



Final Report

The edges of home ownership

authored by

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for the

Australian Housing and Urban Research Institute

at RMIT University and University of Western Australia

October 2013

AHURI Final Report No. 216

ISSN: 1834-7223

ISBN: 978-1-922075-45-1

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Title	The edges of home ownership	
ISBN	978-1-922075-45-1	
Format	PDF	
Key words	home ownership, affordable housing, AHURI 3M	
Editor	Anne Badenhorst	AHURI National Office
Publisher	Australian Housing and Urban Research Institute Melbourne, Australia	
Series	AHURI Final Report; no. 216	
ISSN	1834-7223	
Preferred citation	Wood, G., Smith, S., Ong, R. and Cigdem, M. (2013) <i>The edges of home ownership</i> , AHURI Final Report No. 216. Melbourne: Australian Housing and Urban Research Institute.	

ACKNOWLEDGEMENTS

This material was produced with funding from the Australian Government and the Australian state and territory governments. AHURI Limited gratefully acknowledges the financial and other support it has received from these governments, without which this work would not have been possible.

AHURI comprises a network of universities clustered into Research Centres across Australia. Research Centre contributions, both financial and in-kind, have made the completion of this report possible.

This paper uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Families, Housing, Community Services, and Indigenous Affairs (FaHCSIA) and is managed by the Melbourne Institute of Applied Economic and Social Research (MIAESR). The findings and views reported in this paper, however, are those of the authors and should not be attributed to either FaHCSIA or the MIAESR.

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ACRONYMS

ABS	Australian Bureau of Statistics
AHURI	Australian Housing and Urban Research Institute Ltd.
BHPS	British Household Panel Survey
CPI	Consumer Price Index
CRA	Commonwealth Rent Assistance
CSM	Continuing Sample Members
ECHP	European Community Household Panel
FaCSIA	Australian Government Department of Families, Community Services and Indigenous Affairs
GDP	Gross Domestic Product
GFC	Global Financial Crisis
HA	Housing Assistance
HILDA	Household, Income and Labour Dynamics Survey in Australia
LTV	Loan-to-value ratio
MEW	Mortgage Equity Withdrawal
MIAESR	Melbourne Institute of Applied Economic and Social Research
NIHPS	Northern Ireland Household Panel Survey
OECD	Organisation for Economic Co-operation and Development
SMI	Support for Mortgage Interest
TSM	Temporary Sample Members
UK	United Kingdom
UKHLS	UK Household Longitudinal Study
USA	United States of America

EXECUTIVE SUMMARY

Key themes

The edges of home ownership contain important signals about the functioning of the housing system, the link between housing and the wider economy, and the relevance of owner occupation to the financial and wider wellbeing of home occupiers. These edges are usually thought of, if at all, in terms of barriers to entry for first-time buyers (with a spotlight on affordability), the challenge of sustainability (how to minimise the risk of premature exit through financial stress), and, more recently, the question of utility (the extent to which retirees trade-out of ownership to mobilise their principle asset-base for welfare). There has, however, been rather little interest in the two-way permeability of the interface between renting and owning across the life course, in the way the edges of ownership function financially and in the delivery of housing services, or in the policy implications of this transitional zone. 'The edges of home ownership' project addresses these gaps.

Aims

The project has three aims:

1. To describe the circumstances and identify the characteristics of the neglected group of households that churn in and out of ownership.
2. To identify the characteristics and events that drive household decisions at the edges of ownership.
3. To document the contribution of the edges of ownership to the resilience of Australian housing markets.

Methods

The project uses the household panel surveys of Australia (HILDA) and the UK (BHPS and UKHLS) to analyse the character and trajectories of households on the edges of ownership. Specifically the analysis comprises:

1. Descriptive and exploratory techniques to display the data, raising questions about the differences between those who attain and sustain ownership, those who achieve then leave that tenure, and those who churn back and forth between owning and renting across the study period.
2. Modelling exercises to identify the socio-economic and demographic factors disposing households to stay, leave or churn, and to consider any role that housing equity withdrawal might play.
3. The construction of composite biographies to illustrate some typical pathways through the edges of ownership.

Key findings

The analysis profiles three groups of owners: ongoing owners who are able to attain and sustain home ownership to the end of a ten-year study period; leavers, who attain owner occupation but exit during the study period; and churners, who leave and return to owner occupation at least once. Some of the more important results are:

1. Ongoing owners provide a benchmark for sustainability.
2. There is more mobility than expected in all directions across the edges of ownership.
3. These transitions occur across the life course.

4. There is considerable 'churn' from owning to renting and back again.
5. These patterns are more conspicuous in Australia than the UK, and may reflect important housing system differences.

Policy implications

High rates of exit from home ownership and increasing indebtedness across the life course threaten an Australian retirement incomes policy based on low housing costs in old age.

Evidence of churning at the edges of home ownership questions the targeting of direct subsidies on first home buyers, and draws attention to the limitations of tax arrangements that concentrate housing tax subsidies on the higher income over-65 outright homeowner.

The greater than anticipated mobility at the edges of ownership signal a niche market for a range of financial instruments to manage owner occupation in the 21st century.

1 INTRODUCTION

1.1 Rationale

The edges of ownership form a neglected zone between the majority tenure, sustainable owner occupation, and the minority experience, long-term renting. In tenure-divided societies like Australia, the UK and the USA—where there is a stark financial, social and cultural divide between owners and renters—it is surprising that so little attention has been paid to the zone of transition between them. To be sure, there is a great deal of interest in how to make home ownership more affordable and inclusive, and in how to ensure that, once owner occupation is attained, it is viable and sustainable. There has also, of late, been growing interest in how to protect those who slip out of the sector when times get tough. However, the research reported here was inspired by a further discovery: namely that the edges of ownership are in flux; they are characterised by a surprising degree of ‘churn’ among households who cycle in and out of ownership more than once. This study is the first to look in detail at the diverse trajectories of those who occupy the edges of ownership, to analyse the predictors and effects of ‘churn’, and to consider the implications of these for the wellbeing of households and the functioning of the housing system.

1.2 Context

Conventionally, in the English-speaking world at least, the edges of home ownership are crossed just once in the life course, when young households step out of parental, or rental, accommodation and onto the so-called housing ladder. Access is secured through a small equity stake (or deposit) together with the leverage of a residential mortgage. Thereafter, owner occupation provides—among other things—a way of smoothing incomes across the life course, and a tax-advantaged investment vehicle that is traditionally retained until at, or near, the end of life.

Rising prices across the millennium changed this equation slightly, making it difficult for young households, whose incomes and savings are not protected against house price appreciation, to accumulate deposits or support large enough mortgages to enter home ownership. The problem of affordability for first-time buyers took centre stage. In the credit-rich years of the early 2000s, lenders responded with a new range of ‘affordability’ products (Scanlon & Whitehead 2004). These lowered entry costs by reducing deposit requirements and deferring capital repayments, thus, arguably, building a bridge across the widening gap between renting and owning, but enlarging the edges of ownership beyond sustainable limits. Alternative ways to achieve that end included a limited range of equity finance products. But although Australia and the UK have taken the lead here, the sector is very small (Smith 2013).

A second shift in mortgage markets occurred at this time, as an array of product embellishments were introduced to encourage borrowers to add to their mortgage, *in situ* as well as when moving, to release funds for discretionary spending. The astonishing growth and financial effects of this ‘equity borrowing’ bonanza are documented elsewhere (Parkinson et al. 2009; Smith & Searle 2008; Smith 2012, 2013; Wood et al. 2013). The important point here is that, with the advent of the global financial crisis, steadily growing leverage together with an epidemic of equity borrowing created the conditions under which a generation of mortgagors could slip out of ownership as readily as they eased into it.

One cost of both innovations was, in short, an accumulation of unsustainable debt secured against volatile assets whose risks were poorly managed. The policy response was again swift: for home buyers, its primary manifestation in Australia and

the UK was to encourage forbearance among lenders, creating a holding position for borrowers at the edges of ownership in the hope that this might act as a bridge to better times (Smith 2010).

Policies that help households attain and sustain owner occupation have, in short, been quick to recognise that the edges of ownership can be precarious, but they have consistently regarded these edges as a zone to transition to cross and then leave behind in favour of mainstream home ownership. This might have been a fair view for those years in the 20th century when owner occupation was expanding both absolutely and relative to the rental sector, and in a period when the investment returns on housing were largely rolled over as inheritance. Today, however, times have changed. There is now considerable, well-founded, alarm that a combination of demographic change (divorce and separation), leveraged purchases at high real housing prices, and precarious forms of employment have interacted with contemporary flexible housing markets to push or keep large numbers of Australian and UK households out of home ownership (Beer & Faulkner 2009). Equally, there is growing evidence that the need to mobilise housing wealth to meet pressing spending needs has forced households, both on the margins and in the mainstream, to borrow up, rather than pay down their debts, in a pattern that may not be sustainable (Ong et al. 2013; Wood et al. 2013). In our own analyses, for example, for Australia alone, counting every year between 2001 and 2010, we estimate (using the survey of Household, Income and Labour Dynamics in Australia) that *1.9 million* episodes of home ownership were terminated by a move into rental housing. This was more prevalent among the under-50s than among older age groups: in fact, 23 per cent of home ownership spells in Australia among the under 50s ended, compared with 16 per cent among those 50 and over.

These patterns are striking and merit close attention. However, even more intriguing is the indication that nearly two-thirds (61%) of ex-home owners later regained ownership; and some (7%) churned in and out more than once, even within the time-limited 10-year period. In short, the evidence is that the edges of home ownership are more permeable than once thought, are crossed in both directions, and are characterised by a degree of 'churn' that is sufficient to warrant consideration in its own right.

This is of more than simply academic interest; indeed it raises major policy concerns. For example, high rates of exit across the life course threaten the high levels of home ownership on which Australian retirement incomes policy is based, potentially increasing demands on housing assistance programs, in particular Commonwealth Rent Assistance (CRA). It also compromises the role of housing wealth as an asset base for welfare, in settings where neither social nor individual insurance safety nets adequately meet the costs of biographical disruption and financial shocks (Wood et al. 2013). Furthermore, evidence of churning at the edges of home ownership questions the targeting of direct subsidies on first home buyers, and draws attention to the limitations of tax arrangements that concentrate housing tax subsidies on the higher income over-65 outright home owner. If this churn is about swapping the costs of owning for those of renting, it also raises questions about the range of financial instruments available to manage owner occupation in the 21st century (Smith et al. 2013).

1.3 Exploring the edges of ownership

To consider the economic and policy implications of the spaces of transition between owning and renting, a study of 'The edges of home ownership' seems warranted. To that end we draw evidence from Australia's longitudinal survey, HILDA, to describe

the edges of ownership. We ask whether the processes at work are cause for alarm, whether they reflect a well-functioning housing system, or indeed whether they offer evidence that might be of use in designing different housing futures, for example a tenure neutral approach to home occupation. To benchmark the Australian experience, matched data are drawn from the British Household Panel Survey (and its successor, Understanding Society). This comparative study has the following aims:

1. *To describe the circumstances and identify the characteristics of the neglected group of households that churn in and out of ownership.* In particular, we ask how do the socio-demographic and financial characteristics of those on the edges of home ownership in Australia and the UK compare with those sustaining owner occupation, and with those leaving for the long term.
2. *To identify the characteristics and events that drive household decisions at the edges of ownership.* The research focuses especially on the extent to which these decisions are shaped by the need and ability to unlock housing wealth, either by borrowing against home equity, or by selling residential property. Using the panel data from both countries, we also consider the demographic and socio-economic drivers of behaviour at the margins of home ownership.
3. *Document the contribution of the edges of ownership to the resilience of Australian housing markets.* This aim is especially well illuminated by international comparison, using the benchmark of the UK, whose national household panel survey is comparable in key ways with HILDA. Australia and Britain have similarly complete mortgage markets, and similarly high rates of owner occupation. However, a differing policy environment and marked institutional differences in the rental sector may affect behaviours at the edges of ownership. In relation to the latter, we consider whether the large private rental sector in Australia helps ‘oil the wheels’ between renting and ownership (performing a risk management role as a temporary refuge for those on the edge), and whether the large British social housing sector provides a ‘soft landing’, or a permanent sink, for those forced out of owner occupation by financial adversity.

1.4 Structure of report

In the next chapter of the document, we discuss the methods used to explore the edges of ownership in two large and complex data sets. Thereafter the analysis proceeds as follows:

Chapter 3 contains a descriptive overview of the various trajectories, transitions and household characteristics that make up the edges of ownership.

Chapter 4 focuses on the role and relevance of equity extraction behaviours in shaping these edges.

Chapters 5 and 6 present the results of two modelling exercises, which specify, first (in Chapter 5), the characteristics and circumstances associated with exit from ownership and second (in Chapter 6) the predictors of re-entry to ownership, or the capacity to churn.

Chapter 7 gathers together the descriptive materials and modelling results to present some stylised accounts—represented in composite biographies—of household trajectories through the edges of ownership. This section provides a summary of the similarities and differences in the characteristics and experience of four groups of households—ongoing owners in the mainstream, ongoing owners on the edge (who maintain a precarious position at the margins of the sector), leavers (who drop out altogether), and ‘churners’ who regain owner occupation, having left the sector at least once in the study period.

The conclusion of the report discusses the policy implications of our findings and makes some suggestions for further research.

2 METHODOLOGICAL APPROACH

2.1 Data

The empirical analysis draws on three nationally representative panel data surveys—information on Australian households is drawn from the Household, Income and Labour Dynamics of Australia Survey (HILDA); and for data on British households, we exploit both the British Household Panel Survey (BHPS) and its successor, Understanding Society, otherwise known as the UK Household Longitudinal Study (UKHLS).

We begin by offering an overview of these three data sources and also explain the method employed to link the BHPS, which ended in 2008, and UKHLS. The common features these three datasets share are highlighted before tackling key differences that require data manipulation to achieve consistency across the three datasets.

2.1.1 Data overview

The three data sources share some important common features that enable detailed cross-country comparative analysis. First, they offer a comprehensive range of variables that portray the edges of home ownership, including labour market, income, housing, health and other key socio-demographic variables such as marital status and number of dependent children. All datasets also contain subjective and quasi-subjective indicators of wellbeing, such as self-assessed financial prosperity, self-reported capacity to pay for housing and other material deprivation indicators. Second, their longitudinal nature allows us to track individuals over time, observe life events, and correlate life transitions with changes in individuals' housing circumstances. Thirdly, similarities in their structure and data collection methods mean that we can observe and profile movements between home ownership and renting across different years.

The Household, Income and Labour Dynamics Survey (HILDA) is a nationally representative household longitudinal survey that has been conducted annually since its inception in 2001. The surveys collect detailed information at both household- and individual-levels of measurement. Questions are typically repeated in every wave. There are currently 11 waves of HILDA data, and we exploit the first 10 waves that were available at the time we began this research project. The sample size in wave 1 covers 7682 households and 19 914 individuals; this sample is referred to as Continuing Sample Members (CSM) because they are tracked in every subsequent wave. Over time, new household members arising due to marriages and births are added so the sample size gradually increases. Children are interviewed annually once they turn 15 years of age. Adults who join households containing a CSM are classified as Temporary Sample Members (TSM) and interviewed conditional on their continued residence in households with a CSM.

The BHPS is an annual survey tracking adults aged 16 years or over drawn from a nationally representative selection of UK households. In its first year (1991), members of 5000 households were interviewed, resulting in approximately 10 000 individual interviews. These same individuals were then re-interviewed annually until 2008, when the survey ended. The fieldwork for BHPS starts in September of the year of the survey, with the bulk of interviews completed by December of the same year. A relatively smaller number of interviews extend through to April of the following year (Laurie 2010).

A number of sub-samples have been added to the survey since its inception. From 1997 onwards, the BHPS began incorporating a sub-sample of the UK European

Community Household Panel (ECHP) that includes responding households from Northern Ireland, and a sample of low-income British households. Two more samples were added in 1999 to boost the number of households from Scotland and Wales. Finally, in 2001, a sample of households from the Northern Ireland Household Panel Survey (NIHPS) was incorporated into the BHPS. Our analysis of BHPS data begins in 2001. Hence, the BHPS data used includes all these sub-samples to form a representative UK-wide panel (Taylor et al. 2010). By 2001, the sample had grown to roughly 10 000 households and almost 19 000 responding adults.

As of 2008, the BHPS had run for 18 years and was replaced by the UKHLS. When it started in 2009, the UKHLS had a much larger sample size of around 30 000 households and approximately 50 000 adults. UKHLS respondents are also re-interviewed at 12-month intervals. However, given the much larger sample size, fieldwork takes longer to complete. Hence, each wave's UKHLS interviews are conducted over a two-year period and so waves overlap; for example, interviews in year 1 of wave 2 are conducted in the same months as interviews for year 2 of wave 1 (Laurie 2010).

UKHLS was designed to ensure continuity with the BHPS data, though not all the variables of interest to housing economists were retained. Moreover, because fieldwork for wave 1 of the UKHLS began in January 2009, interviews were conducted at around the same time as those for the final wave of BHPS (September 2008 to April 2009). As a consequence, the BHPS sample could not be incorporated into wave 1 of the UKHLS. Instead, the BHPS sample was interviewed as part of the UKHLS in year 1 of wave 2, with fieldwork conducted during the year 2010 (Laurie 2010). Each respondent from the BHPS retained his or her unique person identifier in the UKHLS, this being the principal identifier linking BHPS and UKHLS.

2.1.2 Data manipulation to achieve design consistency across HILDA, BHPS and UKHLS

There are some notable disparities between the three datasets that required careful data manipulation to achieve consistency across the two countries. For example, there is a marked difference in each survey's timeframe (see Table 1 below). Of the three longitudinal surveys, the UK's BHPS dataset has the longest span, beginning as early as 1991, which is exactly ten waves ahead of its Australian counterpart, but ending two years earlier than HILDA. The UKHLS, on the other hand, runs for the shortest time period, having begun in 2010. To maximise the duration of common time spans we created a single data sample for the UK by integrating the BHPS dataset with the UKHLS surveys. This was a complex and time consuming process for a number of reasons.

First, changes in the variable naming and labelling conventions between BHPS and UKHLS meant that they had to be modified to ensure consistency across the two surveys. Second, the UKHLS interviews for ex-BHPS respondents should have been carried out in 2010 and completed by December 2010 (see Table 2 in Laurie 2010). The maximum gap between their last BHPS interview and first UKHLS interview would then be two years, and around half of the BHPS sample should have been interviewed for wave 2 of the UKHLS within 18 to 20 months of their final interview for the BHPS (Laurie 2010). However, our analysis of a sample of home owners reveals that while almost half of ex-BHPS respondents had been interviewed within 20 months of their final interview, the maximum gap between the two interviews is actually 30 months; 82.4 per cent of interviews were completed within two years, but another 17.6 per cent took between 25 and 30 months. Ideally the time gap between interviews would be one year so that the period between interviews matches that in

BHPS (up to 2008). The longer interval between the last interview for BHPS respondents and their first interview for UKHLS is a limitation.

Third, housing tenure status in both the BHPS and UKHLS are reported on a household basis. It is important to be able to assign home ownership status to those adult members in the household who are legal owners of the home. For example, in the case of a couple with an adult son who is still living at home, it is most likely that the partners are the legal home owners, while the son's housing tenure is in fact rent-free. It is possible to observe the household reference person within each household in the BHPS. In the case of home owner households, this person is the principal owner of the home. But this convention was dropped in the UKHLS, thus complicating identification of ownership in owner occupied households. We therefore impute household reference person status following the rules used in the BHPS (see Appendix 2.3 of Taylor et al. 2010). These rules assign household reference person status to the principal owner or renter of the property, the male taking precedence over the female in the case of couples and the older taking precedence over the younger in the case of same-sex couples. With multiple non-partner owners, for example, where a father and son are both owners of the property, the older person is designated as the principal owner. These rules are followed in imputing household reference person, and therefore, home ownership status, to individuals within the same household.

Finally, outstanding mortgage debt is a crucial variable in any analysis of home ownership and housing equity. This variable is present in BHPS but absent from the UKHLS. However, original mortgage debt secured at purchase and additions to mortgage debt (mortgage equity withdrawal) are recorded and used to impute the mortgage variable in 2010. For those logged as home owners in both 2008 (final wave of BHPS) and 2010 (wave 2 of the UKHLS), mortgage debt in 2010 is set equal to the sum of outstanding mortgage debt in 2008, interest accruing between the 2008 and 2010 interviews and mortgage equity withdrawal (MEW), less the sum of mortgage payments between 2008 and 2010. Accrued interest is imputed using an interest rate of 5.35 per cent, the average of the monthly interest rate of UK financial institutions during 2008–09.¹ For those who had moved between 2008 and 2010, either from rental housing into owner-occupied housing, or within the owner-occupied sector, the mortgage debt variable was simply calculated as the amount borrowed at purchase plus any MEW during 2010. We were also able to identify those with interest-only loans; for these mortgagors outstanding mortgage debt in 2010 is the amount borrowed at purchase plus any MEW.

