | 0.016 | -0.001 | 0.031 | -0.027* | 0.014 |
| <i>Churning transferring history</i> | | | | | | | | | | |
| Neither, low TTO | -0.073** | 0.014 | -0.004 | 0.012 | -0.021** | 0.007 | 0.079** | 0.016 | 0.019* | 0.010 |
| Neither, high TTO | -0.202** | 0.014 | 0.105** | 0.017 | 0.029** | 0.011 | 0.023 | 0.021 | 0.045** | 0.014 |
| Transferred | -0.131** | 0.035 | 0.059 | 0.042 | 0.029 | 0.027 | -0.039 | 0.054 | 0.082* | 0.044 |
| Churned | -0.206** | 0.013 | 0.008 | 0.014 | -0.007 | 0.010 | 0.138** | 0.018 | 0.067** | 0.013 |
| Both | -0.132** | 0.054 | -0.077** | 0.038 | 0.049 | 0.046 | 0.085 | 0.076 | 0.074 | 0.056 |

Appendix 6a continued: Multinomial logit mean marginal effects – Individuals commencing spells in 1997-98 – Males

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|--|---------------------------------------|-------|---------------------------------------|-------|---------------|-------|------------|-------|------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| <i>State or territory of residence</i> | | | | | | | | | | |
| NSW | -0.015 | 0.016 | -0.016 | 0.012 | -0.005 | 0.008 | 0.025 | 0.017 | 0.011 | 0.009 |
| QLD | -0.046** | 0.018 | -0.044** | 0.011 | 0.011 | 0.009 | 0.073** | 0.019 | 0.006 | 0.009 |
| SA | -0.037 | 0.024 | -0.002 | 0.017 | 0.026* | 0.015 | 0.008 | 0.027 | 0.006 | 0.014 |
| WA | -0.044** | 0.021 | -0.053** | 0.013 | -0.031** | 0.009 | 0.118** | 0.023 | 0.010 | 0.012 |
| TAS | -0.066* | 0.036 | 0.004 | 0.026 | 0.023 | 0.022 | 0.057 | 0.042 | -0.018 | 0.016 |
| NT | -0.075 | 0.047 | -0.021 | 0.034 | -0.045** | 0.012 | 0.104** | 0.051 | 0.038 | 0.032 |
| ACT | -0.039 | 0.053 | -0.028 | 0.033 | 0.039 | 0.031 | 0.058 | 0.057 | -0.031 | 0.020 |
| <i>Housing status</i> | | | | | | | | | | |
| Owner-outright | 0.089** | 0.022 | -0.020 | 0.014 | -0.002 | 0.009 | -0.043* | 0.022 | -0.023** | 0.008 |
| Home-purchasing | 0.106** | 0.035 | -0.021 | 0.022 | -0.012 | 0.015 | -0.063* | 0.034 | -0.011 | 0.013 |
| Owner-other | -0.020 | 0.060 | -0.027 | 0.032 | 0.003 | 0.028 | 0.038 | 0.066 | 0.006 | 0.026 |
| Public renting | -0.092** | 0.042 | 0.079** | 0.034 | 0.032 | 0.021 | -0.008 | 0.045 | -0.011 | 0.017 |
| Other non-owner | -0.010 | 0.015 | 0.009 | 0.011 | 0.007 | 0.008 | -0.009 | 0.015 | 0.003 | 0.007 |

Note: SE: Standard errors derived from 400 bootstrap samples. ** and * indicate significance at the 5% and 10% level respectively

Appendix 6b: Multinomial logit mean marginal effects – Individuals commencing spells in 1997-98 – Females

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|---|--|-------|--|-------|---------------|-------|------------|-------|---------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| <i>Age group</i> | | | | | | | | | | |
| 20-24 | 0.093** | 0.023 | 0.033 | 0.024 | -0.055** | 0.013 | -0.048** | 0.021 | -0.023** | 0.009 |
| 25-34 | 0.095** | 0.023 | 0.051** | 0.025 | -0.042** | 0.014 | -0.068** | 0.021 | -0.036** | 0.010 |
| 35-44 | 0.089** | 0.027 | 0.077** | 0.029 | -0.054** | 0.015 | -0.071** | 0.023 | -0.042** | 0.010 |
| 45-54 | -0.032 | 0.028 | 0.141** | 0.037 | 0.000 | 0.020 | -0.090** | 0.027 | -0.018 | 0.012 |
| 55-59 | -0.163** | 0.026 | 0.107** | 0.048 | 0.259** | 0.050 | -0.176** | 0.030 | -0.028 | 0.018 |
| 60-64 | -0.240** | 0.022 | 0.183** | 0.065 | 0.273** | 0.074 | -0.181** | 0.048 | -0.035 | 0.028 |
| <i>Country of birth & indigenous status</i> | | | | | | | | | | |
| ESC | 0.001 | 0.020 | 0.031* | 0.017 | 0.002 | 0.016 | -0.017 | 0.022 | -0.017 | 0.012 |
| NESC | 0.002 | 0.017 | -0.025 | 0.015 | 0.008 | 0.013 | 0.025 | 0.019 | -0.010 | 0.009 |
| ATSI | -0.027 | 0.035 | 0.045 | 0.034 | 0.015 | 0.029 | -0.029 | 0.034 | -0.005 | 0.019 |
| <i>Partner status</i> | | | | | | | | | | |
| Partner on IS | 0.009 | 0.018 | -0.089** | 0.014 | 0.055** | 0.016 | 0.001 | 0.020 | 0.025* | 0.013 |
| Partner not on IS | 0.063** | 0.021 | -0.080** | 0.013 | 0.021 | 0.016 | -0.019 | 0.020 | 0.015 | 0.014 |
| <i>Presence of children</i> | | | | | | | | | | |
| Youngest 0-2 | -0.050 | 0.034 | 0.020 | 0.033 | 0.013 | 0.027 | 0.005 | 0.038 | 0.013 | 0.026 |
| Youngest 3-5 | -0.020 | 0.038 | 0.027 | 0.035 | 0.044 | 0.036 | -0.087** | 0.038 | 0.036 | 0.031 |
| Youngest 5-12 | -0.005 | 0.037 | 0.006 | 0.033 | 0.012 | 0.029 | -0.031 | 0.037 | 0.018 | 0.025 |
| Youngest ≥13 | 0.059 | 0.039 | -0.069** | 0.027 | 0.054* | 0.031 | -0.068* | 0.037 | 0.025 | 0.027 |
| <i>Initial payment type</i> | | | | | | | | | | |
| OS | -0.067** | 0.031 | -0.164** | 0.023 | 0.202** | 0.040 | -0.066* | 0.039 | 0.096** | 0.030 |
| PP | -0.105** | 0.031 | 0.164** | 0.033 | -0.032 | 0.022 | -0.010 | 0.034 | -0.016 | 0.018 |
| DSP | -0.197** | 0.030 | 0.481** | 0.047 | -0.085** | 0.015 | -0.169** | 0.039 | -0.031* | 0.018 |
| MAP | -0.038 | 0.031 | 0.344** | 0.036 | -0.079** | 0.013 | -0.184** | 0.028 | -0.043** | 0.012 |
| <i>Earned income</i> | | | | | | | | | | |
| Amount | -0.025** | 0.004 | 0.010** | 0.002 | 0.005** | 0.002 | 0.005* | 0.003 | 0.005** | 0.002 |
| Earnings Time | 0.091** | 0.031 | -0.067** | 0.025 | -0.009 | 0.023 | 0.008 | 0.030 | -0.022 | 0.018 |
| <i>Churning transferring history</i> | | | | | | | | | | |
| Neither, low TTO | -0.068** | 0.014 | -0.017 | 0.013 | 0.002 | 0.013 | 0.070** | 0.018 | 0.013 | 0.011 |
| Neither, high TTO | -0.129** | 0.016 | 0.053** | 0.018 | 0.017 | 0.017 | 0.022 | 0.022 | 0.037** | 0.015 |
| Transferred | -0.147** | 0.025 | -0.014 | 0.027 | 0.123** | 0.036 | 0.018 | 0.039 | 0.020 | 0.024 |
| Churned | -0.109** | 0.017 | -0.030 | 0.019 | -0.026* | 0.015 | 0.134** | 0.025 | 0.032** | 0.016 |
| Both | -0.199** | 0.036 | -0.058 | 0.044 | 0.103* | 0.057 | 0.023 | 0.069 | 0.131** | 0.058 |