The successfully merged BHPS/UKHLS dataset covers the years 1991–2010, but the cross-country matched data runs from 2001 to 2010. In Australia, we have ten equally spaced (annually) waves of data. In the UK, we have eight annual waves of data from 2001 to 2008, followed by a 'ninth' unequally spaced wave drawn from wave 2 of the UKHLS.

¹ We obtained this rate from the Bank of England's interactive database on interest and exchange rates by selecting the 'Monthly interest rate of UK monetary financial institutions (excl. Central Bank) sterling standard variable rate mortgage to households (in per cent) not seasonally adjusted' from July 2008 to June 2009 and then taking its average. The interactive database can be found on this website:

<http://www.bankofengland.co.uk/boeapps/iadb/index.asp?Travel=NixIRx&levels=1&XNotes=Y&C=RO&XNotes2=Y&Nodes=X41513X41514X41515X41516X41517X55047X76909X40727X40728X40752&SectionRequired=I&HideNums=-1&ExtraInfo=true&G0Xtop.x=40&G0Xtop.y=10>

Table 1: Survey data range for HILDA, BHPS and UKHLS

Country	Data source	Survey span
Australia	Household, Income and Labour Dynamics of Australia Survey (HILDA)	2001–11
United Kingdom	British Household Panel Survey (BHPS)	1991–2009
United Kingdom	Understanding Society (UKHLS)	2009–10 (year 1 of wave 2)

2.2 Sample design

Our research is primarily concerned with the housing trajectories of home owners between 2001 and 2010. A key task is the design of a sample of spells in home ownership. A spell is a continuous period of time during which status of one kind or another (here ownership) is unchanged. Some individuals have only one spell because they remained in owner occupation during the period 2001–10 and are continuing owners in 2010 ('ongoing owners'). However, others left home ownership during this period; some return to home ownership by 2010 ('churners') while the departure of some is more durable ('leavers'). The pathways journeyed can then be quite complicated. This section describes a sample design to deal with these complexities.

We begin by framing a balanced sample of individuals who have completed interviews in every wave over the period 2001–10, and in both countries. The balanced panel permits analyses of housing trajectories from year to year. From this balanced sample we select those documented as a home owner in at least one wave. In total, we landed up with comparable samples of 5969 and 5874 owners in Australia and the UK respectively.

These owners are responsible for 6830 home ownership spells in Australia, and 6091 home ownership spells in the UK. The number of spells in each country exceeds the number of persons because some owner's housing trajectories feature more than one spell in home ownership. Spells data have a number of important properties that are best understood using examples. Consider a person observed in home ownership between 2001 and 2007 when they fall out of home ownership and do not return by 2010. The spell spans 7 waves; it 'begins' in 2001 and ends in 2007. In fact we do not know when the person made the transition into ownership because it was ongoing at the start of the survey. This type of spell is typically referred to as left-censored², 1907 (28%) out of a total of 6830 home ownership spells in Australia and 674 (11%) out of a total of 6091 home ownership spells in the UK started after 2001, and are not therefore left-censored. Now consider a person that transitions from rental to owner occupied housing in 2005 and then remains as an owner through to 2010 (the end of the study timeframe). The spell covers six waves; we know when it begins but not when it ends. This spell is described as right-censored; how the housing trajectory unfolds beyond 2010 is not recorded.

² Strictly speaking, this is not true in the BHPS. We truncated BHPS at 2001 to construct a panel that could be compared to HILDA over the same timeframe. BHPS began in 1991 so an investigation over a much longer time span is possible.

It is possible to frame a panel dataset on a person or spell basis. We choose to alternate between person and spell samples depending upon the research question. For example, in Section 3.1 we examine the risk of leaving home ownership in any given year conditional on ‘survival’ as an owner in the preceding year. A spells-based approach is invoked because the research question concerns the timing of transitions from one status (owning) to another (renting). As explained in Wood and Ong (2009), this approach is commonly used by medical researchers to gauge the success of alternative medical procedures, diets and so on, in determining patients’ survival rates. Likewise economists use it to (for example) analyse the factors that determine how quickly the unemployed find jobs.³

Yet other research questions are best answered using a sample of persons and their characteristics. If designed to measure relationships in a single year (wave) it is a cross section sample of persons. If the measurement is over a number of waves in the panel, it is a longitudinal sample of person-periods. In Section 3.2 for example, a key aim is to compare the personal characteristics of home owner sub-groups (ongoing owners, leavers and churners). The characteristics are generally measured using a person unit of measurement so the person-based sample makes sense. Chapter 6 presents another instance of a person-based sample; this time it is employed to investigate the extent to which ex-home owners’ transition onto housing assistance programs. Table 2 below describes the main statistical exercises by chapter, and the unit of analysis in each case.

Table 2: Unit of analysis for key empirical exercises

Chapter	Analysis	Unit of analysis
3.1	Life tables to track the ownership careers of owner occupiers over the period 2001–10	Home ownership spells
	Life tables to track the ownership careers of ex-home owners over the period 2002–10	Rental spells of ex-home owners
3.2	Comparison of characteristics of ongoing owners, leavers and churners	Persons
3.3	Double-log linear regression analysis of wellbeing of ongoing owners, leavers and churners	Person-period data comprising episodes from first observation in home ownership until end of study timeframe
4	Comparison of housing equity management by ongoing owners, leavers and churners	Persons
5	Hazard model of pathways out of home ownership	Home ownership spells
6.1	Analysis of housing tenure following loss of home ownership	Rental spells of ex-home owners
6.2	Analysis of transitions onto housing assistance by ex-home owners	Persons (ex-home owners)
6.3	Probit regression model of capacity to return to home ownership	Persons (ex-home owners)

³ For a seminal study of this kind see Nickell (1979). Early reviews of the statistical techniques in this context can be found in Lancaster (1979) and Kiefer (1988).

2.3 Variable measurement

In this section we define the important variables guiding our investigations at the edges of home ownership. Appendix 3 presents a list of all variables and brief definitions are also offered. Here we concentrate on variables where different conventions are followed in HILDA and BHPS (UKHLS); for example a categorical variable might have a different range of groupings in HILDA. The adjustments implemented to ensure comparison of 'like with like' are set out below.

2.3.1 *Socio-demographic and human capital variables*

Key socio-demographic variables include age, marital status, presence of dependent children and health. Human capital variables include the usual labour force status and education variables. The self-assessed health, children and education variables are examples of categorical measures with groupings that differ across the three datasets.

The self-assessed health variable has a common range with respondents asked to rank their health from 1 to 5—1 refers to excellent health and higher ranks correspond to a progressively poorer health condition in all three surveys. However, the category labels are not always the same.⁴ We have resorted to the simple expedient of assuming that two health conditions that differ in severity would be assigned to the same ranks in both countries. For example, if two conditions were ranked 2 and 4 in BHPS/UKHLS, they would also be ranked 2 and 4 in HILDA, even though the labels could differ.

There are subtle differences in the definition of dependent children. In HILDA, dependent children include biological, step and foster children living with their parent(s)/guardian(s) and either under 15 years of age, or studying full-time and aged 16–24 years. In BHPS/UKHLS, dependent children are defined as children under 16 years of age and living with their parents. Defining rules to achieve consistency would have been complicated and time-consuming; we believe the differences are minor and so the use of resources in this case are not justified.

Quite different categories have been used to represent educational qualifications in Australia and the UK. We chose to compress 9 (13) kinds of education qualification from the Australian (UK) data into three broad groups that roughly denote tertiary, other post-secondary and secondary education qualifications in the two countries. A further complication is change in the education groupings between BHPS and UKHLS. We assign the latest 2008 BHPS qualification as a proxy for each individual's 2010 qualification, as advised by the UKHLS user support staff.⁵

2.3.2 *Gross income*

A household rather than personal income measure is preferred on the grounds that households can be expected to pool their income for the purposes of meeting mortgage payments and securing 'footholds' in home ownership. But as a measure of spending power nominal household income has at least two weaknesses. First, a given household income supports a higher standard of living in a smaller household. Household income has therefore been equivalised using the modified OECD scale, where a weight of 1 is assigned to the first adult in the household, 0.5 to every additional adult, and 0.3 to each dependent child.⁶ Second, inflation erodes the real

⁴ In HILDA and the UKHLS, the categories are (1) Excellent, (2) Very good, (3) Good, (4) Fair and (5) Poor. In the BHPS, the categories are (1) Excellent, (2) Good, (3) Fair, (4) Poor and (5) Very poor.

⁵ Correspondence is available from the authors on request.

⁶ Refer to OECD (n.d.) for more details at <http://www.oecd.org/eco/growth/OECD-Note-EquivalenceScales.pdf>. Consider a couple with two dependent children. The household would have a weight of 1 assigned to the first adult, 0.5 to the second and 0.3 times two dependent children, giving a

value of household income and since our panel study spans an entire decade we can expect the effects of inflation on ‘spending power’ to be sizeable. Equivalised household incomes have been converted to values at constant 2010 prices using each country’s 2001–2010 Consumer Price Index (CPI) as reported in the Australian Bureau of Statistics (2012), for Australia, and Rate Inflation (2013), for the UK.⁷

2.3.3 Housing equity

The management of housing wealth during spells in home ownership is an important theme with a particular focus on the tactics of those on the edges of home ownership (see Chapter 4). We refer to this as ‘equity exchange’, to capture the mix of equity injections and withdrawals that occur both *in situ* and during residential relocations with a mix of equity borrowing and property sale. That is, withdrawals and injections of housing equity can be mediated through various channels—*in situ* by additions to or repayment of outstanding mortgage debt, or by liquidising housing wealth when trading-on or selling up (see Smith & Searle 2008; Ong et al. 2013). The measurement of housing equity exchange is eased by the availability in all three surveys of outstanding mortgage debt and self-assessed home values as recorded on an annual basis.

In situ additions to outstanding mortgage debt (equity borrowing/mortgage equity withdrawal) are measured by first selecting owners that have remained at the same address and then identifying those who increased their mortgage borrowing between adjacent waves. The difference in outstanding debt is the measure of equity borrowing.⁸ Trading on refers to a move from one owner-occupied home to another between adjacent waves. Housing equity is withdrawn when the amount released on the sale is not all folded back into home purchase; and/or when owners have effectively ‘over-mortgaged’ by taking out a mortgage larger than would have been necessary had all housing equity been reinvested. Equity withdrawal through this channel is simply the difference between the amount of housing equity released on sale and the amount injected on purchase of the new home.⁹ A final channel for transactions in housing equity is selling up—an owner sells and then moves out of owner occupied housing. Those who sell up release an amount of housing equity that we set equal to sale price less concurrent outstanding mortgage debt secured against the home they sold.

There are some important differences in the mortgage debt measure employed in the two countries’ surveys. In HILDA respondents report outstanding mortgage debt secured against their primary home. However, BHPS interviewees are asked to report outstanding mortgage debt secured against all properties, including second homes and rental properties. In practice, this difference is likely to be small. As noted in Ong et al. (2013), under 10 per cent of UK home owners have second properties. Furthermore, most (around three-quarters) multiple property owners have no outstanding mortgage debt secured against their properties.

total weight of 2.1. The gross reported income of this household would then be divided by 2.1 to achieve the equivalised income.

⁷ To convert (say) 2001 household incomes from current to constant 2010 price values we divide the 2001 CPI into the 2010 CPI index and compute the product of this ratio (deflator) and 2001 household income. The CPIs in each country and corresponding deflators are listed in Appendix 1.

⁸ Measurement of equity injection follows exactly the same steps but in reverse.

⁹ Equity injection occurs when under-mortgaging, that is, cashing in other assets that are then folded into home purchase along with the housing equity released on sale of the previous home.

2.3.4 Cost of owning and renting

Transitions into and out of home ownership are the product of tenure choice decisions that are made subject to financial constraints. We can expect the economic cost of remaining an owner and the rent charged for housing in rental tenures to be an important factor shaping these constraints, and hence driving decisions on the edges of home ownership. We draw on a substantial program of research into the measurement of user cost and relative price variables (see Wood et al. 2011; Wood & Ong 2010; Hendershott et al. 2009; Wood & Ong 2008; Wood et al. 2008).

In the case of renting, our cost or price measure is the annual net rent, measured as gross rent less housing assistance (HA). In the UK, a HA recipient is defined as someone who is either:

1. a public housing tenant
2. a community housing tenant (i.e. renting from a housing association), or
3. a renter receiving housing benefit.

Groups (1) and (2) are mutually exclusive, but groups (1)/(2) and (3) can overlap because a public/community housing tenant can also receive housing benefit.

In Australia, we invoke AHURI-3M a microsimulation model of the Australian housing market to identify private rental tenants that are eligible for Commonwealth Rent Assistance (CRA). Public housing and community housing tenants are explicitly identified in the HILDA survey data, so we have three groups of HA recipients defined as:

1. public housing tenants
2. community housing tenants, or
3. CRA recipients.

Groups (1) and (2) are mutually exclusive while Groups (1) and (3) are also mutually exclusive. However, groups (2) and (3) may overlap, that is, a community housing tenant can be eligible for CRA.

Once annual net rent has been calculated in nominal terms, it is converted to real values at 2010 prices using the same procedures as those applied to household incomes.

The after-tax economic cost of home ownership, or user cost, is calculated as a proportion of property value. It includes the after-tax opportunity cost of the owner's equity stake, debt financing costs and annual operating costs less capital gains. The algebraic expression defining Australian and UK user costs parameters are set out in Appendix 2. Definitions of the key components of user cost are also listed in Appendix 2.

3 THE EDGES OF OWNER OCCUPATION: AN OVERVIEW

This chapter provides an overview of the edges of ownership. First, there is a description of the patterns of movement around these edges, documenting both the extent to which people drop out of the sector and the rates at which they regain it. Second, there is a depiction of the socio-economic, demographic and other characteristics of those who inhabit the margins of home ownership. Finally, consideration is given to the extent to which living on the edge impacts on financial and wider wellbeing.

3.1 Transitions on the edge

The combined impact of structural changes in labour markets, demographic shifts, technical innovation and globalisation, on home ownership aspirations, is increasingly well-documented. Recognising the changing nature of housing careers consequent on this is now a familiar idea (Beer & Faulkner 2011). But little is known about housing transitions at the edges of home ownership where the threats to financial sustainability are greatest. In this section we document these transitions via three empirical exercises.

The first exercise describes the structure of the edges of ownership. We take all Australian and British ownership spells ongoing in 2001 or starting between 2001 and 2010. Spells are (in the present context) periods of time during which ownership status is uninterrupted. They are used to classify owners into three groups:

1. Those with a continuous presence in home ownership (ongoing owners).
2. Those whose home ownership spells are terminated by a transition into rental housing (leavers).
3. Those who have at least two ownership spells separated by a temporary transition into rental housing (churners).¹⁰

The analysis reports the distribution of spells across these three categories. So this exercise is a first look at the variety of housing transitions that structure the edges of ownership. This is followed by a second exercise in which life tables are used to analyse the chances of exit from ownership as the length of the ownership spell increases. Finally, in a third, related, exercise we consider the chances of an ex-owner returning to the sector as their spell in renting lengthens. Together, these three exercises give a comprehensive picture of movement around the edges of home ownership.

Table 3 and Figure 1 below set the scene by presenting a breakdown of ownership spells according to our threefold classification. The majority of Australian and British home owners had uninterrupted ownership status in the first decade of the new millennium, but this is especially marked in Britain where 91 per cent of spells are continuous. Australians are more likely to transition out of home ownership; durable exits (leavers) account for nearly 9 per cent of all spells, while temporary exits (churners) take a 13 per cent share, though in only 1 per cent of spells do the

¹⁰ A few points of clarification are warranted here. A spell in home ownership begins in the wave when the individual is first recorded as an owner occupier. In the study time frame 2001–10 the continuous ownership spells of ongoing owners were either continuing in 2001, or commencing before 2009. But assignment to the ongoing owner classification means that the spell was uninterrupted by a *move out of owner occupation* and continuing in 2010. They might have moved house, but as home owners. Churners achieve at least one return to home ownership, but leavers' transitions into rental housing are durable, that is, enduring in 2010.

Australians churn in and out of home ownership on two or more occasions. Durable British departures from home ownership occur in a smaller 5.4 per cent share of all periods of home ownership and only 3.6 per cent periods in ownership end in temporary exits.

The edges of home ownership therefore appear to be wider and more fluid in Australia. They also embrace a large number of the Australian population. Australian population weighted estimates show the magnitude of this, indicating that of the 9.2 million ownership spells over the data collection period 2001–10, over 1.9 million periods of residence in owner occupation were terminated by transitions into rental housing; in 640 000 cases there was no return to ownership by 2010.

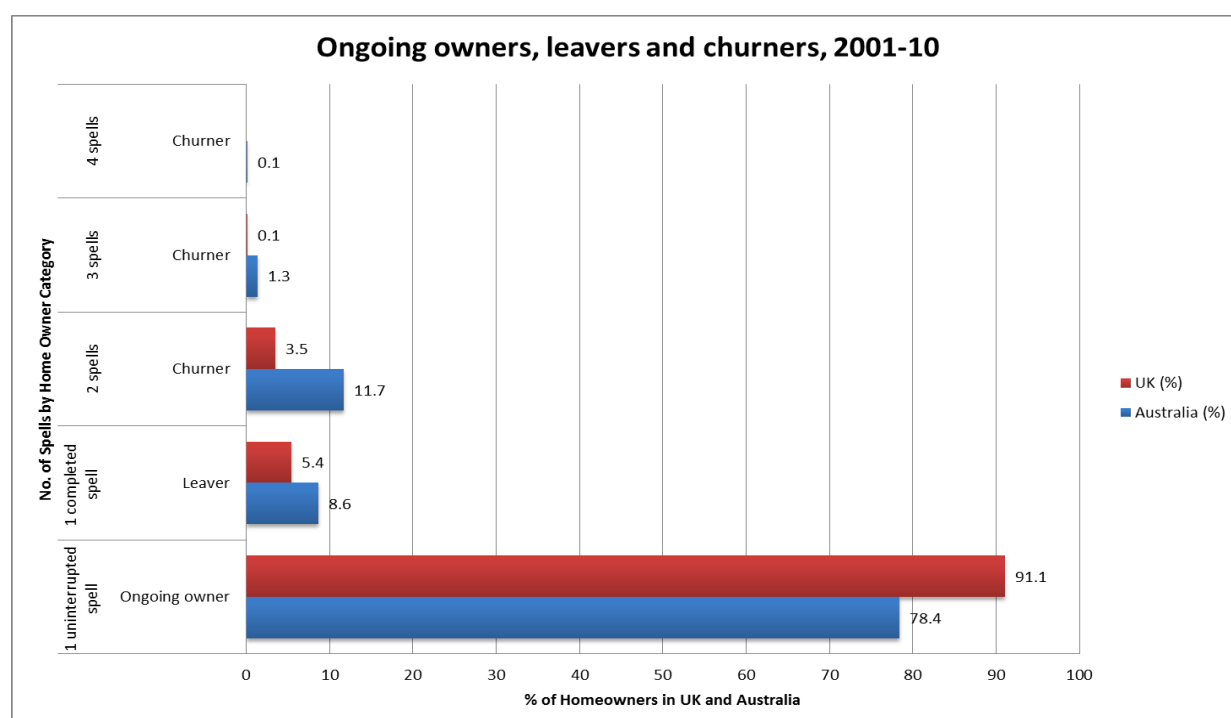
Table 3: Ongoing owners, leavers and churners 2001–10, sample estimates

Australia			UK		
Number of home owners with	Category	Number	Number of home owners with	Category	Number
1 uninterrupted spell	Ongoing owner	4,678	1 uninterrupted spell	Ongoing owner	5,351
1 completed spell	Leaver	515	1 completed spell	Leaver	314
2 spells	Churner	696	2 spells	Churner	208
3 spells	Churner	75	3 spells	Churner	8
4 spells	Churner	5		Churner	
Total		5,969			5,874

Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

Note: Does not equal 100 due to rounding up or down.

Figure 1: Ongoing owners, leavers and churners, Australia and UK, 2001–10



Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

3.1.1 *Exiting ownership: a life table approach*

An important tool summarising the time pattern of tenure transitions out of ownership is the life table. This approach can be used to track the ownership careers of samples drawn from HILDA and BHPS and spanning the period from the start of the data collection period (2001) to its end (2010) (see Singer & Willett 2003, pp.326–30). In Table 4 below, time, measured in intervals of one year, is recorded in column 1 (year 0 is often referred to as the 'beginning of time'). Any transition out of ownership occurring at t_j ($j=0,1,\dots,9$) but before t_{j+1} is classified as happening during the j th time interval—see column 2 where the bracket [denotes inclusions and the parenthesis) signals exclusions. No transitions can occur during the 0th time interval which begins at time 0 and ends just before year 1 begins (survey respondents are simply asked for their ownership status at the time of interview). The following information is then recorded:

- The number of ownership spells ongoing at the beginning of the year (column 3), also known as the risk set.
- The number of spells that ended because of exit from home ownership during the year (column 4).
- The number of spells where persons were still owners when data collection ended. These spells are referred to as right-censored at the end of the year (column 5).

These columns provide a narrative history of ownership careers as the journeys travelled by these owner occupiers evolve over time. At the 'beginning of time', when everyone is an owner, all 6830 (6091) are Australian (British) home owners. But 182 (40) began their spell in the final year of the data collection period and were therefore right-censored. This left $6830 - 182 = 6648$ ($6091 - 40 = 6051$) to enter the next time interval, year 1. During year 1, 427 (119) home owners quit the tenure by the end of the year and 143 (38) were right-censored. This left 6078 (5894) home owner spells to continue into the second year. Thus, in each year other than the beginning of time (year zero), the risk set declined because of *both* transitions out of ownership and right-censoring. As we reach the lower rows of the life table, censoring can increasingly undermine our knowledge about moves out of home ownership. For example, among the 4535 (5248) ownership spells ongoing at the start of year 7, only 81 (39) leave by the end of the year, but 142 (101) were censored.

Altogether, this life table depicts ownership histories over 53 299 (50 700) person years; 6648 (6051) year 1s, 6078 (5894) year 2s and so on through to 4070 year 9s (in UK 5108 year 8s); because loss of home ownership affects a minority and the data collection period is finite, 78 per cent of all spells in our Australian sample are right-censored spells and an even higher 81 per cent in the UK sample. There are three main causes of right-censoring:

- There are home owners that never lose home ownership.
- There are those who leave home ownership but not during the study's data collection period.
- Attrition of the sample, as when study participants cannot be tracked down and drop out of the study.¹¹

The first two sources occur because data collection ends, not because of actions taken by study participants. We can therefore assume that these censoring

¹¹ Spells that are censored because of attrition are omitted from life Table 2, so the sample is a balanced panel.

mechanisms are non-informative, such that those remaining in the study after the censoring date 'are representative of everyone who would have remained in the study had censoring not occurred' (Singer & Willett 2003, p.318). The credibility of the life table analyses relies on this assumption, but the third source of right-censoring is a threat to its validity as it will erode the representativeness of the at-risk set if there are differences between those who drop out and those remaining in the study. In Australia those attriting are significantly less likely to be economically active, hold qualifications and work in permanent jobs. They also have fewer children, are more prone to widowhood, though less inclined to divorce. These differences prove statistically significant and are therefore a caveat, a common one in the analysis of panel data.¹²

A key measure of the risk of transitions out of home ownership is the hazard rate (see column 6 in Tables 4 (a) and (b) and Figure 2 below)—the proportion of those owner occupiers at the start of each year that moved into rental housing by the end of the year. Note that these proportions are conditional on being eligible to experience the *event* (loss of home ownership) in any given year. The hazard must lie between 0 and 1. The higher the hazard the greater the risk; the lower the hazard the lower the risk. Consider year 1; in Australia 6648 start the year as owner occupiers but before the end of the year 427 had moved out into rental housing, a hazard equal to 6.4 per cent. In the UK, 6051 start the year as owners, but only 119 move out by the end of the year, a much lower hazard of 2 per cent.

¹² The results of tests are available from the authors on request. The caveat is unnecessary if the chances of exiting home ownership are unrelated to these characteristics.

Table 4: Spells in home ownership, 2001–10, sample estimates^a

(a) Australia

Year of spell (<i>t</i>)	Time interval	Number of spells at start of year (<i>Y</i>)	Number exiting home ownership during the year (<i>M</i>)	Spells censored at the end of year	Hazard rate $h_t = N_t / Y_t$	Survival rate $S_t = S_{t-1}(1-h_t)$
0	[0,1)	6,830	0	182		1.00
1	[1,2)	6,648	427	143	0.06	0.94
2	[2,3)	6,078	234	157	0.04	0.90
3	[3,4)	5,687	193	146	0.03	0.87
4	[4,5)	5,348	165	151	0.03	0.84
5	[5,6)	5,032	136	137	0.03	0.82
6	[6,7)	4,759	90	134	0.02	0.80
7	[7,8)	4,535	81	142	0.02	0.79
8	[8,9)	4,312	79	163	0.02	0.78
9	[9,10)	4,070	98	3,972	0.02	0.76
Total			1,503	5,327		

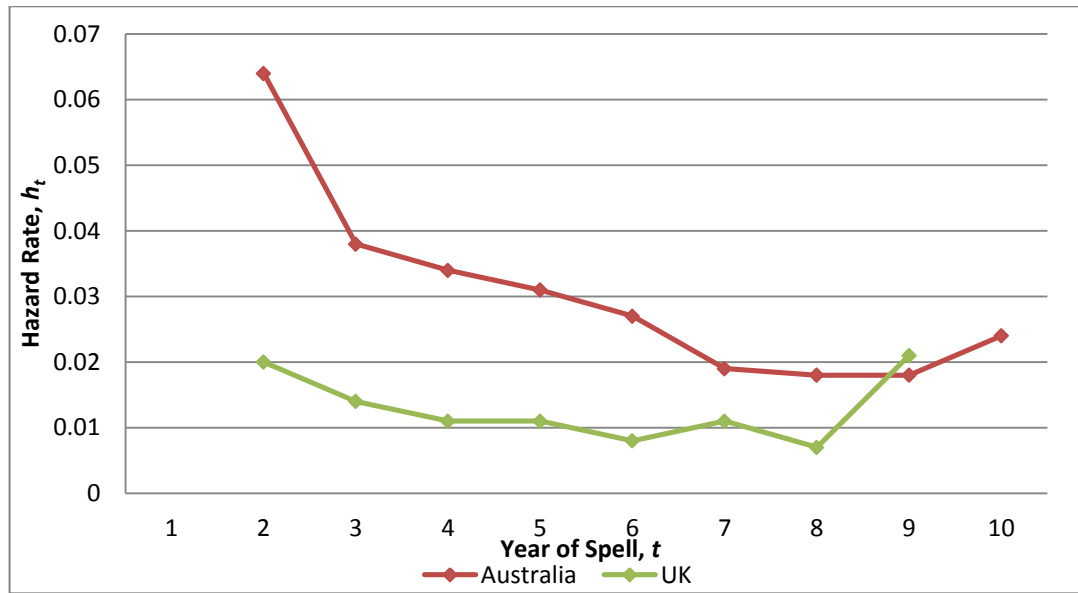
(b) UK

Year of spell (<i>t</i>)	Time interval	Number of spells at start of year (<i>Y</i>)	Number exiting home ownership during the year (<i>M</i>)	Spells censored at the end of year	Hazard rate $h_t = N_t / Y_t$	Survival rate $S_t = S_{t-1}(1-h_t)$
0	[0,1)	6,091	0	40		1.00
1	[1,2)	6,051	119	38	0.02	0.98
2	[2,3)	5,894	80	57	0.01	0.97
3	[3,4)	5,757	65	49	0.01	0.96
4	[4,5)	5,643	63	58	0.01	0.95
5	[5,6)	5,522	46	90	0.01	0.94
6	[6,7)	5,386	57	81	0.01	0.93
7	[7,8)	5,248	39	101	0.01	0.92
8	[8,9)	5,108	108	5,000	0.02	0.90
NA	[9,10)					
Total			577	5,514		

Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

Note: ^a. Interviews for Wave 2 of Understanding Society were carried out over an extended period of time. Caution should be taken when interpreting final year and totals of UK.

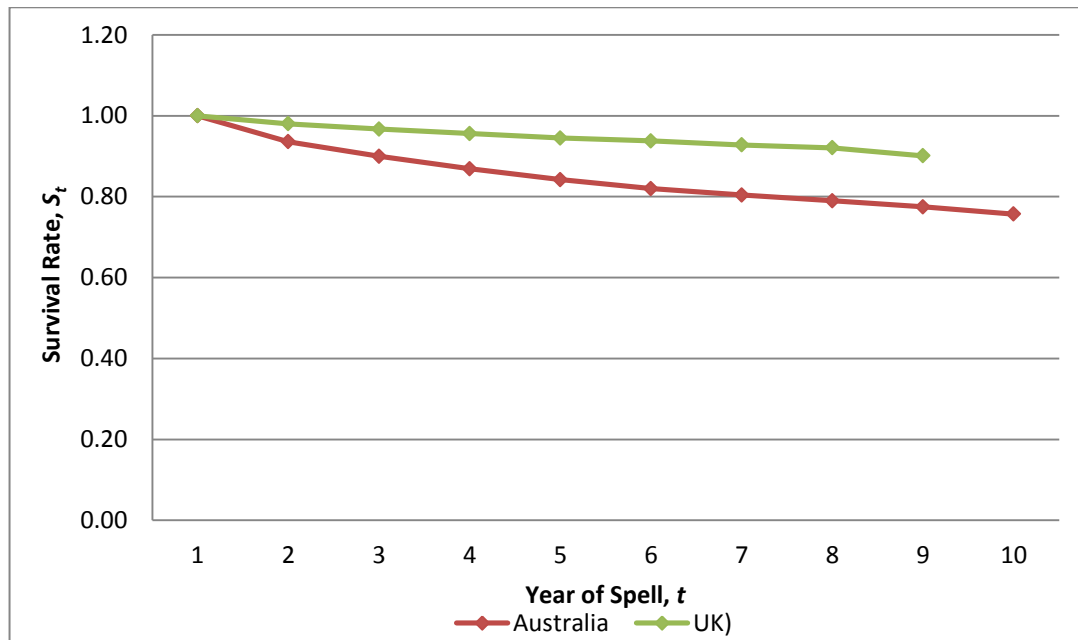
Figure 2: Hazard rate, Australia and UK, 2001–10



Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

An alternative way of describing the distribution of transitions into rental housing is the survivor function. It assesses the probability that a randomly selected owner occupier will 'survive' in home ownership past year j of a spell (see Figure 3 below). At the 'beginning of time' everyone is surviving as no one has left ownership and so its value is one. As moves into rental housing occur, the survivor function declines toward its lower bound value of zero; unlike the hazard function, the survivor function will never increase. It turns out that the information contained in the estimated hazard function can be used to calculate survival probabilities.¹³

Figure 3: Survival rates, Australia and UK, 2001–10



Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

¹³ Survival rates are calculated using the formula, $S_t = S_{t-1}(1-h_t)$, where S_t and h_t denote the survival and hazard rates in year t , respectively, and S_{t-1} is the survival rate in year $t-1$.

3.1.2 *Explaining exit rates*

With these technical preliminaries out of the way we can now discuss our findings. In Australia, the hazard rates tell us that the risk of exiting ownership systematically declines through to year 8. The relatively high hazards in the early years of a spell might reflect investment and credit risks that retreat as mortgages are paid down and incomes rise. Comparisons across the two countries confirm that the hazard is both absolutely and relatively low in the UK and though hazards decline over the first three years of UK spells, there is no systematic trend as spells lengthen beyond three years.¹⁴ The survivor function reflects the cumulative effects of these differences in hazard rates; in the UK, an estimated 90 per cent of owner occupiers, compared with just 78 per cent of their Australian counterparts, are expected to continue in home ownership for more than eight years.

There is an important caveat to consider before speculating about the reasons behind these different patterns. A majority of ownership spells in the sample began before the start of the data collection period (2001) and so we do not know when these spells in home ownership started.¹⁵ Table 5 below and Figures 4 and 5 below address this issue by omitting spells ongoing in 2001. So that the sample only comprises spells starting in years between and including 2002 and 2010. Hazard rates are higher than those in the larger sample. The Australian conditional probabilities of exit fall from 14.1 per cent in year 1 to 5.8 per cent in year 7; for a randomly selected Australian home owner starting a spell in home ownership the chances of 'survival' beyond year 7 are only 59 per cent. This sample could then be more exposed to investment and credits risks. This would not be surprising as many of the spells in the larger sample will cover segments of the pathways travelled by owner occupiers that have paid off mortgages, and have no exposure to investment or credit risks. In this new sample of spells, highly leveraged first home buyers will be a more influential presence; this is reflected in higher loan-to-value ratios (LTVs). In the first year of spells in the right and left-censored sample mean LTVs are only 31.7 per cent in Australia, and 30.1 per cent in the UK. But the corresponding LTVs in the right-censored sample are much higher at 58.3 per cent and 46.8 per cent respectively.

¹⁴ All the observations in year 8 are from respondents who were interviewed in the BHPS in year 7 followed by a subsequent interview in Understanding Society in year 8. Because the UK interval between year 7 (BHPS) and year 8 (Understanding Society) is in fact longer than one year for most respondents (and two or more years for one-quarter of the respondents), the apparent spike in the hazard rate in year 8 is in part due to a statistical artefact.

¹⁵ When spells begin before the data collection period they are referred to as left-censored. In Australia, 4923 or 72.1 per cent of spells are left-censored. In the UK, 5417 or 88.9 per cent of spells are left-censored. Tables 4(a) and (b) treat the left-censored spells as if they were all new ownership spells in 2001. But this is obviously unsatisfactory; unfortunately these left-censored spells pose challenges that cannot be resolved by invoking assumptions such as those brought into play to address right-censoring. The advice followed by the likes of Fichmen (1989) is to omit the left-censored spells, and we follow this advice in Table 5 below.

Table 5: Spells in home ownership starting 2002–10, sample estimates^a

(a) Australia

Year of spell (<i>t</i>)	Time interval	Number of spells ongoing at start of year (<i>Y</i>)	Number exiting home ownership during the year (<i>N</i>)	Spells censored at the end of year	Hazard rate $h_t = N_t / Y_t$	Survival rate $S_t = S_{t-1}(1-h_t)$
0	[0,1)	1,907	0	182		1.00
1	[1,2)	1,725	244	143	0.14	0.86
2	[2,3)	1,338	101	157	0.08	0.79
3	[3,4)	1,080	87	146	0.08	0.73
4	[4,5)	847	48	151	0.06	0.69
5	[5,6)	648	32	137	0.05	0.65
6	[6,7)	479	20	134	0.04	0.63
7	[7,8)	325	19	142	0.06	0.59
8	[8,9)	164	1	163	0.01	0.59
Total		8,513	552	1,355		

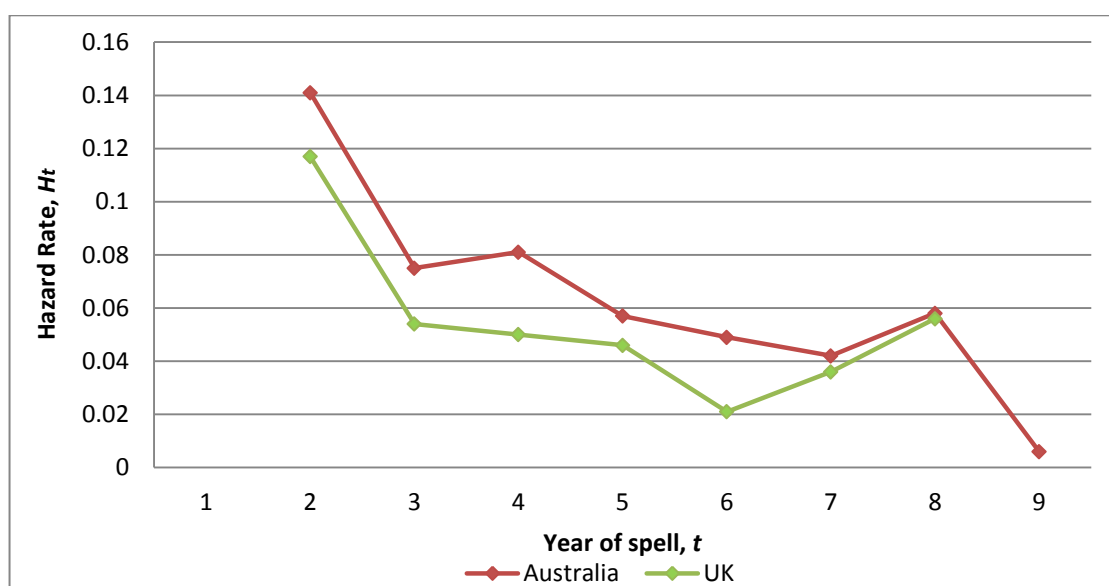
(b) UK

Year of spell (<i>t</i>)	Time interval	Number of spells ongoing at start of year (<i>Y</i>)	Number exiting home ownership during the year (<i>N</i>)	Spells censored at the end of year	Hazard rate $h_t = N_t / Y_t$	Survival rate $S_t = S_{t-1}(1-h_t)$
0	[0,1)	674	0	40		1.00
1	[1,2)	634	74	38	0.12	0.88
2	[2,3)	522	28	57	0.05	0.84
3	[3,4)	437	22	49	0.05	0.79
4	[4,5)	366	17	58	0.05	0.76
5	[5,6)	291	6	90	0.02	0.74
6	[6,7)	195	7	81	0.04	0.72
7	[7,8)	107	6	101	0.06	0.68
8	[8,9)					
Total		3,226	160	514		

Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

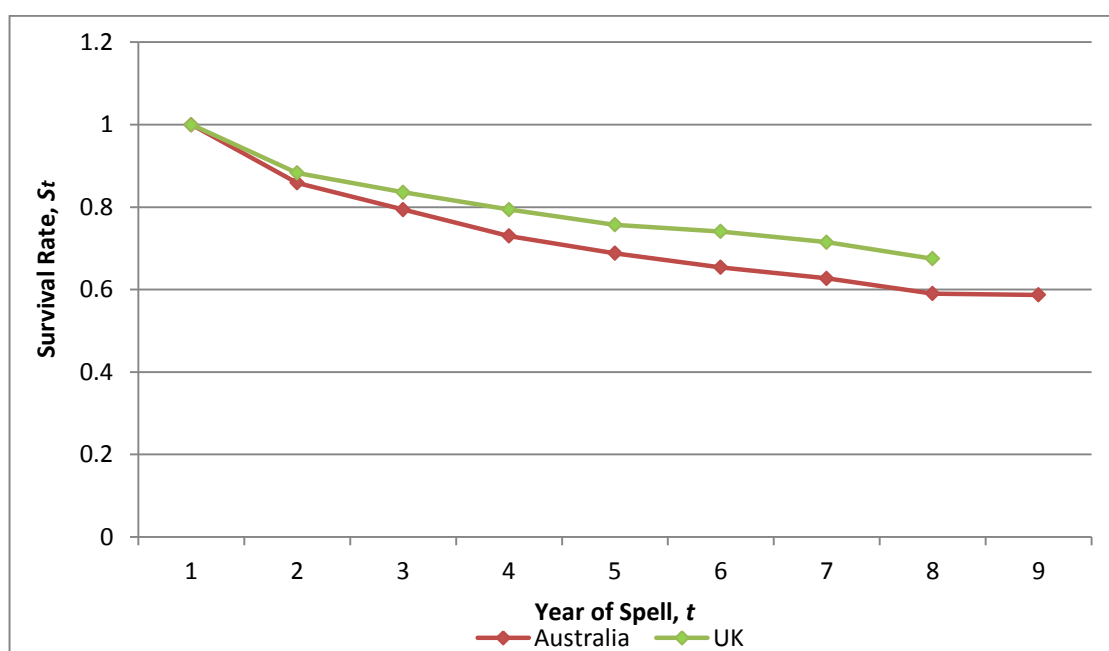
Note: ^a. Interviews for Wave 2 of Understanding Society were carried out over an extended period of time. Caution should be taken when interpreting final year and totals of UK.

Figure 4: Hazard rate, Australia and UK, 2002–10



Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

Figure 5: Survival rate, Australia and UK, between 2002–10



Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

The British right-censored sample of hazard and survival rates exhibit similar patterns, but departures from home ownership are less common. The British conditional probabilities of exit fall from 11.7 per cent in year 1 to 5.6 per cent in year 7; for a randomly selected British home owner starting a spell in home ownership between 2002 and 2010, the chances of 'survival' beyond year 7 are higher at 68 per cent. The hazard rates are always below their Australian counterparts, though the negative duration dependence is less pronounced (see Figure 4 above).

At 'first sight' the way in which ownership survival rates differ between the two countries is puzzling, because we might have expected the opposite trend. The downturn in the British housing market triggered by the Global Financial Crisis (GFC)

was steeper than that in Australia, for example. Between 2007 and 2009, UK house prices plunged 8.8 per cent before a recovery in 2010 when house prices increased by 7.2 per cent; but they still remained below their levels in 2007. On the other hand, Australian house prices were flat in years 2007–09 before accelerating again in 2010 until they were 20 per cent higher than in 2007.¹⁶ The broader macroeconomic picture was also weaker in the UK; recession in the UK economy resulted in real GDP falling by -4.9 percentage points between years 2007 and 2009, while the Australian economy continued to ‘post gains’ with real GDP growth of 3.7 percentage points over the same period.¹⁷ The majority of all spells in the Table 3 sample extend into the post-GFC era (92.4% in Australia, 92.3% in Britain), and so we should expect these striking cross-country differences to leave their mark by shifting the British hazard rates above their Australian counterparts. But the evidence in Figure 4 above contradicts this expectation.

Two kinds of explanation spring to mind. The first set of possibilities relate to financial pressures. Australian mortgagors are paying off mortgages that are higher relative to incomes than those in the UK, and may therefore be more at risk of early default and exit. Girouard’s data (2010, Table 2.2), indicate that as the GFC approached, Australia’s residential mortgage debt was 120 per cent of the personal sector’s disposable income, but a lower 105 per cent of the personal sector’s disposable income in Britain. These aggregate figures are not, however, reflected in the survey data used in the present study, where the UK figures are slightly higher than those for Australia.¹⁸ This might be an artefact.¹⁹ Nevertheless, and as noted above, those Australians beginning spells in home ownership in the new millennium were relatively highly geared, and therefore possibly more vulnerable.