Appendix 6b continued: Multinomial logit mean marginal effects – Individuals commencing spells in 1997-98 – Females

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|--|---------------------------------------|-------|---------------------------------------|-------|---------------|-------|------------|-------|------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| <i>State or territory of residence</i> | | | | | | | | | | |
| NSW | 0.002 | 0.017 | 0.003 | 0.014 | 0.003 | 0.013 | -0.013 | 0.017 | 0.005 | 0.011 |
| QLD | -0.013 | 0.019 | -0.019 | 0.015 | 0.000 | 0.013 | 0.002 | 0.020 | 0.030** | 0.013 |
| SA | -0.011 | 0.026 | -0.012 | 0.024 | 0.018 | 0.022 | 0.003 | 0.027 | 0.003 | 0.016 |
| WA | 0.001 | 0.022 | -0.038** | 0.018 | -0.019 | 0.016 | 0.041* | 0.025 | 0.014 | 0.016 |
| TAS | -0.032 | 0.038 | -0.003 | 0.031 | 0.032 | 0.031 | -0.026 | 0.042 | 0.028 | 0.030 |
| NT | -0.078* | 0.046 | 0.060 | 0.048 | -0.031 | 0.033 | 0.031 | 0.059 | 0.018 | 0.035 |
| ACT | 0.148** | 0.067 | -0.085** | 0.043 | 0.015 | 0.044 | -0.072 | 0.065 | -0.006 | 0.036 |
| <i>Housing status</i> | | | | | | | | | | |
| Owner-outright | 0.047** | 0.021 | 0.018 | 0.016 | -0.035** | 0.012 | -0.012 | 0.021 | -0.018* | 0.009 |
| Home-purchasing | 0.084** | 0.033 | -0.003 | 0.023 | -0.059** | 0.017 | 0.015 | 0.032 | -0.037** | 0.012 |
| Owner-other | -0.075 | 0.047 | 0.061 | 0.037 | -0.077** | 0.020 | 0.114** | 0.054 | -0.024 | 0.026 |
| Public renting | -0.082** | 0.037 | 0.050 | 0.032 | 0.009 | 0.025 | 0.003 | 0.038 | 0.020 | 0.021 |
| Other non-owner | 0.028* | 0.017 | 0.004 | 0.015 | -0.027** | 0.012 | 0.004 | 0.017 | -0.008 | 0.009 |

Note: SE: Standard errors derived from 400 bootstrap samples. ** and * indicate significance at the 5% and 10% level respectively

Appendix 6c: Multinomial logit mean marginal effects – Individuals commencing spells in 1998-99 – Males

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|---|--|-------|--|-------|---------------|-------|------------|-------|---------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| <i>Age group</i> | | | | | | | | | | |
| 20-24 | 0.026 | 0.037 | 0.044 | 0.028 | 0.075 | 0.081 | -0.129** | 0.033 | -0.017 | 0.012 |
| 25-34 | 0.026 | 0.032 | 0.052** | 0.026 | 0.085 | 0.070 | -0.143** | 0.029 | -0.019* | 0.011 |
| 35-44 | -0.021 | 0.034 | 0.105** | 0.035 | 0.129 | 0.084 | -0.182** | 0.033 | -0.032** | 0.011 |
| 45-54 | -0.074** | 0.035 | 0.155** | 0.047 | 0.192** | 0.097 | -0.253** | 0.033 | -0.020 | 0.014 |
| 55-59 | -0.157** | 0.037 | 0.065 | 0.047 | 0.439** | 0.104 | -0.354** | 0.027 | 0.008 | 0.023 |
| 60-64 | -0.239** | 0.027 | -0.013 | 0.037 | 0.627** | 0.088 | -0.375** | 0.029 | -0.001 | 0.032 |
| <i>Country of birth & indigenous status</i> | | | | | | | | | | |
| ESC | -0.024 | 0.018 | 0.015 | 0.014 | 0.017* | 0.010 | -0.007 | 0.021 | -0.001 | 0.012 |
| NESC | -0.005 | 0.017 | -0.009 | 0.012 | -0.012 | 0.008 | 0.024 | 0.018 | 0.002 | 0.010 |
| ATSI | 0.045 | 0.038 | 0.002 | 0.022 | -0.023 | 0.015 | -0.005 | 0.038 | -0.020 | 0.018 |
| <i>Partner status</i> | | | | | | | | | | |
| Partner on IS | 0.033 | 0.026 | -0.013 | 0.015 | 0.013 | 0.012 | -0.048* | 0.028 | 0.015 | 0.016 |
| Partner not on IS | 0.113** | 0.027 | -0.044** | 0.011 | 0.005 | 0.012 | -0.086** | 0.028 | 0.011 | 0.016 |
| <i>Presence of children</i> | | | | | | | | | | |
| Youngest 0-2 | 0.008 | 0.030 | 0.028 | 0.024 | -0.002 | 0.014 | -0.023 | 0.035 | -0.011 | 0.016 |
| Youngest 3-5 | 0.002 | 0.044 | 0.008 | 0.030 | 0.018 | 0.022 | -0.044 | 0.046 | 0.017 | 0.029 |
| Youngest 5-12 | 0.008 | 0.033 | 0.011 | 0.021 | -0.013 | 0.013 | -0.026 | 0.035 | 0.021 | 0.023 |
| Youngest ≥13 | 0.045 | 0.043 | -0.010 | 0.023 | 0.006 | 0.015 | -0.042 | 0.045 | 0.000 | 0.023 |
| <i>Initial payment type</i> | | | | | | | | | | |
| OS | 0.016 | 0.028 | -0.108** | 0.011 | 0.055** | 0.019 | -0.062* | 0.034 | 0.100** | 0.026 |
| PP | -0.040 | 0.035 | 0.080** | 0.033 | 0.052** | 0.024 | -0.149** | 0.038 | 0.057* | 0.032 |
| DSP | -0.204** | 0.028 | 0.491** | 0.044 | -0.057** | 0.006 | -0.182** | 0.038 | -0.048** | 0.012 |
| MAP | -0.073 | 0.085 | 0.273** | 0.088 | -0.007 | 0.026 | -0.166* | 0.100 | -0.027 | 0.040 |
| <i>Earned income</i> | | | | | | | | | | |
| Amount | -0.024** | 0.004 | 0.006** | 0.002 | 0.004** | 0.001 | 0.011** | 0.003 | 0.003** | 0.001 |
| Earnings Time | 0.108** | 0.029 | -0.021 | 0.019 | -0.032** | 0.015 | -0.043 | 0.030 | -0.012 | 0.015 |
| <i>Churning transferring history</i> | | | | | | | | | | |
| Neither, low TTO | -0.082** | 0.014 | -0.017 | 0.011 | -0.009 | 0.008 | 0.104** | 0.018 | 0.004 | 0.010 |
| Neither, high TTO | -0.175** | 0.015 | 0.049** | 0.015 | 0.023* | 0.012 | 0.037 | 0.023 | 0.066** | 0.017 |
| Transferred | -0.124** | 0.048 | -0.007 | 0.032 | 0.017 | 0.032 | -0.031 | 0.068 | 0.146** | 0.051 |
| Churned | -0.173** | 0.015 | -0.030** | 0.012 | -0.003 | 0.009 | 0.151** | 0.020 | 0.054** | 0.014 |
| Both | -0.215** | 0.049 | 0.020 | 0.058 | -0.027 | 0.031 | -0.048 | 0.094 | 0.270** | 0.099 |

Appendix 6c continued: Multinomial logit mean marginal effects – Individuals commencing spells in 1998-99 – Males

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|--|---------------------------------------|-------|---------------------------------------|-------|---------------|-------|------------|-------|------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| <i>State or territory of residence</i> | | | | | | | | | | |
| NSW | 0.003 | 0.017 | -0.002 | 0.011 | 0.004 | 0.009 | 0.004 | 0.019 | -0.009 | 0.009 |
| QLD | -0.028 | 0.019 | -0.030** | 0.012 | 0.001 | 0.010 | 0.058** | 0.021 | -0.001 | 0.010 |
| SA | -0.058** | 0.024 | 0.007 | 0.018 | 0.012 | 0.014 | 0.053** | 0.026 | -0.015 | 0.012 |
| WA | -0.045** | 0.022 | -0.008 | 0.015 | -0.010 | 0.011 | 0.067** | 0.025 | -0.004 | 0.012 |
| TAS | 0.006 | 0.037 | 0.015 | 0.026 | -0.014 | 0.016 | 0.004 | 0.041 | -0.010 | 0.020 |
| NT | -0.114** | 0.044 | 0.026 | 0.036 | -0.031* | 0.017 | 0.072 | 0.053 | 0.047 | 0.032 |
| ACT | 0.083 | 0.072 | -0.028 | 0.047 | 0.021 | 0.047 | -0.054 | 0.075 | -0.022 | 0.037 |
| <i>Housing status</i> | | | | | | | | | | |
| Owner-outright | -0.017 | 0.022 | 0.011 | 0.015 | -0.003 | 0.008 | 0.034 | 0.026 | -0.026** | 0.011 |
| Home-purchasing | 0.022 | 0.034 | -0.019 | 0.020 | -0.002 | 0.013 | -0.005 | 0.036 | 0.004 | 0.019 |
| Owner-other | -0.036 | 0.067 | 0.071 | 0.048 | -0.011 | 0.022 | -0.004 | 0.089 | -0.021 | 0.030 |
| Public renting | -0.101** | 0.036 | 0.088** | 0.037 | 0.000 | 0.018 | 0.006 | 0.045 | 0.007 | 0.024 |
| Other non-owner | -0.025* | 0.015 | 0.011 | 0.011 | -0.007 | 0.009 | 0.017 | 0.017 | 0.004 | 0.009 |