A further differential financial pressure has to do with interest rates. In the UK mortgage interest rates tumbled in response to the financial chaos precipitated by the GFC, offering some protection, at least to those with variable rate mortgage contracts. In 2006, variable rates averaged 6.5 per cent, but over the three-year period 2007–10 the average rate was only 5.6 per cent.²⁰ These lower rates eased the housing cost burden of leveraged UK home buyers. In contrast, variable rates continued to increase in Australia through 2007 and 2008 before a steep decline. Overall, average rates hardly moved—in 2006 the mean rate was 7.6 per cent, and they remained at that average level of 7.6 per cent over 2007–10.²¹ In 2006, as the GFC approached, 4.6 per cent of Australian mortgagors reported difficulties meeting payments, an incidence that remained steady in the GFC years with only a slight increase to 4.7 per

¹⁶ House price data was obtained from the *OECD Economic Outlook*, volume 2012, issue 2, no. 92, Statistical Annex Table 59: House Prices. To access the data, see <http://www.oecd.org/eco/outlook/economicoutlookannextables.htm>.

¹⁷ Data on real GDP figures were obtained from *OECD Economic Outlook*, volume 2012, issue 2, no. 92, Statistical Annex Table 1: Real GDP. For access to data, see <http://www.oecd.org/eco/outlook/economicoutlookannextables.htm>.

¹⁸ In 2006, our estimates based on HILDA and BHPS indicate that mortgage debt was 106 per cent (110%) of gross household income in Australia (UK).

¹⁹ The UK mortgage debt figure includes borrowing secured against properties other than the primary home, whereas the Australian mortgage debt figure is restricted to the primary home. However, only 10 per cent of UK home owners are multiple property owners.

²⁰ Interest rate calculations for the UK were based on monthly standard variable interest rates, obtained from the Bank of England Statistical Interactive Database (to access data, see <http://www.bankofengland.co.uk/boeapps/iadb/>).

²¹ Interest rate calculations for Australia are based on the standard variable interest rate data for housing loans, obtained from the Reserve Bank of Australia Statistical Tables (see <http://www.rba.gov.au/statistics/tables/index.html>).

cent in 2010. Nevertheless, nearly 1 in 10 (9.2%) of the 2006 mortgagors transitioned out of home ownership between 2007 and 2009. Among British home owners with a mortgage, less than 1 per cent reported payment difficulties in 2006, and though this then increased sharply to 5.3 per cent in 2009, only 2.3 per cent of British mortgagors left home ownership between 2007 and 2009.

A second, and potentially more influential, set of explanations for the differential rates of exit in the two countries are rooted in some important inter-country institutional differences. Historically, British home owners have been eligible through the social security system for what is now known as support for mortgage interest (SMI). There is no such safety net for mortgagors in Australia. According to Wilcox and Pawson (2011, Table 110) the number of British recipients peaked at over half a million in 1993, and still numbered 200 000 in 2011, despite a succession of curbs introduced between 1987 and 1995. At the time the British housing market was hit by the GFC, SMI was subject to a ceiling of £100 000 but this was doubled to £200 000 in January 2009; conditional on completing a waiting period that was temporarily reduced from 38 weeks to 13 weeks in January 2009, SMI continues indefinitely as long as the claimant remains out of work (Stephens 2011, p.58). Lender forbearance has also been a major factor in preventing the translation of arrears into possessions in the current UK housing cycle (Finney & Kempson 2009, p.126).

The rental housing tenures in each country's housing system offer another institutional explanation for the contrast between them. The larger unregulated Australian private rental sector may help 'oil the wheels' between renting and ownership by performing a risk management role that offers temporary, relatively easily accessible, refuge for those on the edges of home ownership. It also provides a vantage point for movers who in the meantime screen opportunities in the home purchase market at their destination. Britain's private rental market is relatively small, and not sufficiently diverse to perform the same role. The UK's social housing sector is large by Australian standards, but the needs-based allocation systems in use (which to an extent suspend the market mechanism) do not prioritise those who exit owner occupation simply for financial reasons. So while social housing might provide a 'soft landing' and permanent sanctuary for those forced out of owner occupation by extreme financial adversity coupled with pressing social (e.g. health) needs, it does not offer the same fluidity of movement between tenures that seems characteristic of the Australian rental sector. In short, exit from ownership may be easier for, and more appealing to, Australian than UK households.

A further consideration, which we are not able to analyse here, is the transaction costs incurred when moving house. In the UK, the scarcity of rental alternatives mean that downsizing to a cheaper home is the more relevant option for many financially stressed home buyers. But the costs of selling and buying cheaper housing could prove so prohibitive that they wait until the 'last minute', and risk homelessness instead. These ideas have greater currency to the extent that transaction costs are higher in UK housing markets.

Overall, these contrasting patterns suggest that those on the edges of Australian and British home ownership respond very differently to the shocks of the early 21st century. In Australia, the lack of social security support for mortgagors, together with a large private rental housing sector, may encourage owners to exit to adjust to growing financial pressures. That is, the Australian housing system can accommodate those who wish to exchange the costs of owning for those of renting and are willing to move home in order to do so. In contrast, while British mortgagors' payment difficulties climbed to levels higher than those in Australia, the social security support to help home owners meet mortgage pressures, the extent of lender forbearance and

plunging mortgage interest rates, together with limited opportunities to use the rental sector to adjust to financial pressures, appear to have prevented a corresponding climb in exit rates from home ownership over the study period.

3.1.3 *Regaining ownership*

Now consider Table 6 and Figures 6 and 7 below where we describe the pathways journeyed after transitions out of home ownership. That is, we consider the possibility for leavers to ‘churn’ back into owner occupation.

In Australia, we have a sample of 1503 ex-home owner spells; the UK spells sample is smaller at 577. This spell data is not left-censored and is not therefore subject to the caveats applicable in the case of Table 3. It shows that ex-home owners in Australia and the UK have a good chance of returning to owner occupation, if they do so quickly. Note that the conditional probabilities of returning fall off quite sharply. As a result, sizeable minorities remain renters in the long run.

The fact that the hazard function for the UK lies below its Australian counterpart and has a faster rate of decline (see Figure 6 below) shows that, in Britain this ‘permanent fallout’ is especially marked. The survivor function suggests that 40 per cent of UK ex-homeowners can expect to rent for more than seven years following their loss of home ownership status. On the other hand, the equivalent Australian estimate is quite a bit lower at 24 per cent. These comparisons add further to a picture that portrays greater fluidity in Australia’s housing system. Perhaps in this case, the insecurity of rental housing motivates an early return to ownership for those who can achieve that. In contrast, it is possible that Britain’s larger *social* rented housing sector plays a different kind of role, providing a ‘soft landing’ with security of tenure for households with recognised social needs.

Table 6: Spells in renting by ex-home owners, 2002–10, sample estimates^a

(a) Australia

Year of spell (<i>t</i>)	Number renting at start of year (<i>T</i>)	Number returning to home ownership during the year (<i>N</i>)	Number censored at the end of year	Hazard rate $H_t = N_t / T_t$	Survival rate $S_t = S_{t-1}(1-H_t)$
0	1,503	0	186		1.00
1	1,317	501	104	0.38	0.62
2	712	184	63	0.26	0.46
3	465	90	52	0.19	0.37
4	323	42	45	0.13	0.32
5	236	20	55	0.09	0.30
6	161	17	43	0.11	0.26
7	101	6	52	0.06	0.25
8	43	1	42	0.02	0.24
Total		861	642		

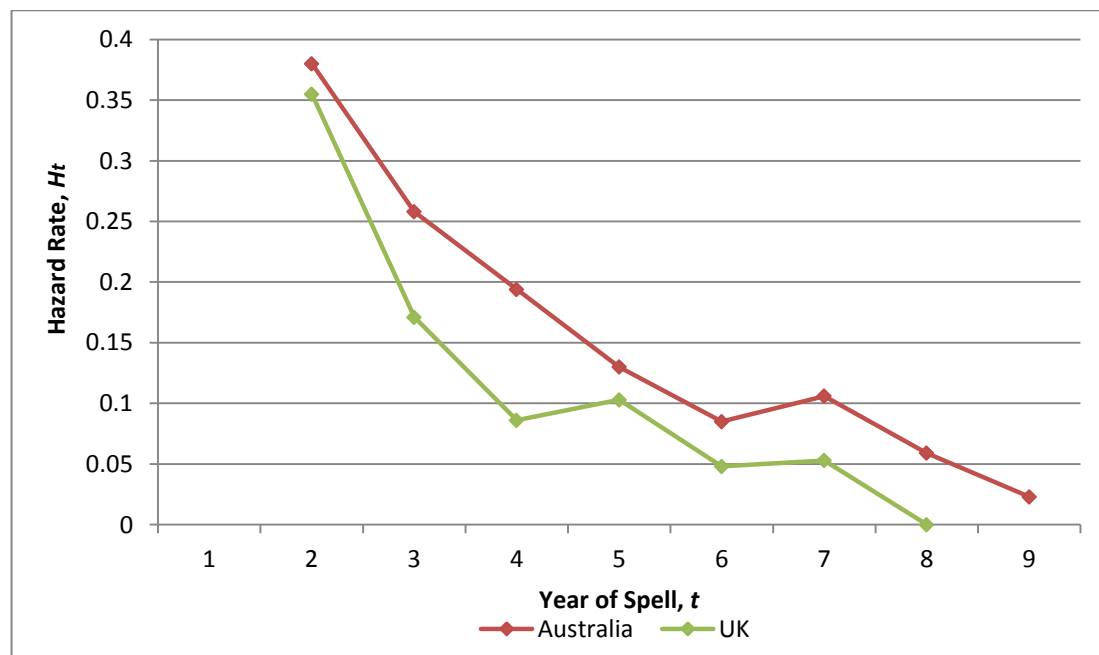
(b) UK

Year of spell (<i>t</i>)	Number renting at start of year (<i>T</i>)	Number returning to home ownership during the year (<i>N</i>)	Number censored at the end of year	Hazard rate $H_t = N_t / T_t$	Survival rate $S_t = S_{t-1}(1-H_t)$
0	577	0	160		1.00
1	417	148	35	0.36	0.65
2	234	40	43	0.17	0.54
3	151	13	31	0.09	0.49
4	107	11	33	0.10	0.44
5	63	3	22	0.05	0.42
6	38	2	18	0.05	0.40
7	18	0	18	0.00	0.40
8					
Total		217	360		

Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

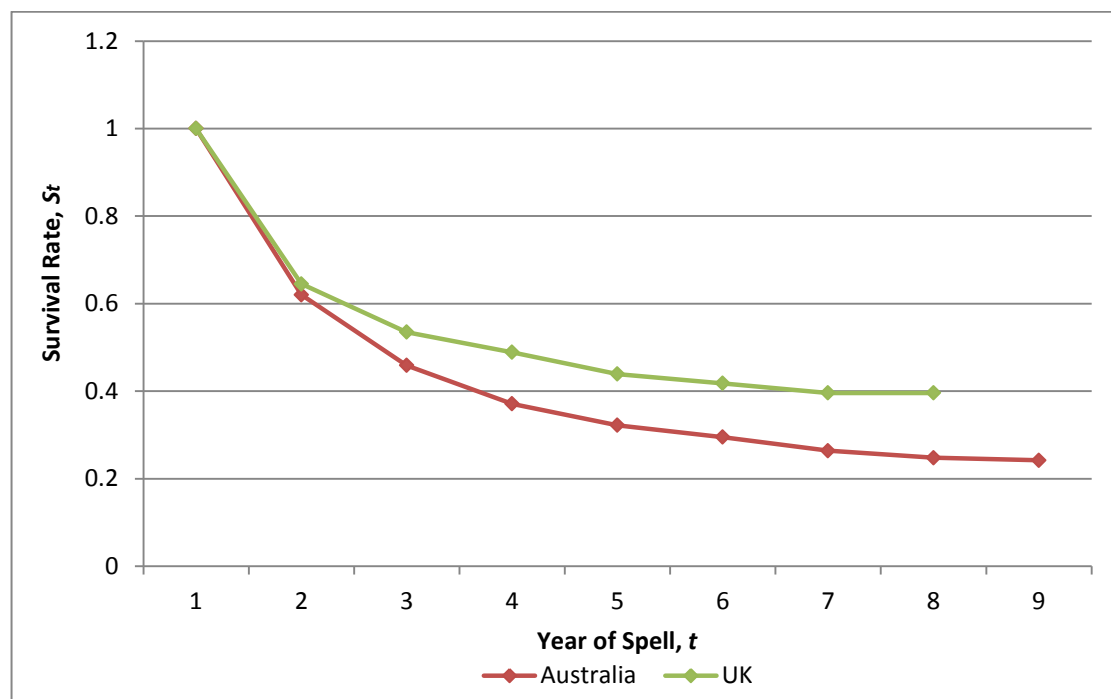
Note: ^a. The sample is spells in rental housing following termination of a spell in home ownership. The maximum length of the spell is therefore eight years (seven years) for Australia (UK) since at least one year of the sample timeframe has been spent in home ownership.

Figure 6: Hazard rate, Australia and UK, between 2002–10



Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

Figure 7: Survival rate, Australia and UK, between 2002–10



Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

3.1.4 Conclusion

This section shows that across the first decade of the current millennium, the majority of households, having attained owner occupation, sustained it to the end of the study period. In the combined observations for the two countries, just one in seven (15%) dropped out, though the likelihood of this was much higher for Australia (22%), than for the UK (9%). Life tables together with graphs of hazard rates and survival rates compared and contrasted the patterns for the two countries.

An intriguing discovery is the relatively high proportion—over half—among those exiting ownership who re-enter that tenure sector before the end of the study period. The proportions are much higher in Australia (60%) than in the UK (41%), though the fact that this occurs at all in such a short time frame—contrary to most conceptualisations of housing pathways in the wider literature—suggests that ‘churning’ is a phenomenon that merits closer scrutiny.

This theme is taken up later, but for the moment we note that, in terms of exit from ownership, Australians who leave may be drawn from a broader cross-section of the population than their British counterparts. They are able to make use of a diverse well-functioning private rental sector to match housing outcomes to capacity to pay. At the same time, tenure insecurities and rental uncertainties may motivate those who can to regain ownership as soon as possible.

In contrast in the UK, less people drop out of ownership, but when they do, they are more likely to rent for the long term. This may partly be accounted for by selective exit among people with pressing housing needs that can be accommodated in the social rented sector. Here, security of tenure (as well as personal financial circumstances) may permanently prevent re-entry to ownership.

3.2 Characteristics at the edge

The majority of owner-occupiers are, by definition, in the mainstream. However, as Section 3.1 shows, the margins are wider than the image of a tenure-divided society often implies. We have now identified two key groups at the edges of ownership. Those the literature is most familiar with are the leavers: people who have managed to attain owner occupation but are unable to sustain it, falling out of the sector altogether. Less in the spotlight are the churners: households who drop out of ownership but return to the sector at least once in less than a decade. These households not only challenge conventional views about the progressive character of housing ‘careers’; they also run counter to the post-GFC assumption that households who exit are in an irreversible spiral of decline.

In this section we provide an overview of the characteristics of leavers and churners, comparing and contrasting them with the characteristics of those in continuing ownership. To make the most of this comparative overview, we also make a distinction among ongoing owners between those who enter as well as leave the study period as owners (‘ongoing owners in the mainstream’), and those who enter as renters and then attain and sustain ownership through to 2010, the end of the study period. We can think of these as ‘ongoing owners at the edge’—households who could progress into the mainstream, but who might equally remain on the margins. This group represents a larger proportion of all ongoing owners in Australia (15%) than it does in the UK (7%).

3.2.1 Living on the edge

Figure 8 below provides some key demographic data for the study populations. Four points are of particular interest.

First, the chart shows that individuals are closest to the edge when they are at their youngest. Nearly half the annual cycles accounted for by ongoing owners on the edge in the Australian sample (and over one-third of those in the UK) are accounted for by the under-35s. In contrast, only one in eight cycles in the all ongoing owner sample fall into this age group (ongoing owners in the mainstream are older still). Leavers and churners are between these extremes, with the latter recording a higher proportion of 'youthful' cycles than the former.

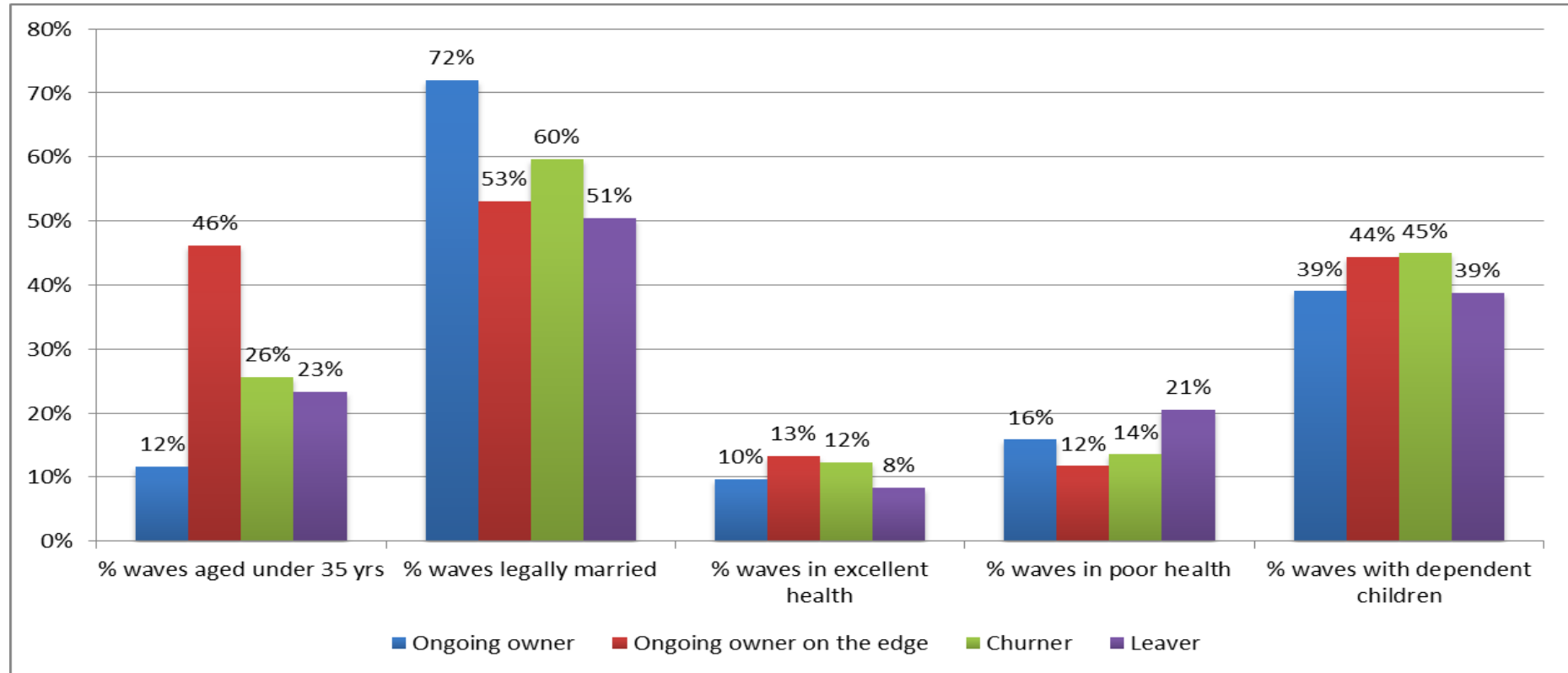
Second, Figure 8 shows that half or more of the ownership cycles in all groups are accounted for by people who are married. However, a much higher proportion of ownership years are spent in marriage by ongoing owners than by any other group. When we look at the position at the beginning and end of ownership spells (data not shown here) we find that in the first year of observation as an owner, churners are least likely to be married (and more likely to be in a de facto relationship, as well as, in the UK, divorced) than others. By the end of the study period, however, the proportion of churners who are divorced has nearly doubled in Australia and more than doubled in the UK. Relationship formation and dissolution might therefore be a significant driver of churn. In both countries, ongoing owners on the edge and leavers look rather similar in marriage rates, but in Australia at least the latter are much more likely to be divorced (whereas the former may not yet have partnered).

Third, the presence of children also varies across the householder groups, though not by a great deal. However, it is worth noting that while marriage may be least common among those shifting out of home ownership, in the UK at least, children are more likely to be present in these households than among ongoing owners. This is partly an age effect, but it also reflects the acute spending needs commonly prompted by relationship breakdown in the presence of children, which may require financially stressed households to sell their homes to raise the cash they need. Because of these age effects, little definitive can be said about the presence of children without first engaging in a modelling exercise (see Chapter 5).