Note: SE: Standard errors derived from 400 bootstrap samples. ** and * indicate significance at the 5% and 10% level respectively

Appendix 6d: Multinomial logit mean marginal effects – Individuals commencing spells in 1998-99 – Females

| Variable name | Neither churn nor transfer TTO<50% | | Neither churn nor transfer TTO≥50% | | Transfer only | | Churn only | | Churn & transfer | |
|---|--|-------|--|-------|---------------|-------|------------|-------|---------------------|-------|
| | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E | Effect | S.E |
| <i>Age group</i> | | | | | | | | | | |
| 20-24 | 0.150** | 0.025 | -0.004 | 0.024 | -0.005 | 0.018 | -0.096** | 0.019 | -0.044** | 0.009 |
| 25-34 | 0.120** | 0.024 | 0.038* | 0.022 | 0.003 | 0.018 | -0.098** | 0.020 | -0.063** | 0.011 |
| 35-44 | 0.104** | 0.028 | 0.068** | 0.026 | 0.004 | 0.021 | -0.103** | 0.024 | -0.073** | 0.010 |
| 45-54 | 0.040 | 0.030 | 0.085** | 0.032 | 0.079** | 0.029 | -0.161** | 0.022 | -0.043** | 0.011 |
| 55-59 | -0.146** | 0.035 | 0.025 | 0.040 | 0.373** | 0.057 | -0.209** | 0.026 | -0.042** | 0.018 |
| 60-64 | -0.245** | 0.026 | 0.171** | 0.055 | 0.361** | 0.067 | -0.223** | 0.030 | -0.064** | 0.016 |
| <i>Country of birth & indigenous status</i> | | | | | | | | | | |
| ESC | 0.014 | 0.021 | 0.000 | 0.017 | -0.002 | 0.014 | -0.006 | 0.021 | -0.007 | 0.013 |
| NESC | -0.025 | 0.018 | 0.026* | 0.016 | -0.006 | 0.012 | -0.008 | 0.019 | 0.012 | 0.011 |
| ATSI | -0.072* | 0.037 | 0.038 | 0.037 | 0.027 | 0.034 | 0.034 | 0.043 | -0.027 | 0.021 |
| <i>Partner status</i> | | | | | | | | | | |
| Partner on IS | -0.016 | 0.019 | -0.099** | 0.012 | 0.071** | 0.016 | 0.014 | 0.020 | 0.029** | 0.014 |
| Partner not on IS | 0.047** | 0.021 | -0.071** | 0.012 | 0.049** | 0.018 | -0.039* | 0.022 | 0.013 | 0.016 |
| <i>Presence of children</i> | | | | | | | | | | |
| Youngest 0-2 | -0.079** | 0.037 | 0.100** | 0.047 | 0.019 | 0.036 | -0.073* | 0.043 | 0.033 | 0.032 |
| Youngest 3-5 | -0.078* | 0.042 | 0.050 | 0.047 | 0.025 | 0.042 | -0.054 | 0.048 | 0.057 | 0.043 |
| Youngest 5-12 | -0.020 | 0.040 | 0.071 | 0.044 | -0.004 | 0.034 | -0.044 | 0.043 | -0.003 | 0.028 |
| Youngest ≥13 | 0.015 | 0.042 | -0.019 | 0.038 | 0.024 | 0.032 | -0.093** | 0.042 | 0.073* | 0.039 |
| <i>Initial payment type</i> | | | | | | | | | | |
| OS | -0.027 | 0.037 | -0.199** | 0.006 | 0.142** | 0.040 | -0.084** | 0.039 | 0.168** | 0.041 |
| PP | -0.092** | 0.037 | 0.181** | 0.040 | -0.057** | 0.026 | -0.012 | 0.043 | -0.021 | 0.021 |
| DSP | -0.198** | 0.027 | 0.531** | 0.038 | -0.072** | 0.014 | -0.197** | 0.031 | -0.063** | 0.014 |
| MAP | -0.150** | 0.025 | 0.424** | 0.033 | -0.096** | 0.011 | -0.141** | 0.027 | -0.037** | 0.016 |
| <i>Earned income</i> | | | | | | | | | | |
| Amount | -0.029** | 0.004 | 0.007** | 0.002 | 0.006** | 0.002 | 0.012** | 0.004 | 0.004** | 0.001 |
| Earnings Time | 0.161** | 0.028 | -0.039* | 0.022 | -0.040* | 0.021 | -0.064* | 0.037 | -0.017 | 0.016 |
| <i>Churning transferring history</i> | | | | | | | | | | |
| Neither, low TTO | -0.049** | 0.015 | -0.008 | 0.014 | 0.012 | 0.013 | 0.023 | 0.017 | 0.022* | 0.012 |
| Neither, high TTO | -0.144** | 0.017 | 0.090** | 0.020 | 0.026 | 0.018 | 0.006 | 0.024 | 0.022 | 0.017 |
| Transferred | -0.126** | 0.032 | -0.049* | 0.027 | 0.156** | 0.041 | -0.068* | 0.040 | 0.088** | 0.034 |
| Churned | -0.123** | 0.019 | -0.061** | 0.018 | 0.012 | 0.019 | 0.101** | 0.026 | 0.071** | 0.019 |
| Both | -0.149** | 0.049 | -0.119** | 0.038 | 0.104 | 0.065 | -0.037 | 0.066 | 0.201** | 0.067 |

Appendix 7a: Multinomial logit coefficient estimates – Individuals commencing spells in 1997-98 – Males

| Variable Name | <i>Neither churn nor transfer: TTO ≥ 50%</i> | | <i>Transfer only</i> | | <i>Churn only</i> | | <i>Churn & transfer</i> | |
|-------------------|--|-------|----------------------|---------|-------------------|-------|-----------------------------|-------|
| | Coef. | S.E | Coef. | S.E | Coef. | S.E | Coef. | S.E |
| 20-24 | -0.388** | 0.171 | 0.212 | 0.386 | -0.611** | 0.110 | -0.440* | 0.253 |
| 25-34 | -0.035 | 0.166 | 0.685* | 0.368 | -0.472** | 0.110 | -0.001 | 0.240 |
| 35-44 | 0.148 | 0.184 | 1.627** | 0.369 | -0.508** | 0.127 | 0.083 | 0.270 |
| 45-54 | 0.450** | 0.200 | 2.164** | 0.376 | -0.389** | 0.145 | 0.029 | 0.317 |
| 55-59 | 0.689** | 0.297 | 3.808** | 0.414 | -0.277 | 0.241 | 1.759** | 0.379 |
| 60-64 | 1.789** | 0.479 | 5.719** | 0.536 | -0.006 | 0.495 | 2.991** | 0.564 |
| ESC | 0.126 | 0.150 | -0.333 | 0.235 | -0.008 | 0.109 | -0.240 | 0.241 |
| NESC | -0.309** | 0.128 | -0.345* | 0.178 | -0.162* | 0.088 | -0.243 | 0.177 |
| ATSI | 0.079 | 0.239 | -0.748* | 0.432 | 0.065 | 0.171 | -0.303 | 0.350 |
| Partner on IS | 0.002 | 0.166 | 0.347* | 0.197 | -0.198 | 0.125 | -0.138 | 0.248 |
| Partner not on IS | -0.659** | 0.197 | -0.898** | 0.269 | -0.339** | 0.136 | 0.000 | 0.257 |
| Youngest 0-2 | 0.206 | 0.231 | -0.117 | 0.327 | 0.207 | 0.165 | 0.694** | 0.304 |
| Youngest 3-5 | 0.248 | 0.292 | 0.439 | 0.358 | 0.447** | 0.210 | -0.077 | 0.468 |
| Youngest 5-12 | 0.242 | 0.225 | -0.403 | 0.297 | 0.273 | 0.172 | 0.255 | 0.336 |
| Youngest ≥13 | -0.131 | 0.270 | -0.383 | 0.331 | 0.087 | 0.196 | -0.387 | 0.452 |
| ASA | -2.354** | 0.512 | 1.073** | 0.199 | -0.747** | 0.152 | 1.099** | 0.204 |
| PP | 1.126** | 0.271 | 1.338** | 0.365 | 0.185 | 0.228 | 1.492** | 0.359 |
| DSP | 2.831** | 0.261 | -30.96 | 1389149 | 0.109 | 0.304 | 0.217 | 0.533 |
| MAP | 1.554** | 0.458 | -0.418 | 0.631 | -0.589 | 0.586 | -0.018 | 0.877 |
| Earnings Amount | 0.134** | 0.022 | 0.158** | 0.031 | 0.070** | 0.017 | 0.133** | 0.031 |
| Earnings Time | -1.032** | 0.230 | -1.359** | 0.344 | -0.468** | 0.152 | -1.089** | 0.329 |
| Neither, low TTO | 0.239* | 0.123 | -0.212 | 0.190 | 0.457** | 0.080 | 0.620** | 0.185 |
| Neither, high TTO | 1.647** | 0.145 | 1.484** | 0.200 | 0.992** | 0.121 | 1.703** | 0.220 |
| Transferred | 1.010** | 0.348 | 1.129** | 0.421 | 0.479 | 0.297 | 1.659** | 0.437 |
| Churned | 1.013** | 0.147 | 0.808** | 0.214 | 1.221** | 0.104 | 1.942** | 0.188 |
| Both | -0.296 | 0.700 | 1.337** | 0.626 | 0.762* | 0.393 | 1.577** | 0.627 |
| NSW | -0.084 | 0.122 | -0.048 | 0.182 | 0.115 | 0.090 | 0.273 | 0.190 |
| QLD | -0.230* | 0.138 | 0.362* | 0.187 | 0.332** | 0.097 | 0.287 | 0.204 |
| SA | 0.128 | 0.184 | 0.600** | 0.249 | 0.150 | 0.139 | 0.267 | 0.279 |
| WA | -0.364** | 0.179 | -0.676** | 0.306 | 0.420** | 0.118 | 0.324 | 0.245 |
| TAS | 0.290 | 0.275 | 0.639* | 0.365 | 0.380* | 0.205 | -0.188 | 0.549 |
| NT | 0.106 | 0.405 | -1.265 | 1.079 | 0.532* | 0.286 | 0.865* | 0.483 |
| ACT | -0.106 | 0.430 | 0.739 | 0.521 | 0.266 | 0.308 | -0.811 | 1.045 |
| Owner-outright | -0.474** | 0.156 | -0.351* | 0.193 | -0.393** | 0.112 | -0.863** | 0.239 |
| Home-purchasing | -0.520** | 0.260 | -0.584* | 0.342 | -0.486** | 0.179 | -0.600* | 0.364 |
| Owner-other | -0.178 | 0.422 | 0.123 | 0.565 | 0.157 | 0.328 | 0.193 | 0.604 |
| Public renting | 0.908** | 0.299 | 0.912** | 0.362 | 0.349 | 0.264 | 0.154 | 0.448 |
| Other non-owner | 0.112 | 0.115 | 0.190 | 0.176 | 0.013 | 0.080 | 0.101 | 0.158 |
| Constant | -1.268** | 0.190 | -3.564** | 0.387 | 0.285** | 0.129 | -2.884** | 0.292 |
| Pseudo R2 | 0.120 | | | | | | | |
| No. of obs. | 5,722 | | | | | | | |

Note: 'Neither churn nor transfer: TTO<50%' is the base outcome for which coefficient estimates are normalised to zero. SE: Standard error. ** and * indicate significance at the 5% and 10% level respectively.