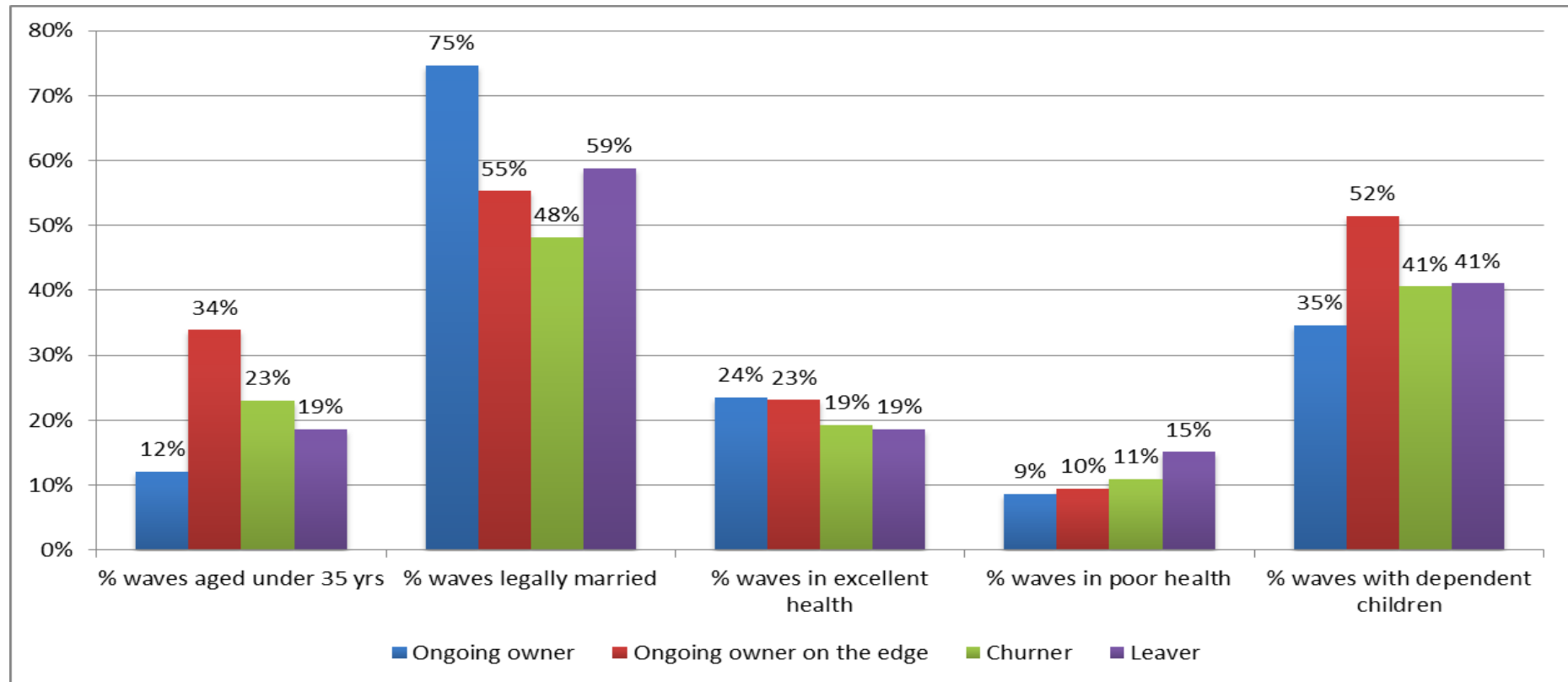
Finally, Figure 8 below provides information on health status. Overall, and for every group, only a minority of ownership cycles are spent either in the best or worst of health. However, in both countries leavers spend the least amount of their time in ownership in excellent health (compared with other groups) and the most in poor health. This is a point we return to in later sections.

Figure 8: Demographic characteristics, by home owner group, 2001–10

(a) Australia



(b) UK

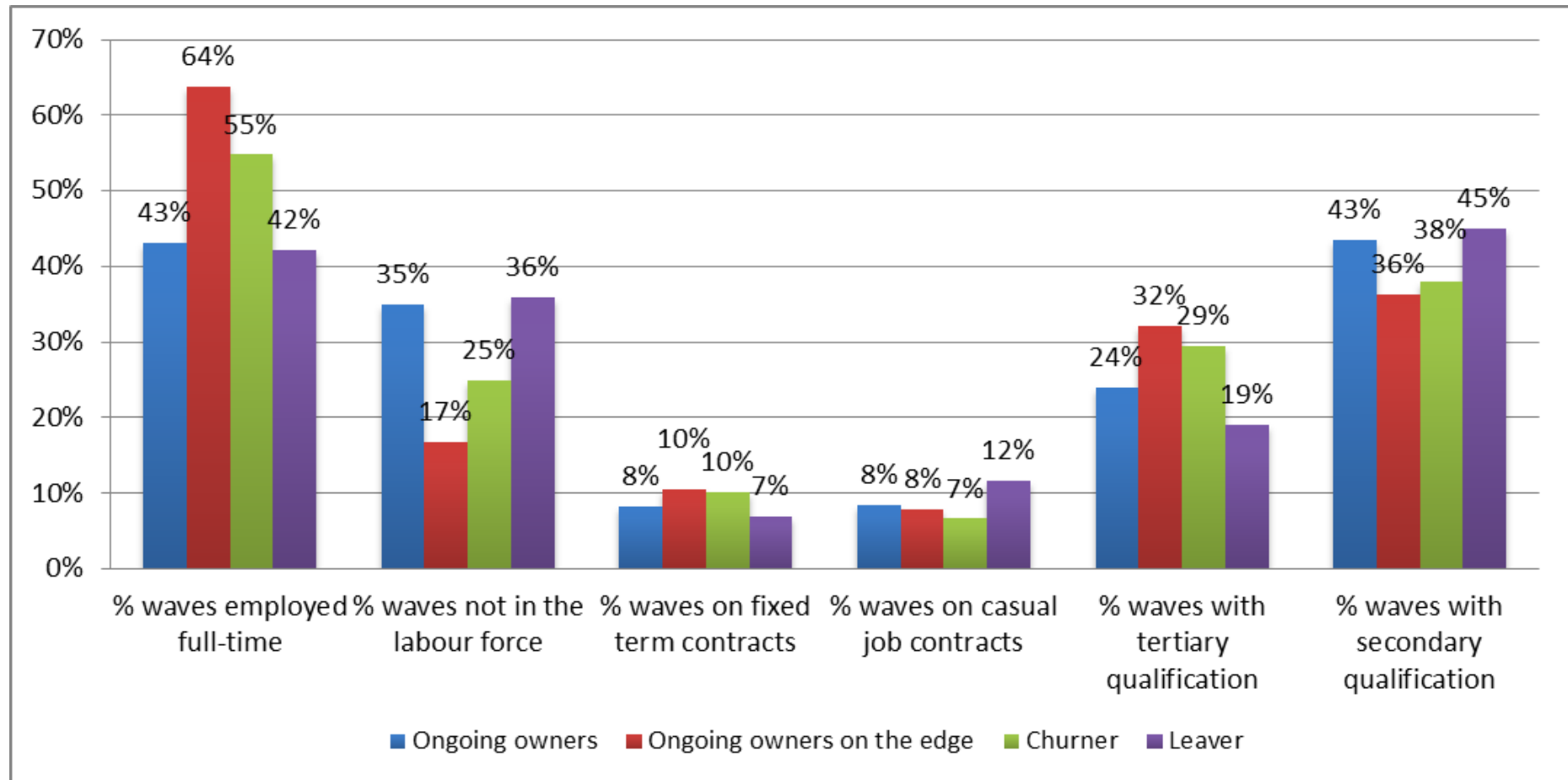


Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

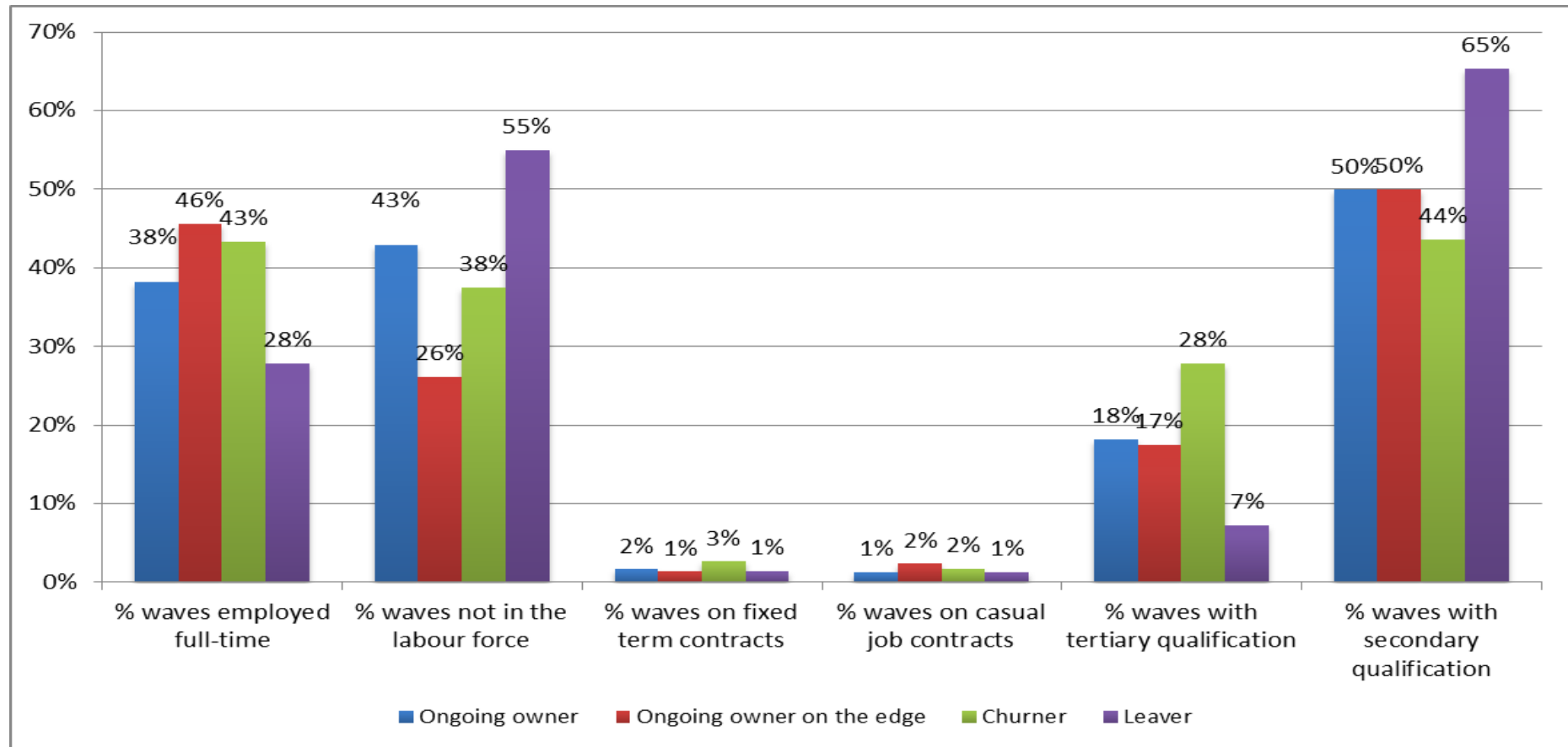
Figure 9 below shows patterns of education and employment for ongoing owners and those on the margins of ownership. The message is broadly the same for both countries: educationally, leavers are least likely to have higher (tertiary) qualifications, while churners are best educated (along with Australian ongoing owners on the edge). In terms of the job market, Australian households seem much more able than their UK counterparts to sustain owner occupation while on fixed term or casual contracts. In both countries, however, the highest rates of employment are shown by two groups: ongoing owners on the edge (who would have needed employment to get into the sector during the study years) and churners (who will need to demonstrate employment to get back into the housing market after exit). Leavers in both countries spend the highest proportion of ownership waves outside the labour force (even despite the fact that some older ongoing owners will have retired).

Figure 9: Labour market characteristics and qualifications of home owner groups, 2001–10

(a) Australia



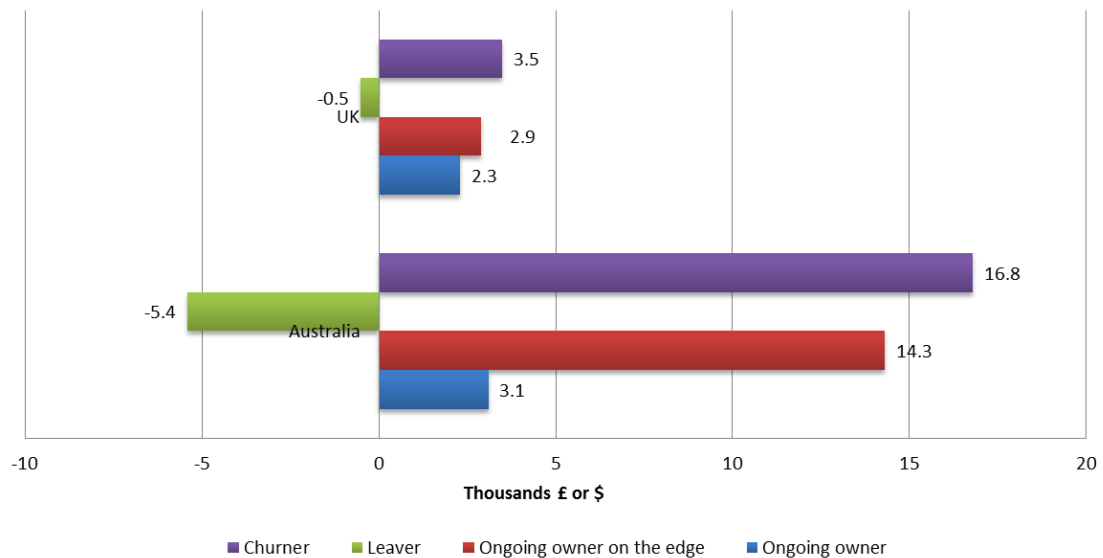
(b) UK



Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

Figure 10 below underlines the precarious position of the leavers: they are the only group in either country whose median household incomes—already lower than average—fell rather than increased between the first and last year of their spell of ownership. Ongoing owners and churners look more secure. Intriguingly, however Australians who churn end up with higher incomes than ongoing owners. This perhaps suggests that, in order to get back into the market having dropped out, households need an income premium over and above that of those who stay where they are.

Figure 10: Median change in household gross income by home owner group, Australia and UK, 2001–10

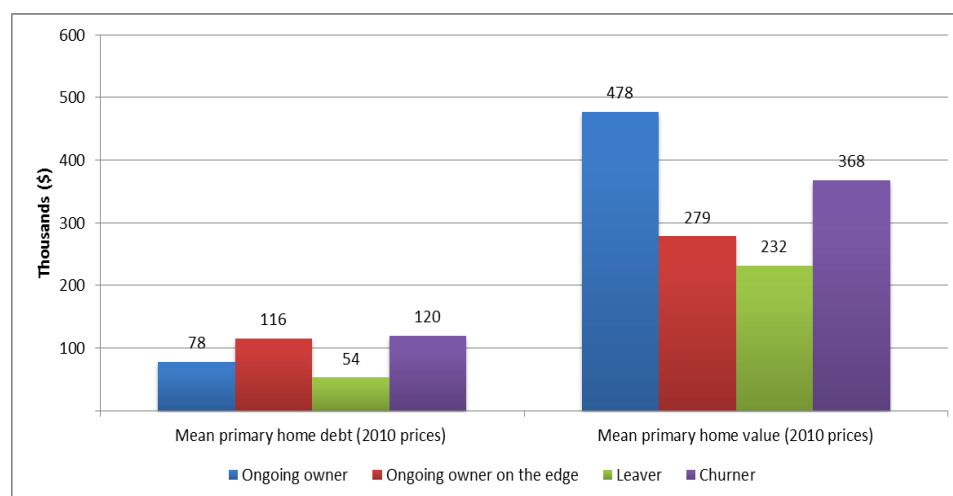


Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

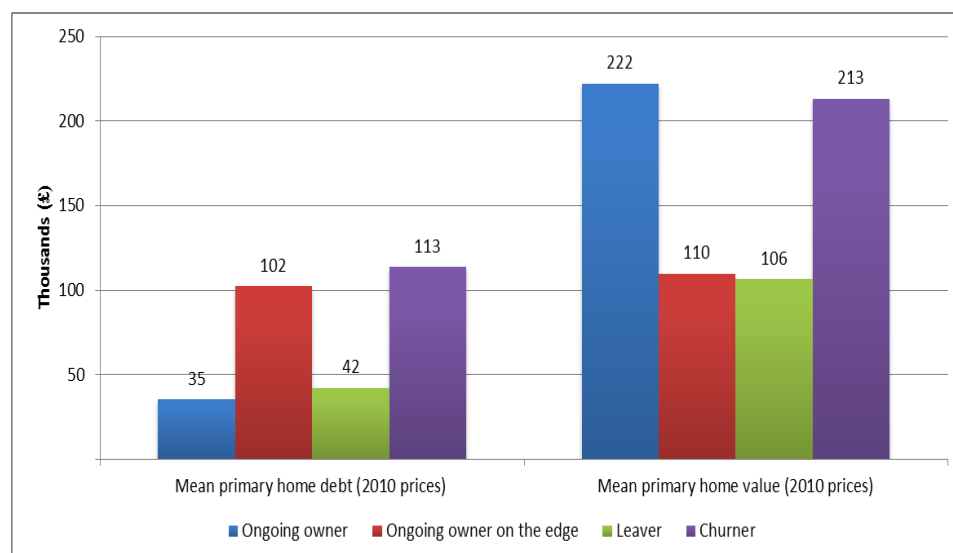
The groups also differ in their position in the housing market. Figure 11 below shows that ongoing owners, on average, occupy the highest value properties. In the UK, they also carry least mortgage debt. (Data not shown here also indicate that ongoing owners are also most able to improve their position year on year by saving, often regularly). Churners are not far behind ongoing owners on home values, and between their first and last wave in ownership, they experience higher rates of growth in property values (some of which is due to trading up in the housing market). Their debts are generally higher, however, and they bear the worst debt-to-income ratio in the study. Figure 12 below shows the change in mortgage debt levels among the four groups between the beginning of their first spell (in this study) as owners, and the end of the last spell. The difference between churners, whose debts rise substantially, and ongoing owners, whose debts fall, is striking in both countries.

Figure 11: Mean primary home value and debt, 2001–10

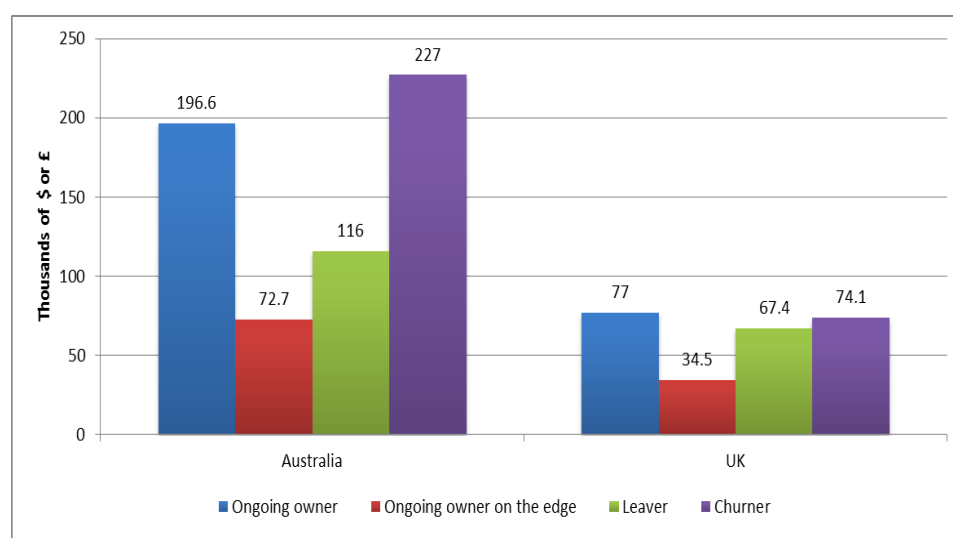
(a) Australia



(b) UK

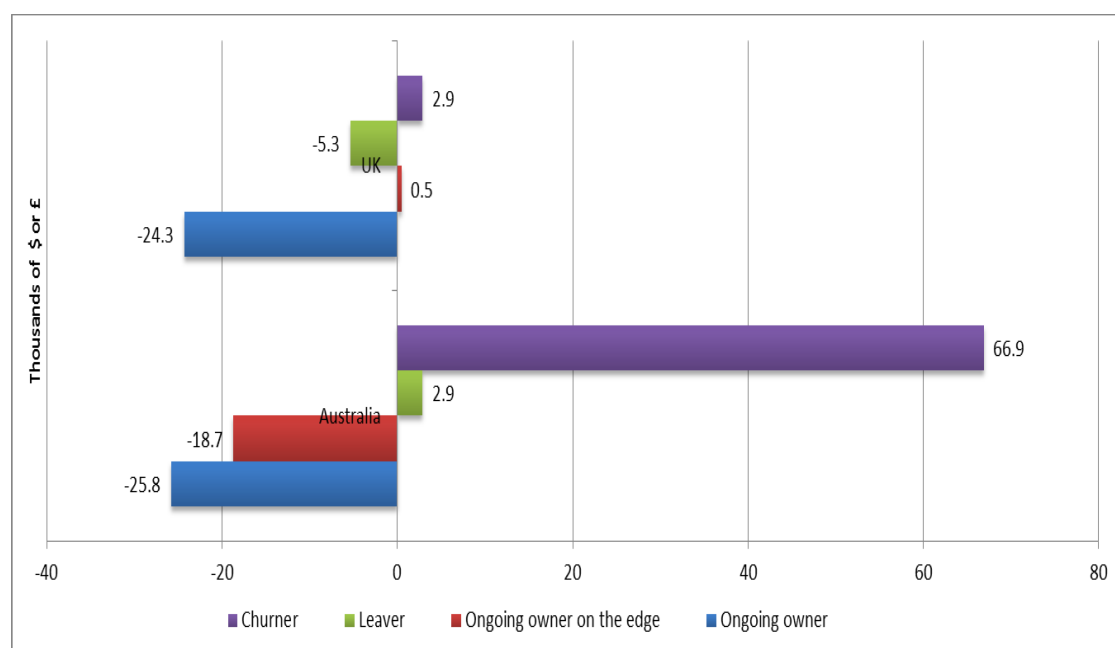


(c) Median change in value of primary home (2010 prices), Australia and UK



Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

Figure 12: Median change in mortgage debt on primary home between first and last observation in home ownership (2010 prices), Australia and UK

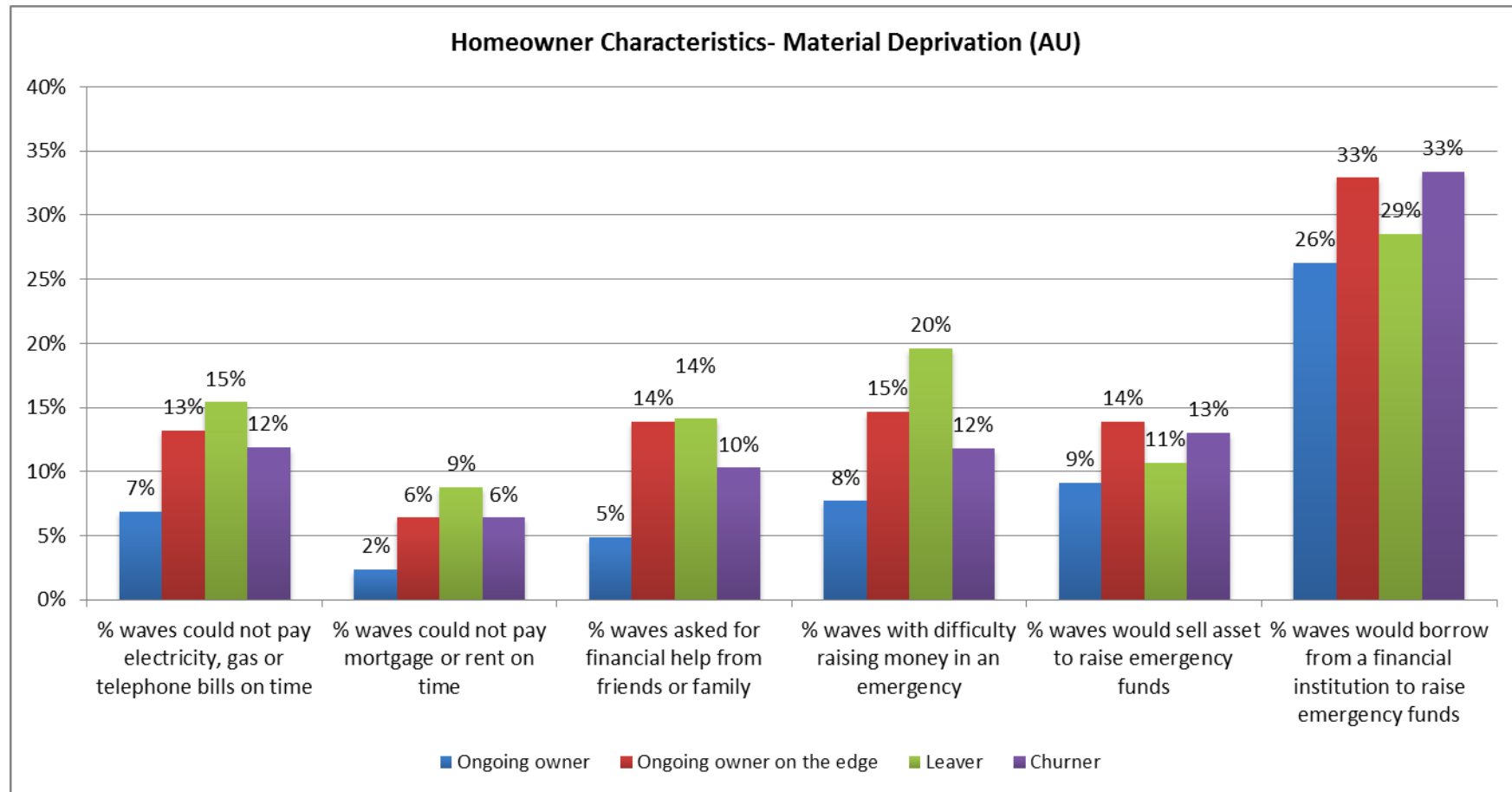


Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

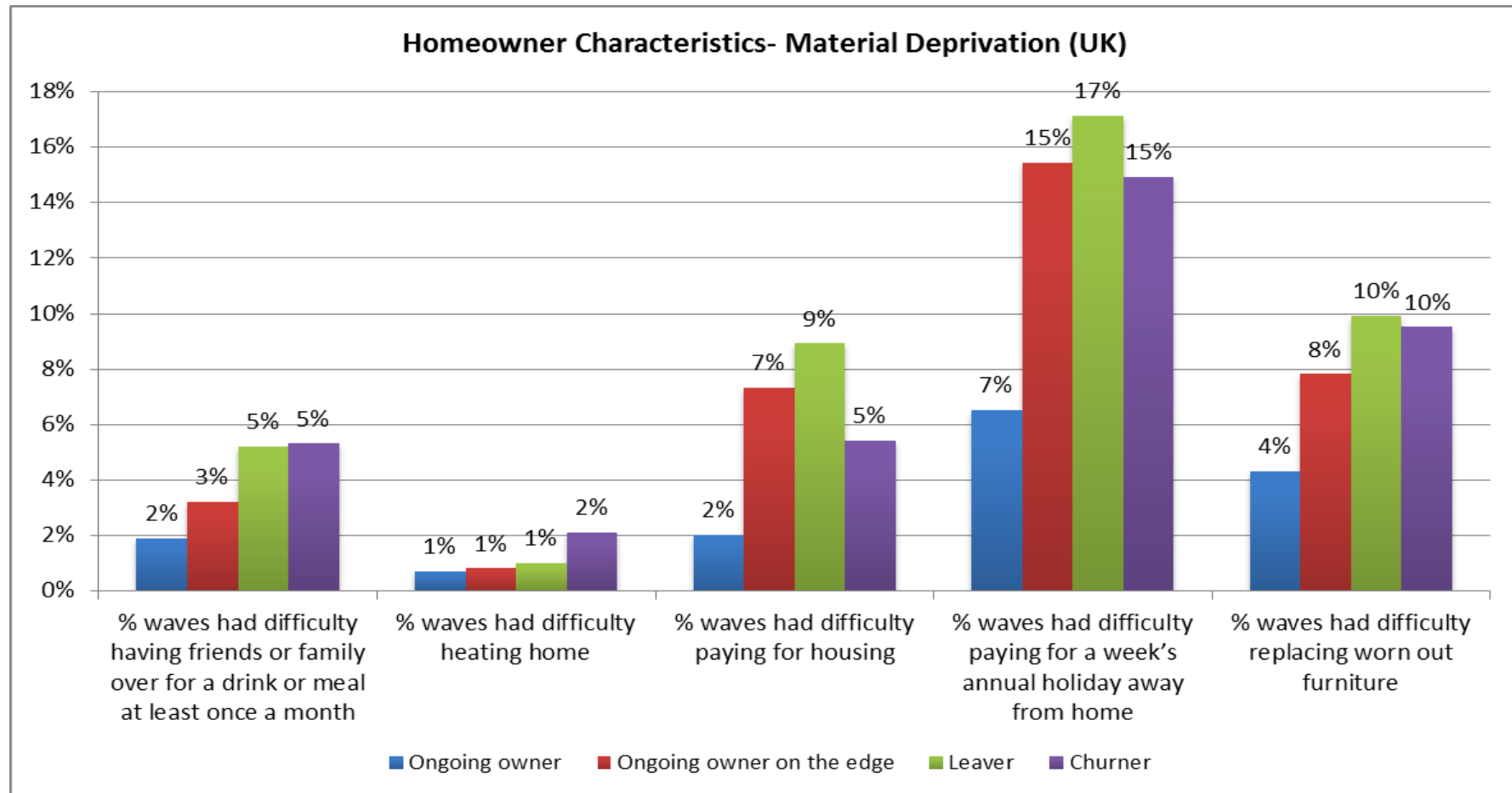
Leavers show lowest property values with corresponding low debt. However, the extent to which leavers struggle financially during their time in owner occupation is further apparent from Figure 13 below. This indicates that all groups at the edges of ownership are in a worse position than ongoing owners on a range of indicators of financial and material wellbeing. In both Australia and the UK, however, leavers are more likely than any other group to report being unable to pay their housing and other costs (utility bills and emergencies in Australia; subsistence items and holidays in the UK). On examining change in these material indicators over periods of ownership (data not shown here), the leavers' position also changes for the worse *relative* to the others over the course of the study. For example, in Australia, the incidence of being unable to pay utility bills drops overall between first and last observations, but much less so for leavers than for the others. The incidence of not being able to pay housing costs on time falls overall, but for leavers it rises.

Figure 13: Material deprivation, by home owner group, 2001–10

(a) Australia



(b) UK

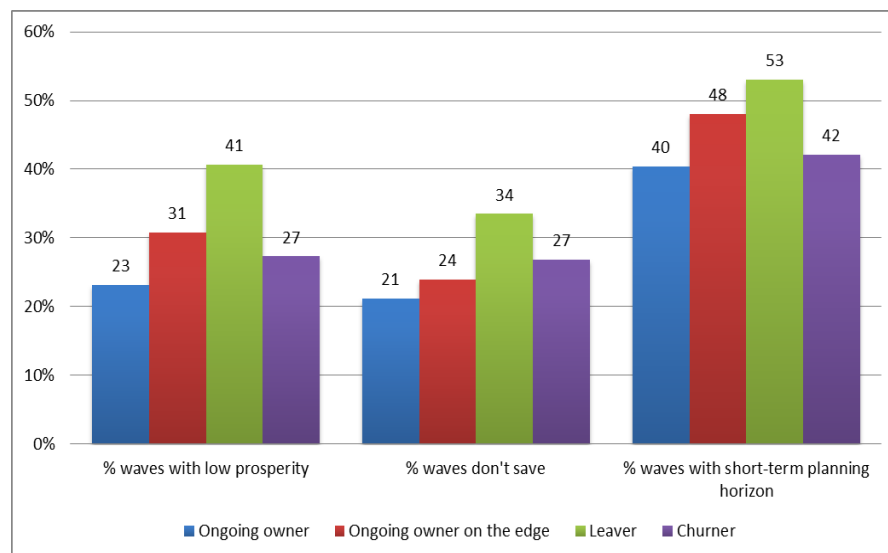


Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

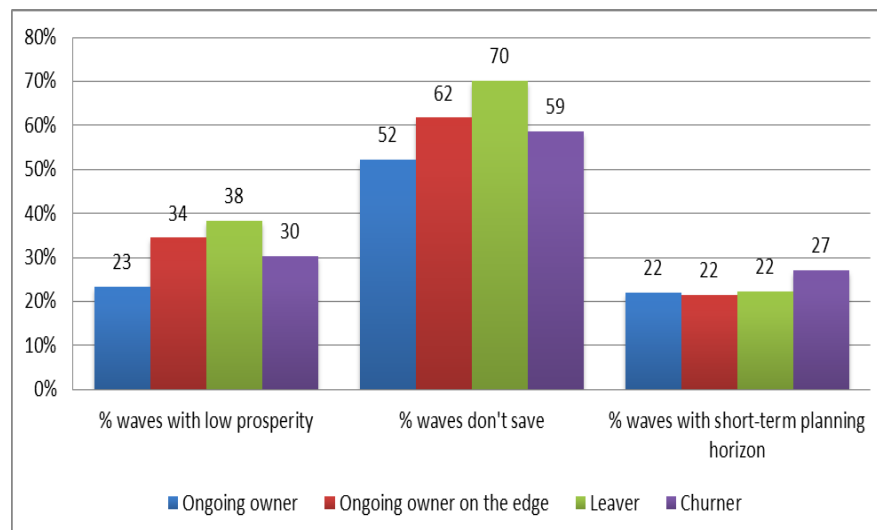
This stressed position is underlined, in Figure 14 below, which shows that leavers spend the highest proportion of ownership waves with low prosperity and being unable to save. In Australia, they also spend more time than the others managing financial affairs over a very short planning horizon, which is one indicator of the uncertainty of their position.

Figure 14: Prosperity/savings habits and planning horizon, by home owner group, 2001–10

(a) Australia



(b) UK



Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

Notes: 1. Low prosperity refers to just getting along or worse in relation to one's needs and commitments. The absence of a comparable prosperity variable in UKHLS means that the latest BHPS value is used as a proxy for the UKHLS value.

2. In HILDA, the savings variable is not available in waves 5, 7 and 9. Hence, values from the immediate preceding wave are used as the only available proxies. The absence of a comparable savings variable in UKHLS means that the latest BHPS value is used as a proxy for the UKHLS value.

3. In the Australian case, short-term planning refers to a savings and planning horizon of less than one year. In the UK, individuals are asked to report whether they plan for the short-term or long-term. In HILDA, the planning variable is not available in waves 5, 7 and 9. Hence, values from the immediate preceding wave are used as the only available proxies. The absence of a comparable planning variable in UKHLS means that the latest BHPS value is used as a proxy for the UKHLS value.

To summarise, the key points to take from this initial overview of those living on the edges of ownership are threefold. First, ongoing owners are a useful reference point; they represent the mainstream, and provide clues about the circumstances that are sustainable. Second, those who drop out of ownership show most evidence of financial stress. Leavers drop out for economic reasons, and their characteristics effectively mark out the limits of owner occupation. Third, it is right to be curious about ‘churners’; they show a mix of characteristics, some of which seem quite mainstream, while others seem precarious. The experiences and fortunes of the churners may turn out to be a litmus test for the wider workings of the housing market.

3.3 WELLBEING AT THE MARGINS

The costs and benefits of systems for the provision of goods and services and of the policy interventions that shape them are increasingly measured against the yardstick of wellbeing. It follows that one measure of whether the edges of ownership should be of interest and concern is the extent to which their character has a bearing on wellbeing. To address this, we offer two exercises—a descriptive overview of wellbeing and life satisfaction at the edges of ownership; and a modelling exercise to capture the drivers of wellbeing and establish the role of transitions out of home ownership among them.

3.3.1 *Wellbeing at the edges of ownership*

The descriptive analysis uses two measures of wellbeing—a mental health score and a life satisfaction score. These are used to establish the levels of wellbeing of leavers and churners, relative to that of ongoing owners, as they adapt to their permanent or temporary loss of home ownership. These comparisons provide one indicator of whether the edges of home ownership in today’s fluid housing markets are a problem or a resource.

We first measure the psychological impact of exit from ownership using the mental health component of the SF36 on a scale of 0 (least healthy) to 100 (most healthy) in HILDA, and the GHQ12 on a scale of 0 (least distressed) to 36 (most distressed) in BHPS. Note that we follow Searle (2008) by using the inverse of the GHQ12 scale in our analysis so that, in the case of both Australia and the UK, an increasing scale for the mental health variable denotes a rise in wellbeing.

Second, we measure overall life satisfaction. Here, the HILDA variable is on a scale of 0 (completely dissatisfied) to 10 (completely satisfied). The BHPS variable is on a scale of 1 (completely dissatisfied) to 7 (completely satisfied).²²

Tables 7 and 8 below provide an overview of the mental wellbeing and life satisfaction of ongoing owners, leavers and churners in Australia and the UK. On both measures and in both countries, ongoing ownership is broadly associated with the highest levels of wellbeing, leaving with the lowest, and churning lies between the two. This is intuitively logical: if owner occupation is the tenure of choice, we would expect those who both attain and sustain it to report higher levels of wellbeing than those who achieve it and then leave.

The point is both underlined and qualified in the rows in the tables that document the differences in mental wellbeing and life satisfaction reported by churners and leavers when they were each in and out of ownership. In Australia, leavers and churners both report, on average, higher levels of mental wellbeing and of life satisfaction as owner-

²² Note that in BHPS wave 11, this variable is reported on a scale of 1 to 4 instead of 1 to 7. Hence, the following transformation is executed in wave 11: 1 remains as 1, 2 is recoded into 3, 3 is recoded into 5, 4 is recoded into 7.

occupiers than they do in periods of renting. This is true overall and for every spell of ownership for churners (except for psychological wellbeing in the fourth spell, where small numbers may distort the mean measure).

In the UK, in contrast, mean mental wellbeing is slightly higher among these groups when they are renting than when they are owning. This might reflect an accumulation of stress among marginal British buyers when they realise that their position as owner-occupiers is becoming unsustainable, but (unlike their Australian counterparts) have no opportunity to exit early into a diverse well-functioning rental sector. It may also reflect a well-documented mental health gain on rehousing among those whose level of stress or depression qualifies them for priority access to the UK's social rented sectors (Smith et al. 1997). The UK is also intriguing for differences reported in life satisfaction. Leavers are more satisfied as owners than as renters, but churners in their first cycle out of ownership are more satisfied as renters. This might reflect relief at having escaped financial stress, and/or a level of optimism that leavers do not have of returning to ownership before too long. Serial churning may not bring the same benefits, however.

Table 7: Mental wellbeing levels in and out of home ownership—ongoing owners, leavers and churners, person-period observations from 2001–09/10

Spell	Home ownership status	Australia [0–100]				UK [0–36]			
		Stayer	Leaver	Churner	All	Stayer	Leaver	Churner	All
1 st spell	In	73.5	67.8	71.0	73.1	26.0	24.9	24.9	26.0
	Out		64.6	69.1	66.3		25.6	25.3	25.5
2 nd spell	In			69.4	69.4			26.1	26.1
	Out			62.1	62.1			26.6	26.6
3 rd spell	In			64.9	64.9			18.9	18.9
	Out			52.6	52.6			21.9	21.9
4 th spell	In			58.5	58.5				
	Out			72.0	72.0				
All spells	In	73.5	67.8	69.9	72.9	26.0	24.9	25.4	26.0
	Out		64.6	67.2	65.8		25.6	25.5	25.5

Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

Table 8: Mean life satisfaction levels in and out of home ownership—ongoing owners, leavers and churners, person-period observations from 2001–09/10

Spell	Home ownership status	Australia [0 – 10]				UK [1 – 7]			
		Stayer	Leaver	Churner	All	Stayer	Leaver	Churner	All
1 st spell	In	8.1	7.7	7.8	8.0	4.5	4.3	4.1	4.5
	Out		7.6	7.7	7.6		4.1	4.7	4.3
2 nd spell	In			7.9	7.9			4.3	4.3
	Out			7.5	7.5			2.3	2.3
3 rd spell	In			7.3	7.3			3.2	3.2
	Out			7.0	7.0			4.9	4.9
4 th spell	In			8.5	8.5				
	Out			7.0	7.0				
All spells	In	8.1	7.7	7.9	8.0	4.5	4.3	4.2	4.5
	Out		7.6	7.7	7.6		4.1	4.2	4.1

Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

3.3.2 The drivers of wellbeing

To test these explanations, we conduct difference-in-difference modelling of the impact of leaving or churning in and out of home ownership on wellbeing outcomes after controlling for observed and omitted characteristics. In this part of the exercise, we restrict ourselves to the mental wellbeing measures whose range is sufficient to regard as continuous for the purposes of this modelling technique. The life satisfaction measures would require alternative estimation techniques.

We estimate random effects models using a double log linear model with a difference-in-difference specification (see Table 9 below). The sample includes the episodes/person periods of all home owners. Ignoring the subscripts that identify units and time periods we estimate the following:

$$\text{Wellbeing} = \alpha_0 + \alpha_1 X + \alpha_2 \text{LEAVER} + \alpha_3 \text{LEAVER} * \text{PostL} + \alpha_4 \text{CHURNER} + \alpha_5 \text{CHURNER} * \text{PostC}$$

Where;

Wellbeing is our measure of mental wellbeing as defined above;

X is a collection of controls that include socioeconomic and demographic variables that are commonly thought to shape wellbeing.

LEAVER is a dummy equal to one if the person 'permanently' loses home ownership status;

PostL is a dummy variable that equals one in those person periods/episodes contemporaneous with and following the period in which the individual leaves and becomes a renter. So, if in a time frame 2001 to 2005 the person exits in 2003, PostL takes the value 1 in 2003, 2004 and 2005, zero otherwise.