Appendix 7b: Multinomial logit coefficient estimates – Individuals commencing spells in 1997-98 – Females

| Variable Name | <i>Neither churn nor transfer: TTO ≥ 50%</i> | | <i>Transfer only</i> | | <i>Churn only</i> | | <i>Churn & transfer</i> | |
|-------------------|--|-------|----------------------|-------|-------------------|-------|-----------------------------|-------|
| | Coef. | S.E | Coef. | S.E | Coef. | S.E | Coef. | S.E |
| 20-24 | -0.157 | 0.193 | -0.915** | 0.190 | -0.495** | 0.127 | -0.747** | 0.206 |
| 25-34 | -0.069 | 0.192 | -0.770** | 0.187 | -0.582** | 0.133 | -0.979** | 0.216 |
| 35-44 | 0.087 | 0.209 | -0.880** | 0.217 | -0.564** | 0.154 | -1.110** | 0.255 |
| 45-54 | 0.831** | 0.229 | 0.164 | 0.231 | -0.179 | 0.182 | -0.169 | 0.278 |
| 55-59 | 1.463** | 0.316 | 2.215** | 0.317 | 0.163 | 0.314 | 0.456 | 0.461 |
| 60-64 | 2.837** | 0.538 | 3.347** | 0.567 | 1.199** | 0.589 | 1.372* | 0.833 |
| ESC | 0.170 | 0.142 | 0.013 | 0.170 | -0.060 | 0.123 | -0.285 | 0.225 |
| NESC | -0.168 | 0.132 | 0.044 | 0.145 | 0.064 | 0.106 | -0.163 | 0.179 |
| ATSI | 0.367 | 0.253 | 0.250 | 0.300 | 0.017 | 0.227 | 0.043 | 0.360 |
| Partner on IS | -0.627** | 0.136 | 0.387** | 0.148 | -0.028 | 0.117 | 0.310* | 0.183 |
| Partner not on IS | -0.774** | 0.136 | -0.077 | 0.162 | -0.292** | 0.120 | -0.019 | 0.195 |
| Youngest 0-2 | 0.336 | 0.263 | 0.333 | 0.299 | 0.227 | 0.224 | 0.404 | 0.355 |
| Youngest 3-5 | 0.257 | 0.280 | 0.452 | 0.322 | -0.215 | 0.249 | 0.534 | 0.382 |
| Youngest 5-12 | 0.059 | 0.258 | 0.129 | 0.297 | -0.076 | 0.222 | 0.270 | 0.353 |
| Youngest ≥13 | -0.677** | 0.272 | 0.187 | 0.295 | -0.437* | 0.234 | 0.120 | 0.365 |
| ASA | -1.424** | 0.606 | 1.394** | 0.237 | 0.086 | 0.228 | 1.252** | 0.279 |
| PP | 1.375** | 0.244 | 0.185 | 0.262 | 0.402** | 0.201 | 0.186 | 0.315 |
| DSP | 2.891** | 0.381 | 0.163 | 0.491 | 0.566 | 0.421 | 0.641 | 0.588 |
| MAP | 1.486** | 0.220 | -0.747** | 0.263 | -0.618** | 0.236 | -0.774** | 0.390 |
| Earnings Amount | 0.159** | 0.024 | 0.147** | 0.027 | 0.115** | 0.022 | 0.176** | 0.029 |
| Earnings Time | -0.772** | 0.229 | -0.475* | 0.254 | -0.334* | 0.188 | -0.693** | 0.300 |
| Neither, low TTO | 0.181 | 0.124 | 0.305** | 0.139 | 0.489** | 0.098 | 0.472** | 0.167 |
| Neither, high TTO | 0.920** | 0.146 | 0.792** | 0.172 | 0.684** | 0.134 | 1.096** | 0.198 |
| Transferred | 0.738** | 0.283 | 1.580** | 0.282 | 0.838** | 0.260 | 1.095** | 0.365 |
| Churned | 0.304* | 0.171 | 0.248 | 0.202 | 0.861** | 0.130 | 0.909** | 0.208 |
| Both | 0.977 | 0.614 | 2.037** | 0.587 | 1.409** | 0.562 | 2.485** | 0.608 |
| NSW | 0.015 | 0.121 | 0.025 | 0.141 | -0.045 | 0.103 | 0.061 | 0.179 |
| QLD | -0.065 | 0.137 | 0.054 | 0.155 | 0.058 | 0.113 | 0.449** | 0.185 |
| SA | -0.020 | 0.195 | 0.195 | 0.214 | 0.054 | 0.160 | 0.092 | 0.278 |
| WA | -0.254 | 0.175 | -0.190 | 0.202 | 0.119 | 0.137 | 0.188 | 0.235 |
| TAS | 0.129 | 0.281 | 0.402 | 0.303 | 0.054 | 0.238 | 0.502 | 0.366 |
| NT | 0.667* | 0.370 | 0.058 | 0.472 | 0.443 | 0.330 | 0.590 | 0.491 |
| ACT | -1.119** | 0.498 | -0.383 | 0.455 | -0.719** | 0.353 | -0.577 | 0.639 |
| Owner-outright | -0.085 | 0.137 | -0.513** | 0.159 | -0.213* | 0.124 | -0.474** | 0.204 |
| Home-purchasing | -0.343* | 0.205 | -0.996** | 0.280 | -0.256 | 0.177 | -1.080** | 0.379 |
| Owner-other | 0.634* | 0.345 | -0.670 | 0.484 | 0.632* | 0.337 | -0.103 | 0.595 |
| Public renting | 0.655** | 0.267 | 0.472 | 0.292 | 0.383 | 0.254 | 0.651** | 0.326 |
| Other non-owner | -0.093 | 0.128 | -0.366** | 0.139 | -0.097 | 0.098 | -0.244 | 0.161 |
| Constant | -1.276** | 0.203 | -0.815** | 0.201 | 0.251* | 0.146 | -1.397** | 0.238 |
| Pseudo R2 | 0.092 | | | | | | | |
| No. of obs. | 4,905 | | | | | | | |

Note: 'Neither churn nor transfer: TTO<50%' is the base outcome for which coefficient estimates are normalised to zero. SE: Standard error. ** and * indicate significance at the 5% and 10% level respectively.