CHURNER is a dummy equal to one if the person 'temporarily' loses home ownership status because they return to home ownership by the end of the data collection period;

PostC is a dummy variable that equals one in those person periods/episodes contemporaneous with and following the period in which the individual leaves and becomes a renter.

Alpha2 indicates whether leavers had lower levels of wellbeing before exit and would be confirmed by a negative value. Alpha3 estimates the impact of exit on post-departure levels of wellbeing. If positive, it indicates that transition into rental housing is associated with a rebound in levels of wellbeing. A negative finding suggests that moves out of owner occupied housing further lower levels of wellbeing. Alpha4 and Alpha5 have a similar interpretation.

In Table 9 below we report parameter estimates when the log of the mental wellbeing variable is expressed as a function of the explanatory variables listed in the tables. Continuous explanatory variables are expressed in log form. When the continuous explanatory variables have been transformed into log values, the coefficients (once multiplied by 100) approximately equal the percentage change in wellbeing as a result of a percentage change in the explanatory variable.²³ This allows us to grasp more intuitively the magnitude of the (statistical) effect of leaving, churning and staying on levels of mental wellbeing.

The results indicate that, controlling for all other known and measurable influences, leavers and churners in both countries are predisposed to lower levels of wellbeing than ongoing owners, perhaps reflecting the build-up of financial stress among the exiting groups that has already been documented. In Australia, leavers, regardless of whether they own or rent at the time, have levels of wellbeing that are depressed by 6.6 per cent relative to ongoing owners. For the UK, the differential is slightly less at 4.8 per cent. Churners show smaller but still significantly lower levels of wellbeing than ongoing owners, by 2.1 per cent (Australia) and 4 per cent (UK).

Following exit from ownership, leavers, but not churners, show evidence of some recovery of wellbeing, by 2.5 per cent (Australia) and 3.6 per cent (UK). This suggests that while leaving may be extremely stressful, having left may bring unanticipated benefits. It may, for example, offer some support for the idea of a soft landing in social renting in the UK (where the bounce-back is bigger). For Australia, a possible explanation is that rental housing offers some relief to the financial pressures that pushed leavers out of ownership, but lacks the long-term security that might push wellbeing to higher levels.

It is intriguing that the wellbeing of churners does not rebound in the same way. In the UK, this may reflect the fact that they are unlikely to be eligible for social renting (as they possess characteristics that will later see them return to ownership), so like their Australian counterparts, they may feel the stress of having to find a way back into more secure accommodation.

It is also worth noting from Table 9 that other factors in the models operate much as might be anticipated from the wider literature across both populations. That is, wellbeing is elevated by being female, being older, having higher incomes, being in employment, and so on, and is depressed by ill health, separation, unemployment and related life events.

²³ The percentage impact of going from a value of zero to one for a *binary* explanatory variable is calculated from $(e^{\beta} - 1)$, where β is the estimated coefficient (see Halvorsen & Palmquist 1980).

Table 9: Double log linear regression model of mental wellbeing,²⁴ Australia [0–100] and UK [0–36]

Explanatory variable	Australia			UK		
	Coef	Std error	Sig	Coef	Std error	Sig
Leaver	-0.07	0.01	0.00	-0.05	0.01	0.00
Churner	-0.02	0.01	0.02	-0.04	0.02	0.01
Left home ownership x Leaver [PostL]	0.03	0.01	0.00	0.04	0.01	0.01
Left home ownership x Churner [PostC]	0.00	0.01	0.54	0.02	0.02	0.30
Female	0.02	0.01	0.00	0.05	0.01	0.00
Log of age	0.08	0.01	0.00	0.06	0.01	0.00
De facto	0.00	0.01	0.51	0.00	0.01	0.63
Separated	-0.09	0.01	0.00	-0.09	0.01	0.00
Divorced	-0.03	0.01	0.00	-0.01	0.01	0.52
Widowed	-0.05	0.01	0.00	-0.01	0.01	0.28
Single never married	-0.04	0.01	0.00	0.00	0.01	0.73
One dependent child	0.00	0.00	0.90	-0.01	0.01	0.05
Two dependent children	-0.01	0.01	0.33	0.00	0.01	1.00
Three dependent children	0.00	0.01	0.80	0.00	0.01	0.89
Long-term disability or illness	-0.05	0.00	0.00	-0.05	0.00	0.00
Other post-secondary qualification	-0.01	0.01	0.42	0.00	0.00	0.98
Secondary qualification	-0.01	0.01	0.11	0.00	0.00	0.66
Employed full-time	0.02	0.01	0.00	0.03	0.01	0.01
Employed part-time	0.03	0.01	0.00	0.03	0.01	0.01
Unemployed	-0.03	0.01	0.00	-0.06	0.01	0.00
Permanent contract	0.00	0.01	1.00	-0.02	0.01	0.10
Fixed term contract	0.00	0.01	0.95	0.01	0.02	0.48
Casual contract	0.00	0.01	0.60	-0.02	0.02	0.30
Underemployed	-0.01	0.01	0.04	-0.01	0.01	0.41
Log of real equivalised household gross income ('000s)	0.01	0.00	0.00	0.01	0.00	0.08
Do not save	-0.04	0.00	0.00	-0.02	0.00	0.00
Save irregularly	-0.01	0.00	0.00	0.00	0.01	0.75
Volunteer	0.01	0.00	0.00	0.01	0.00	0.00

²⁴ Calendar year fixed effects are also controlled for in the model in the form of yearly indicator variables. The complete model estimates are available from the authors upon request.

Explanatory variable	Australia			UK		
	Coef	Std error	Sig	Coef	Std error	Sig
Active community group participation	0.02	0.00	0.00	0.01	0.00	0.00
Constant	3.98	0.05	0.00	2.97	0.05	0.00
Rho	0.52			0.33		
N	46195.00			44266.00		
R-sq	0.07			0.03		
Wald-Chi2(38; 37)	957.38		0.00	545.04		0.00

Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

Notes: Omitted categories are Ongoing owners, Age under 35, Married, No dependent children, Tertiary qualifications, Not in the labour force, No contract, Save regularly, 2001.

Where a continuous variable has a value of 0, the log is set equal to 0.

Table 10 below compares selected other characteristics with a significant bearing on wellbeing in one or both countries, before and after departure from home ownership among leavers. The table shows that, as might be expected, departure from home ownership is associated with a rise in the incidence of separation, divorce, widowhood, health conditions and underemployment, all of which have an independently negative impact on mental wellbeing. At the same time, leaving home ownership is linked to exit from employment, a slight dip in real income, as well as withdrawal from involvement in community participation, including volunteering and membership of a community group, all of which again adversely impact on mental wellbeing.

So Table 10 below addresses the puzzle of why we find (above) that leavers' and churners' wellbeing levels are lower during their spells in rental housing relative to those enjoyed when they were owner-occupiers. The answer may lie in the post-ownership deterioration in many of the factors (e.g. viable relationships) that shape wellbeing. In other words, a part of the explanation for why wellbeing levels are lower when owners become renters is because other personal life course developments typically worsen as people transition from ownership to renting. For leavers, the findings suggest that the transition buffers these personal life course developments, perhaps due to the equity realised on selling up. The small positive effect on wellbeing of having exited owner occupation, in the presence of these other stressors may also be due to other factors specific to the type of renting available. For example, priority for rehousing in the social sector in the UK may be triggered by adverse health conditions (which are, astonishingly, reported by nearly two-thirds of UK leavers, who may therefore qualify for a 'soft landing' on exit). Equally it may be that leavers in Australia, with its large, diverse rented sector, contain more options than they anticipated to suit their needs as well as their pockets.

Table 10: Mean selected characteristics of leavers, before and after leaving home ownership, pooled person-period data 2001–10

	Australian leavers		UK leavers	
	In OO	Having left OO	In OO	Having left OO
Separated	5.2%	14.7%	3.2%	7.8%
Divorced	5.6%	16.1%	3.8%	10.3%
Widowed	7.7%	8.4%	11.3%	13.4%
Long-term health/disability	24.9%	33.5%	65.9%	65.3%
Employed full-time	46.6%	40.0%	29.4%	27.4%
Employed part-time	18.2%	17.0%	15.7%	13.5%
Unemployed	2.3%	3.4%	1.6%	3.0%
Not in the labour force	32.9%	39.6%	41.8%	49.1%
Underemployed	4.8%	7.0%	1.8%	2.2%
Gross equivalised real household income ('000)	\$48.5	\$47.2	\$18.3	\$17.9
Volunteer	24.6%	22.3%	22.0%	14.2%
Active community group participation	41.3%	33.8%	46.2%	38.0%

Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

3.4 CONCLUSION

This section of the study contains an overview of the edges of ownership. The analysis points to the different experiences of: ongoing owners (both at the point of entry and in the mainstream), those who exit from the sector, and those who subsequently return.

An investigation into transitions across the edges of ownership indicates that Australian householders show a higher and earlier rate of exit than their UK counterparts. This may reflect differences in the two countries in the extent to which home buyers were insulated from the financial pressures associated with the GFC; it may also reflect institutional differences both in the social security systems of the two countries, and in the size and role of the rented sectors. In contrast, an analysis of rates of return to ownership shows this to be much more prevalent in Australia than the UK, even though it is surprisingly common in both jurisdictions.

Further light is cast on these patterns in an account of the characteristics of those who occupy the edges of ownership. The key findings here relate to the differences between ongoing owners and owners who subsequently leave. Practically every measure in the study points to the precarious financial position of leavers. There is also evidence of a more general link between exiting ownership and factors that increase costs (or limit scale economies) such as relationship breakdown, the presence of children and/or declining health. The data here also draw attention to the anomalous position of churners, who fall somewhere between ongoing owners and leavers, and appear to have affinities with both. Their trajectories merit more attention as they may offer clues about what it is that tips households either towards the ownership mainstream, or 'over the edge' into renting.

Finally, recognising that the ultimate test of a well-functioning housing system is the wellbeing of its occupants, whether they rent or own, we looked for any differences in self-reported psychological wellbeing and life satisfaction across the studied groups. Overall, and in line with the wider literature, we found higher levels of wellbeing among owners than renters; in line with the rest of our own analysis, wellbeing among churners lies between the two.

Interestingly, while in Australia leavers and churners report higher levels of wellbeing as owners than as renters, in the UK the converse is true. The analysis shows, however, that there are many confounding factors (many of the factors that result in exit from ownership have an independently depressing effect on wellbeing), and that when these are taken into account, leavers (but not churners) in both countries experience a buffering effect on wellbeing from renting. In both countries this could have something to do with the financial windfall from home sale (and release from financial stress). In the UK it may be associated with the protective effect of social renting; in Australia it may be linked to the sheer diversity of opportunity in the rental sector.

4 EQUITY AT THE EDGE

4.1 Introduction

The edges of ownership bring households close to one of the major financial divides in modern societies: that between owner-occupiers who hold assets in their home, and renters who do not. This section considers the role and relevance of housing wealth for households at the margins of ownership.

As an asset, owner-occupation is large (in relation to households' balance sheets), lumpy, illiquid and indivisible, and for most home-occupiers in this tenure sector, it accounts for the majority of their wealth portfolio. Households traditionally build up their housing assets through an initial deposit, a sequence of equity injections over the lifetime of a mortgage, the occasional lump sum from gifts, inheritances, bonuses and so on, and by the accumulation of investment returns.

Once assets are injected or accumulated into a primary residence, there are, in today's housing markets, two methods by which owner-occupiers can make use of them—by borrowing against property values to release funds for discretionary expenditure (mortgage equity withdrawal/equity borrowing); or by selling their home (equity release by property transaction within ownership, or by trading ownership for renting).

These methods may, of course, be combined. Ongoing owners may use equity borrowing *in situ*, and may additionally release equity during, or borrow more than they need for, property transactions when moving within ownership. Churners may also extract equity by property transaction, with and without doing so across the rental 'break' in ownership that, by definition, they experience. Churners may, leavers must, and ongoing owners by definition do not, cash in the entire value of their home by selling up.

In this section we gather these behaviours together to describe the patterns of equity borrowing and equity withdrawal engaged in by households in this study. We consider in particular how the decision to mobilise housing assets helps shape the edges of ownership in Australia and the UK.

4.2 Patterns of equity extraction and injection

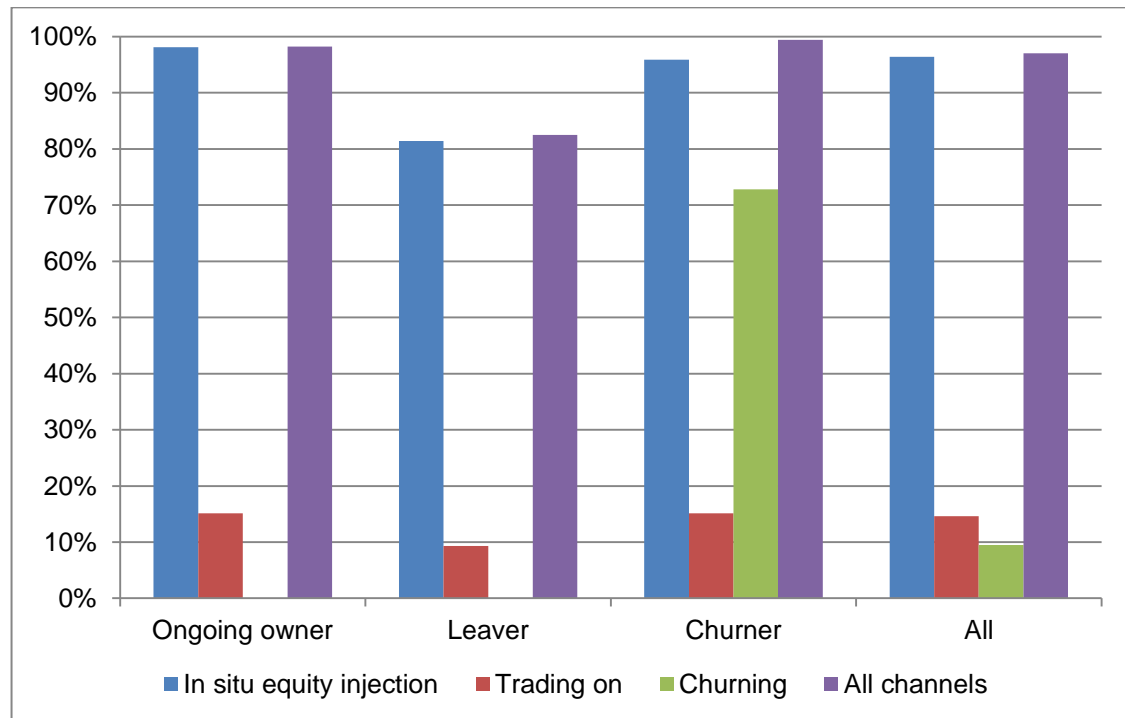
Traditionally, owner-occupation has functioned as a savings vehicle, working chiefly to spread incomes across the life course. This is widely achieved through the use of standard amortising mortgage contracts, which spread interest rate and capital repayments across a fixed period (typically 25 years), and thus arrange for households to make a continuous and growing stream of equity injections into their primary residence. Equity injections through lump sums are also allowed in many cases. Both these have been measured for this study.

Figure 15 below shows the *proportion of households* that made equity injections in one or more annual cycles during the study period and by channel (*in situ*, trading on and churning). As might be expected, most households manage to be net equity injectors over at least one annual cycle during their ownership spell. The anomaly in both countries are the leavers, among whom roughly one in five—even while in owner-occupation—were unable to inject any equity into their home in any annual cycle. Almost all ongoing owners, in contrast, injected equity in one or more annual cycles, while churners sit in the middle, but are less likely to be *in situ* injectors in the UK than in Australia. What is most interesting about churners, however, is the high share that do inject equity when they move back into ownership: over two-thirds of

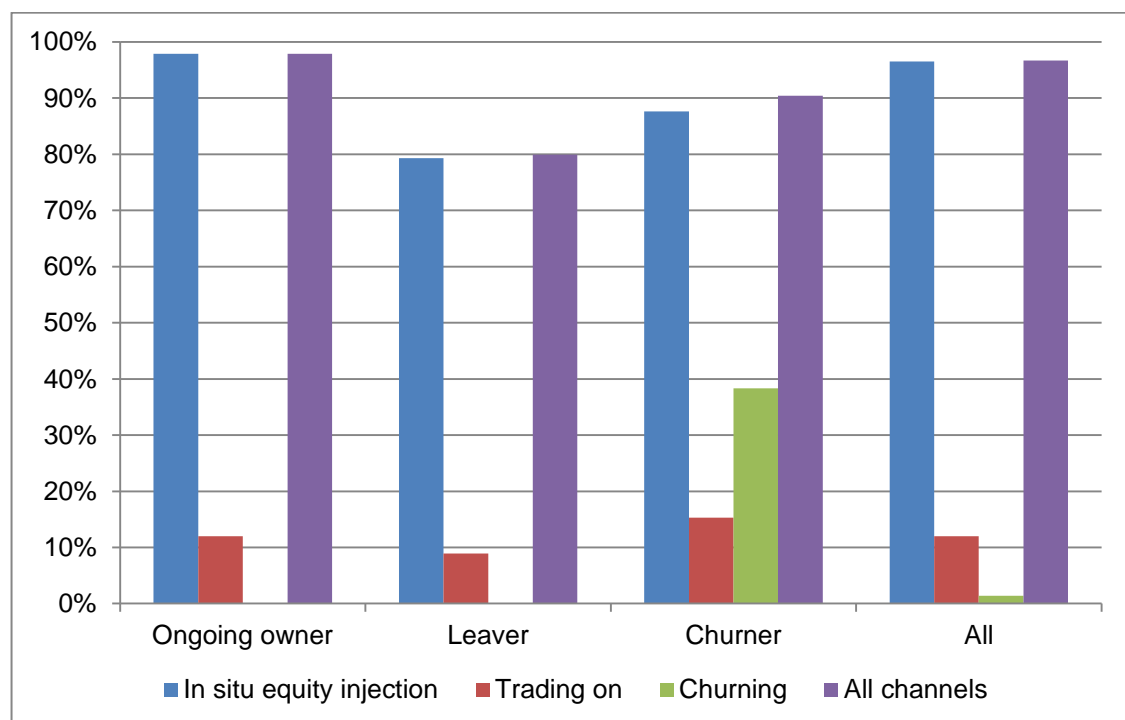
Australian churners and nearly two in five in the UK make a net equity injection, the source of which we consider later.

Figure 15: Incidence of equity injection via alternative channels during 2001–10, by home owner group

(a) Australia



(b) UK



Source: Authors' own calculations from the 2001–2010 HILDA, 2001–08 BHPS and UKHLS wave 2

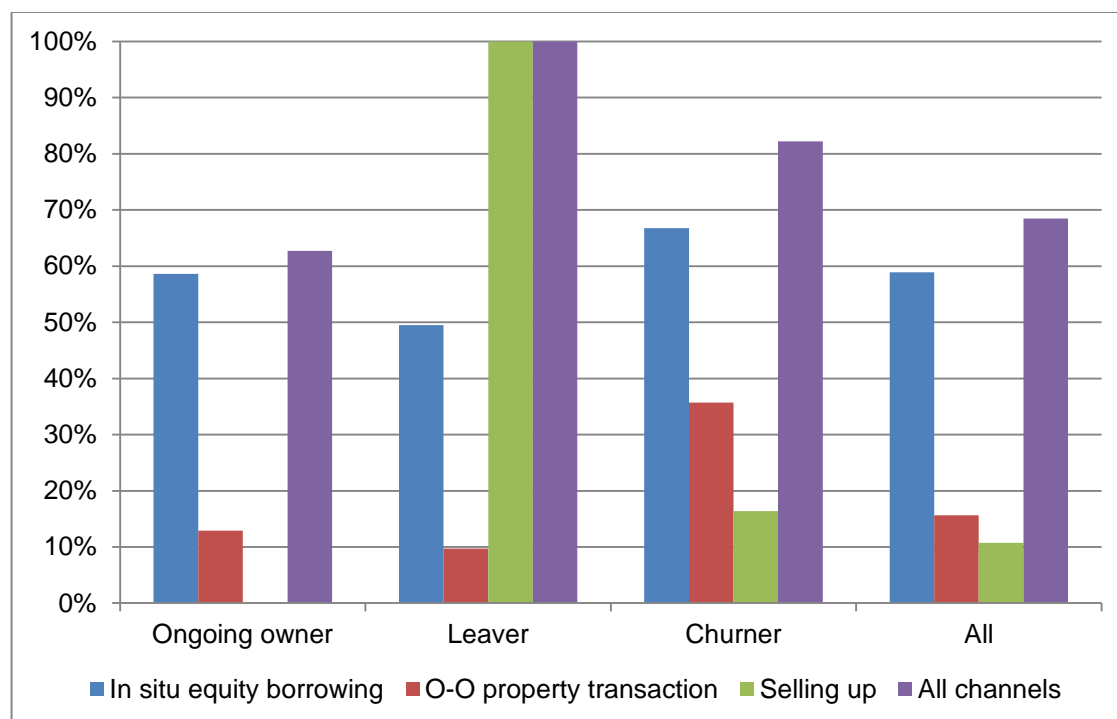
Figure 16 below turns to *equity* extraction, showing the *proportion of households* that made equity withdrawals in one or more annual cycles during the study period and by channel. Here we differentiate between *in situ* equity borrowing, equity extracted through any property transaction that involves selling one home and buying another (even if, as with the churners, there is a gap while they rent), and equity released by selling up and moving into renting.