Appendix 7c: Multinomial logit coefficient estimates – Individuals commencing spells in 1998-99 – Males

| Variable Name | <i>Neither churn nor transfer: TTO ≥ 50%</i> | | <i>Transfer only</i> | | <i>Churn only</i> | | <i>Churn & transfer</i> | |
|-------------------|--|-------|----------------------|-------|-------------------|-------|-----------------------------|-------|
| | Coef. | S.E | Coef. | S.E | Coef. | S.E | Coef. | S.E |
| 20-24 | 0.361 | 0.227 | 0.996** | 0.500 | -0.467** | 0.116 | -0.341 | 0.223 |
| 25-34 | 0.464** | 0.220 | 1.198** | 0.486 | -0.503** | 0.115 | -0.381* | 0.218 |
| 35-44 | 1.024** | 0.230 | 1.775** | 0.492 | -0.456** | 0.133 | -0.426* | 0.250 |
| 45-54 | 1.472** | 0.245 | 2.340** | 0.499 | -0.532** | 0.158 | 0.027 | 0.273 |
| 55-59 | 1.447** | 0.309 | 3.594** | 0.517 | -0.780** | 0.237 | 0.930** | 0.324 |
| 60-64 | 1.659** | 0.466 | 4.817** | 0.601 | -0.274 | 0.412 | 1.687** | 0.503 |
| ESC | 0.242 | 0.167 | 0.392* | 0.204 | 0.067 | 0.113 | 0.081 | 0.202 |
| NESC | -0.077 | 0.147 | -0.248 | 0.200 | 0.078 | 0.095 | 0.035 | 0.163 |
| ATSI | -0.147 | 0.300 | -0.715 | 0.469 | -0.159 | 0.194 | -0.499 | 0.366 |
| Partner on IS | -0.247 | 0.188 | 0.147 | 0.212 | -0.233* | 0.137 | 0.098 | 0.221 |
| Partner not on IS | -0.879** | 0.206 | -0.252 | 0.231 | -0.573** | 0.141 | -0.224 | 0.234 |
| Youngest 0-2 | 0.234 | 0.249 | -0.048 | 0.308 | -0.084 | 0.170 | -0.203 | 0.294 |
| Youngest 3-5 | 0.081 | 0.344 | 0.325 | 0.380 | -0.118 | 0.237 | 0.234 | 0.371 |
| Youngest 5-12 | 0.077 | 0.247 | -0.290 | 0.306 | -0.085 | 0.186 | 0.235 | 0.290 |
| Youngest ≥13 | -0.253 | 0.288 | -0.028 | 0.315 | -0.257 | 0.220 | -0.157 | 0.348 |
| ASA | -2.302** | 0.593 | 0.743** | 0.226 | -0.210 | 0.160 | 0.900** | 0.217 |
| PP | 0.821** | 0.263 | 0.991** | 0.306 | -0.265 | 0.225 | 0.808** | 0.309 |
| DSP | 3.160** | 0.306 | -1.131* | 0.668 | 0.612* | 0.332 | 0.025 | 0.544 |
| MAP | 1.763** | 0.539 | 0.250 | 0.673 | -0.192 | 0.653 | -0.166 | 0.891 |
| Earnings Amount | 0.151** | 0.023 | 0.156** | 0.029 | 0.109** | 0.019 | 0.135** | 0.027 |
| Earnings Time | -0.620** | 0.234 | -1.029** | 0.317 | -0.483** | 0.155 | -0.599** | 0.265 |
| Neither, low TTO | 0.128 | 0.141 | 0.097 | 0.183 | 0.549** | 0.085 | 0.370** | 0.167 |
| Neither, high TTO | 1.262** | 0.163 | 1.247** | 0.215 | 0.898** | 0.128 | 1.577** | 0.192 |
| Transferred | 0.519 | 0.449 | 0.918* | 0.512 | 0.496 | 0.372 | 1.771** | 0.430 |
| Churned | 0.454** | 0.173 | 0.707** | 0.221 | 1.091** | 0.107 | 1.413** | 0.174 |
| Both | 1.529** | 0.749 | 0.770 | 1.195 | 1.212* | 0.659 | 3.001** | 0.695 |
| NSW | -0.027 | 0.142 | 0.058 | 0.186 | -0.004 | 0.095 | -0.152 | 0.169 |
| QLD | -0.231 | 0.162 | 0.098 | 0.202 | 0.233** | 0.102 | 0.084 | 0.177 |
| SA | 0.299 | 0.210 | 0.420 | 0.266 | 0.340** | 0.142 | -0.004 | 0.253 |
| WA | 0.087 | 0.193 | -0.064 | 0.261 | 0.325** | 0.126 | 0.108 | 0.219 |
| TAS | 0.114 | 0.291 | -0.322 | 0.426 | -0.009 | 0.202 | -0.190 | 0.374 |
| NT | 0.739* | 0.403 | -0.309 | 0.784 | 0.670** | 0.314 | 1.035** | 0.428 |
| ACT | -0.586 | 0.656 | 0.080 | 0.708 | -0.405 | 0.366 | -0.648 | 0.771 |
| Owner-outright | 0.167 | 0.167 | -0.010 | 0.194 | 0.142 | 0.122 | -0.368* | 0.213 |
| Home-purchasing | -0.291 | 0.282 | -0.121 | 0.304 | -0.086 | 0.181 | -0.026 | 0.297 |
| Owner-other | 0.701 | 0.439 | -0.074 | 0.578 | 0.125 | 0.396 | -0.216 | 0.669 |
| Public renting | 1.121** | 0.324 | 0.475 | 0.422 | 0.445* | 0.270 | 0.541 | 0.380 |
| Other non-owner | 0.203 | 0.132 | -0.042 | 0.187 | 0.130 | 0.082 | 0.141 | 0.146 |
| Constant | -2.228** | 0.240 | -3.907** | 0.498 | 0.303** | 0.130 | -1.993** | 0.245 |
| Pseudo R2 | 0.112 | | | | | | | |
| No. of obs. | 5,167 | | | | | | | |

Note: 'Neither churn nor transfer: TTO<50%' is the base outcome for which coefficient estimates are normalised to zero. SE: Standard error. ** and * indicate significance at the 5% and 10% level respectively.

Appendix 7d: Multinomial logit coefficient estimates – Individuals commencing spells in 1998-99 – Females

| Variable Name | <i>Neither churn nor transfer: TTO ≥ 50%</i> | | <i>Transfer only</i> | | <i>Churn only</i> | | <i>Churn & transfer</i> | |
|-------------------|--|---------|----------------------|-------|-------------------|-------|-----------------------------|-------|
| | Coef. | S.E | Coef. | S.E | Coef. | S.E | Coef. | S.E |
| 20-24 | -0.519** | 0.223 | -0.560** | 0.208 | -0.854** | 0.130 | -1.193** | 0.194 |
| 25-34 | -0.162 | 0.213 | -0.394* | 0.209 | -0.787** | 0.136 | -1.386** | 0.207 |
| 35-44 | 0.079 | 0.228 | -0.310 | 0.233 | -0.749** | 0.157 | -1.664** | 0.253 |
| 45-54 | 0.414* | 0.246 | 0.484** | 0.237 | -0.809** | 0.179 | -0.833** | 0.262 |
| 55-59 | 0.968** | 0.357 | 2.371** | 0.331 | -0.337 | 0.325 | 0.051 | 0.439 |
| 60-64 | 2.788** | 0.543 | 3.453** | 0.560 | 0.624 | 0.566 | 0.378 | 0.805 |
| ESC | -0.055 | 0.158 | -0.068 | 0.171 | -0.070 | 0.125 | -0.142 | 0.203 |
| NESC | 0.268** | 0.133 | 0.056 | 0.151 | 0.071 | 0.111 | 0.242 | 0.162 |
| ATSI | 0.561* | 0.333 | 0.541 | 0.336 | 0.407 | 0.268 | -0.108 | 0.444 |
| Partner on IS | -0.687** | 0.140 | 0.609** | 0.151 | 0.104 | 0.121 | 0.426** | 0.179 |
| Partner not on IS | -0.702** | 0.144 | 0.217 | 0.169 | -0.303** | 0.131 | 0.007 | 0.201 |
| Youngest 0-2 | 0.953** | 0.335 | 0.537 | 0.331 | 0.071 | 0.279 | 0.688* | 0.379 |
| Youngest 3-5 | 0.662* | 0.361 | 0.583 | 0.378 | 0.146 | 0.309 | 0.905** | 0.424 |
| Youngest 5-12 | 0.527 | 0.325 | 0.070 | 0.330 | -0.070 | 0.273 | 0.031 | 0.403 |
| Youngest ≥13 | -0.186 | 0.326 | 0.170 | 0.314 | -0.395 | 0.274 | 0.649* | 0.362 |
| ASA | -30.143 | 1257957 | 0.942** | 0.255 | -0.192 | 0.256 | 1.358** | 0.278 |
| PP | 1.558** | 0.310 | -0.155 | 0.288 | 0.316 | 0.250 | 0.051 | 0.338 |
| DSP | 3.284** | 0.348 | 0.251 | 0.437 | 0.194 | 0.410 | -0.414 | 0.786 |
| MAP | 2.581** | 0.246 | -0.486* | 0.268 | 0.152 | 0.244 | 0.053 | 0.363 |
| Earnings Amount | 0.162** | 0.020 | 0.166** | 0.020 | 0.145** | 0.019 | 0.157** | 0.023 |
| Earnings Time | -0.897** | 0.203 | -0.998** | 0.222 | -0.810** | 0.174 | -0.847** | 0.248 |
| Neither, low TTO | 0.140 | 0.129 | 0.308** | 0.141 | 0.268** | 0.100 | 0.466** | 0.160 |
| Neither, high TTO | 1.232** | 0.163 | 0.931** | 0.190 | 0.693** | 0.151 | 0.935** | 0.224 |
| Transferred | 0.278 | 0.301 | 1.558** | 0.289 | 0.359 | 0.283 | 1.417** | 0.325 |
| Churned | 0.095 | 0.199 | 0.653** | 0.201 | 0.844** | 0.140 | 1.271** | 0.198 |
| Both | -0.346 | 0.653 | 1.459** | 0.537 | 0.644 | 0.486 | 2.139** | 0.501 |
| NSW | -0.048 | 0.132 | 0.178 | 0.146 | 0.022 | 0.108 | 0.114 | 0.179 |
| QLD | -0.174 | 0.146 | 0.118 | 0.161 | 0.257** | 0.116 | 0.427** | 0.184 |
| SA | 0.153 | 0.193 | 0.074 | 0.229 | 0.256 | 0.161 | 0.274 | 0.263 |
| WA | -0.304* | 0.177 | 0.014 | 0.195 | 0.059 | 0.141 | 0.542** | 0.211 |
| TAS | -0.614* | 0.338 | 0.273 | 0.323 | 0.187 | 0.239 | 0.259 | 0.377 |
| NT | -0.066 | 0.511 | 0.424 | 0.498 | 0.347 | 0.378 | 0.863* | 0.491 |
| ACT | -0.211 | 0.479 | -0.444 | 0.609 | 0.276 | 0.354 | 0.603 | 0.514 |
| Owner-outright | -0.030 | 0.141 | -0.456** | 0.164 | -0.170 | 0.128 | -0.668** | 0.211 |
| Home-purchasing | -0.213 | 0.211 | -0.375 | 0.270 | -0.187 | 0.192 | -0.389 | 0.310 |
| Owner-other | -0.420 | 0.384 | -0.053 | 0.418 | 0.080 | 0.366 | -0.962 | 0.779 |
| Public renting | 0.227 | 0.287 | 0.008 | 0.319 | 0.201 | 0.259 | 0.162 | 0.339 |
| Other non-owner | 0.161 | 0.140 | -0.070 | 0.143 | -0.041 | 0.099 | -0.113 | 0.151 |
| Constant | -1.781** | 0.222 | -1.487** | 0.219 | 0.323** | 0.144 | -1.189** | 0.219 |
| Pseudo R2 | 0.122 | | | | | | | |
| No. of obs. | 4,594 | | | | | | | |

Note: 'Neither churn nor transfer: TTO<50%' is the base outcome for which coefficient estimates are normalised to zero. SE: Standard error. ** and * indicate significance at the 5% and 10% level respectively.