The right-hand set of bars on each chart shows that more than two-thirds of surveyed households in Australia and more than half of those in the UK engaged in a least one episode of equity withdrawal of some kind between 2001 and 2009. Leavers, by definition, all withdrew equity at some point, as did 80 per cent of Australian churners (two-thirds in the UK) and over 60 per cent of ongoing owners (more than half in the UK). This means that over the period of this study less than one in two home-owning households could be described as exclusively locked into equity injection: this is a striking departure from the traditional view of how home purchase works. It raises questions regarding what an environment in which housing wealth is fungible rather than fixed means for households, policy-makers and the housing system as a whole.

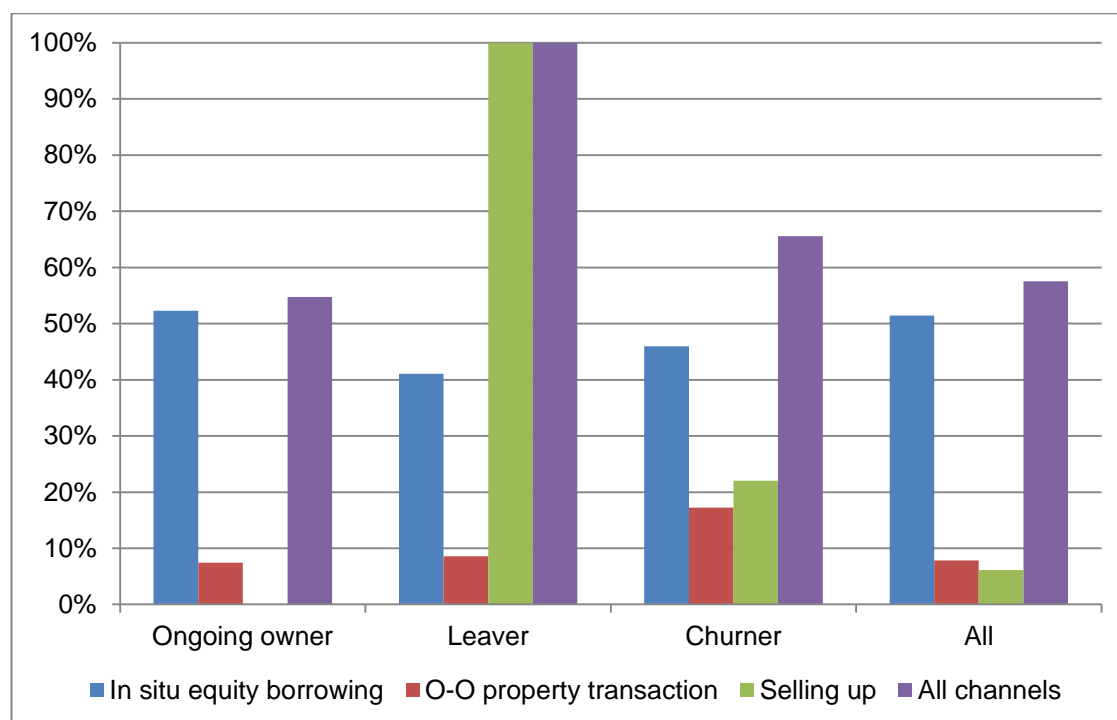
Figure 16 below also draws attention to the fact that the higher incidence of equity extraction in Australia compared to the UK holds across all channels (except selling up, which gave all leavers in this study at least some net equity extraction). Equally striking, however, is the difference in the pattern across household types. In Australia, the highest incidence of *in situ* equity borrowing occurs among churners, whereas in the UK, this style of equity withdrawal is most prevalent among ongoing owners. Equity extraction through property transaction, however, is most prevalent among churners in both countries. The other notable feature is that among leavers in both countries a relatively high proportion (50% in Australia, 40% in the UK) engaged in at least one cycle of equity borrowing, and around one in ten traded on at least once, prior to exiting altogether. So even though, overall, leavers are the least active in equity exchange, their pathway out of ownership is often preceded by one or more equity extraction events.

Figure 16: Incidence of equity extraction via alternative channels during 2001–10, by home owner group

(a) Australia



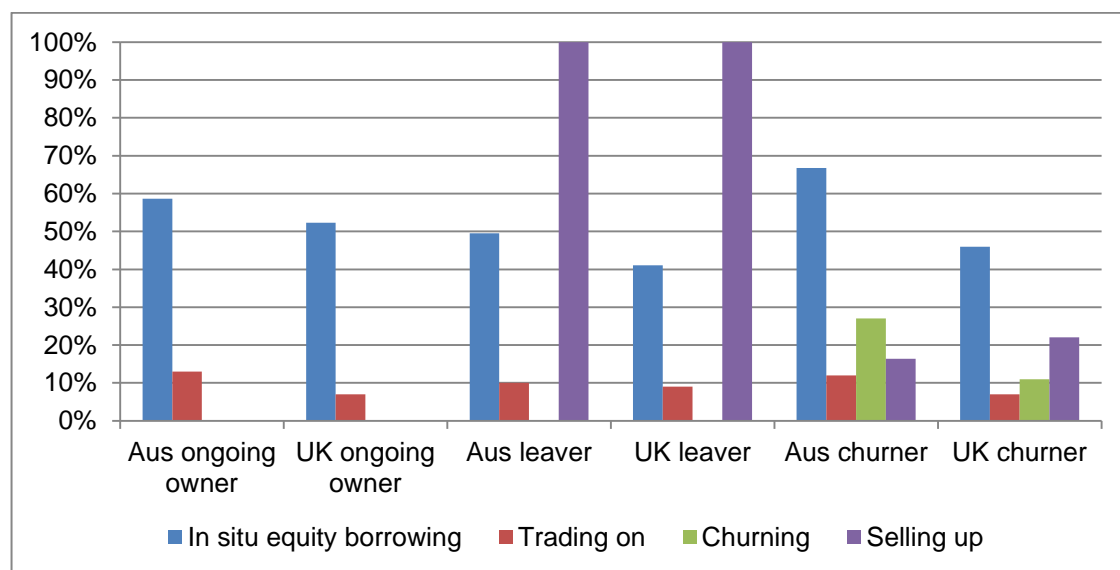
(b) UK



Source: Authors' own calculations from the 2001–2010 HILDA, 2001–08 BHPS and UKHLS wave 2

Figure 17 below offers a more detailed picture by separating equity withdrawal through trading on within owner occupation, from withdrawals executed on churning, that is over the ownership break created by selling one home, renting for a spell and then buying another. Curiously equity extraction through trading on without a rental break is nearly as common among Australian churners as it is among ongoing owners. This implies that churning is not a ‘stand alone’ equity extraction event, but one used in combination with other ways of trading on—albeit that a far higher proportion of churners extract equity by churning than by a simple trade of one owner-occupied property for another. Whereas, in Australia, churners are most likely to extract equity by churning, in the UK, the majority equity extraction event is selling up.

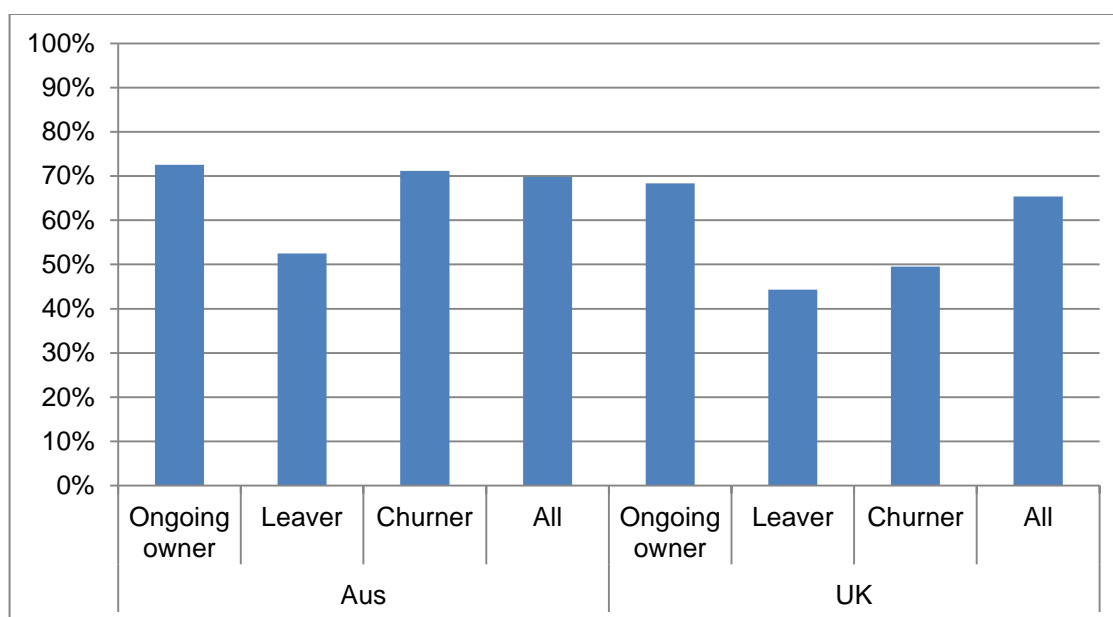
Figure 17: Incidence of equity extraction via alternative channels during 2001–10, by home owner group



Source: Authors' own calculations from the 2001–10 HILDA, 2001–08 BHPS and UKHLS wave 2

Figure 18 below shows that the majority of households who engaged in any style of equity extraction engaged in more than one annual cycle of activity in the study period. This is less true of leavers than of the other groups: just over half the Australian leavers, and just under half their UK counterparts, extracted equity only on the occasion of selling up. This might seem counter to the notion developing in the literature (and in our own previous work) that serial equity borrowing leads to unsustainable debt. However, it must be remembered that we do not know anything about borrowing behaviours prior to the study period, and it is entirely possible that the high leverage of some leavers is due in part to previous equity borrowing episodes. In both countries, ongoing owners are most likely to be serial equity extractors, followed by churners and then leavers. In every category, Australian households are more likely to be serial extractors than their UK counterparts, but whereas Australian churners show frequencies similar to ongoing owners, in the UK the rates are much lower and closer to those of leavers.

Figure 18: Incidence of multiple equity extraction cycles by equity extractors during 2001–10, by home owner group



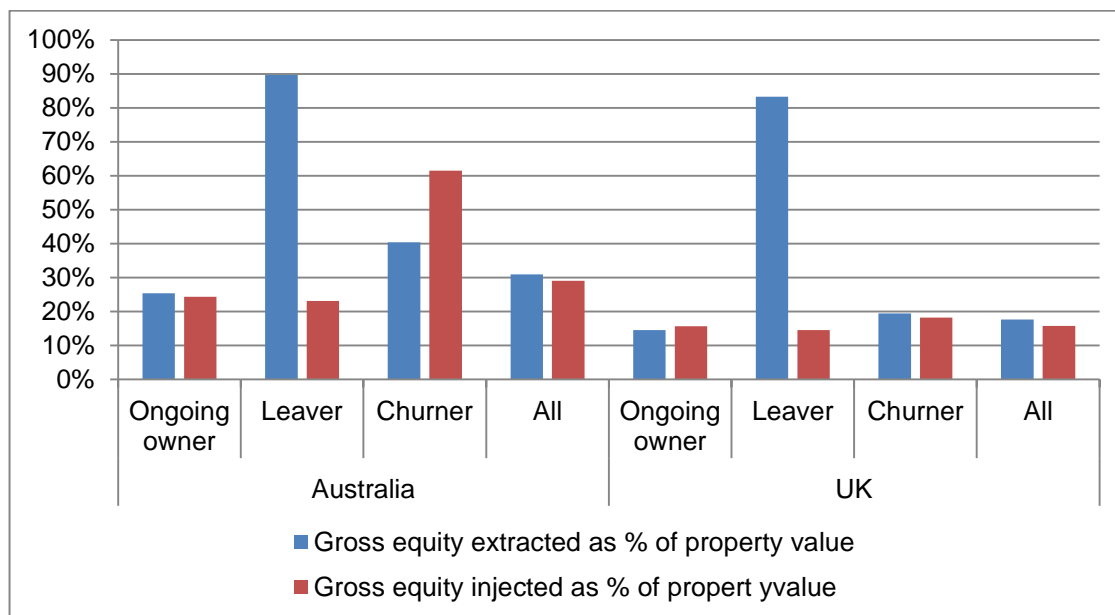
Source: Authors' own calculations from the 2001–10 HILDA, 2001–08 BHPS and UKHLS wave 2

What is most striking in this analysis—though it is an observation we have made many times before (Smith & Searle 2008; Parkinson et al. 2009; Smith & Searle 2010; Ong et al. 2013; Wood et al. 2013)—is that by far the dominant equity extraction behaviour for all groups in the study is equity borrowing (aside from the leavers, who by definition, must all sell up). This is largely a 21st century phenomenon and it has been ongoing across the study period. *Combining* methods of equity extraction is a rare occurrence, engaged in by just over 10 per cent of households overall in Australia (5% in the UK), rising to 17 per cent (and 10%) among households who make any equity extraction at all. However, it is notable that when more than one method is present, the first action is much more likely to be an equity borrowing event than any other. This lends some support to the idea of a cascade effect from equity borrowing into property sale, as raised in Ong et al. (2013).

4.3 The value of equity exchange at the edges of ownership

The relationship between gross equity injection and gross equity withdrawal is shown in Figure 19 below. In aggregate, it can be seen that equity extraction and injection broadly balance in both countries, though the combined sums extracted by the studied sample slightly exceed those injected when shown as a proportion of their combined property values. Both sums are also relatively higher in Australia than they are in the UK. Any sense of balance stems, however, almost entirely from the behaviours of the ongoing owners. Leavers in aggregate extract more, relative to their property values, than they inject (as might be expected) while churners in Australia inject more than they extract (in contrast to their UK counterparts who achieve much the same balance as the ongoing owners). Australian churners seem quite distinctive in the size of their balance sheet which—relative to home values—far exceeds that of the ongoing owners, for extraction as well as in injection, but especially for the latter.

Figure 19: Aggregate amounts of equity injected and extracted during home ownership spells, as a percentage of property value in the last year of home ownership, 2001–10, by home owner group



Source: Authors' own calculations from the 2001–10 HILDA, 2001–08 BHPS and UKHLS wave 2

Table 11 below elaborates on this, showing the median values per equity exchange event (extraction or injection) for the different groups of households in the study. This chart refers to individuals' balance sheets not to the aggregate amounts in Figure 19. Ongoing owners, who rely mainly on equity borrowing, together with an occasional (potentially higher value) property transaction, extract least per event. In the UK, the typical equity extraction broadly matches the typical equity injection, though in Australia, equity extraction events typically have the higher value. Leavers in both countries tend to extract more than they inject, which is hardly surprising, since most have just one extraction event, and that is to sell the whole home. This group is also under-represented among equity injectors.

The churners are particularly interesting because the trend is very different in Australia, where churners typically inject more than they extract, compared to the UK, where the opposite is true. This raises some intriguing questions about the role the edges of ownership play in the management of housing wealth given different institutional arrangements around that transition zone. It may imply a rather different housing pathway for Australian, as compared to UK, churners.

Table 11: Median amount of equity extracted and injected by equity extractors and injectors during 2001–10, by home owner group

	Australia (\$'000)				UK (£'000)			
	Ongoing owner	Leaver	Churner	All	Ongoing owner	Leaver	Churner	All
Equity extracted	-\$120	-\$254	-\$162	-\$143	-£23	-£100	-£70	-£28
Equity injected	\$101	\$70	\$228	\$117	£23	£18	£41	£24

Source: Authors' own calculations from the 2001–10 HILDA, 2001–08 BHPS and UKHLS wave 2

More detail on the channels used by the three groups of households are provided in Table 12 below. The striking observation here is that in the UK the leavers, despite having a shorter time in ownership on average than the ongoing owners, show nearly 25 per cent higher median values for equity borrowing over the study period than ongoing owners. If they trade on, in contrast, their equity extractions are lower than the other groups, and if they sell up, they raise less (nearly 50% less) on average than the churners.

Overall, with their distinctive combination of equity borrowing and selling up, leavers top the equity extraction figures for the UK groups. This might again suggest that for some UK leavers equity borrowing is one in a series of equity extraction events that eventually results in the loss of ownership. The position is different in Australia where leavers raise least through equity borrowing, least when trading on, and least when selling up. Nevertheless, as in the UK, on average and overall, they raise more through equity extraction than the other groups, albeit at the cost of selling their whole home.

Table 12: Median amount of equity extracted via alternative channel during 2001–10, by home owner group

	Australia (\$'000)				UK (£'000)			
	Ongoing owner	Leaver	Churner	All	Ongoing owner	Leaver	Churner	All
<i>In situ</i> equity borrowing	-106.0	-65.6	-75.0	-100.0	-20.4	-25.8	-27.0	-21.0
Extraction via trading on	-100.0	-75.0	-80.0	-97.5	-25.0	-14.5	-30.0	-24.0
Extraction via churning	0.0	0.0	-90.0	-90.0	0.0	0.0	-34.0	-34.0
Extraction via selling up	0.0	-185.0	-186.0	-185.0	0.0	-85.0	-150.0	-90.0
<i>Total extraction</i>	-120.0	-254.0	-161.5	-143.0	-23.2	-100.0	-70.0	-28.3
<i>In situ</i> equity injection	90.0	62.0	80.0	85.7	19.4	14.0	15.0	19.0
Injection via trading on	100.0	100.0	110.0	100.0	36.0	18.5	42.0	35.8
Injection via churning	0.0	0.0	160.0	160.0	0.0	0.0	50.0	50.0
<i>Total Injection</i>	101.0	70.0	228.0	116.5	23.5	17.8	40.8	23.6

Source: Authors' own calculations from the 2001–10 HILDA, 2001–08 BHPS and UKHLS wave 2

This table also confirms the low value of leavers' median *in situ* equity injections, and their marginal position overall. Finally it points to a difference in the characteristics of the Australian and UK churners. UK churners are somewhat like Australia churners in their equity extraction patterns, but much more like UK leavers in their low value *situ* equity injections. So again there is evidence that UK churners do less well overall than their Australian counterparts, possibly because it is hard to make use of the rental sector to best advantage.

4.4 The limits to equity extraction

An important question in relation to patterns of housing equity exchange relates to the impact that these practices might have on the sustainability of owner occupation. To what extent might decisions to engage in equity borrowing or withdrawal open up or close down pathways through the edges of ownership?

Overall, as is apparent from Table 13 below, the majority of home owners (66% in Australia and 71% in the UK) used the flexibility of both their mortgage and their housing transactions at the edges of ownership to steer clear of any net increase in debt by the end of the study period. There is an even more marked avoidance of increased debt to income ratios over the study period (74% in Australia and 78% in the UK). Overall, then, it might be argued that equity exchange is used to smooth the ups and downs of incomes and expenditure over the medium term. Churners in both countries stand out from this pattern: over half (compared to an average of one-third) in Australia added leverage (by a net increase in their mortgage debt) over the study period; 46 per cent (compared with an average of 29%) of UK churners are in the same position. In both countries, churners are also much more likely to have increased their debt to income ratios over the same timeframe.

Table 13: Change in debt status of home owners during 2001–10, by home owner group

Percentage change in debt status	Australia				UK			
	Ongoing owner	Leaver	Churner	All	Ongoing owner	Leaver	Churner	All
<i>Debt status measured by change in mortgage debt</i>								
Decreased or stayed the same	68.6	66.7	47.6	65.7	72.0	70.2	54.5	71.4
Increased	31.4	33.3	52.4	34.3	28.0	29.8	45.5	28.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<i>Debt status measured by change in mortgage debt to income ratio</i>								
Decreased or stayed the same	76.2	73.0	57.3	73.5	78.6	71.4	60.8	77.7
Increased	23.8	27.0	42.7	26.5	21.4	28.6	39.2	22.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' own calculations from the 2001–10 HILDA, 2001–08 BHPS and UKHLS wave 2

As might be expected, given its frequency and its character, equity borrowing is the equity extraction activity most likely to ramp up debt over the years. Table 14 below is a version of Table 13 above showing just the fortunes of the equity borrowers in the study. In Australia over half (56%) of those who engaged in equity borrowing ended up with a net increase in debt, and over two-fifths (43%) increased their debt to income ratio; the figures for the UK are 53 per cent and 40 per cent, respectively. More striking is the extent to which both leavers and churners depart from the mean. In Australia, around two-thirds of leavers and churners (65% and 68% respectively) finish up with a net increase in debt; in the UK, this is true for two-thirds (67%) of leavers and nearly three-quarters (73%) of churners. In Australia, nearly half (49%) of the leavers and more than half of the churners (56%) also increased their debt-to-income ratio by equity borrowing; in the UK, the corresponding figure is nearly three in five (59%) for leavers and churners alike. So, arguably, the groups closest to the

edges of ownership are also those most likely to be taking equity borrowing to its limits, and are most likely to be vulnerable in the face of economic shocks.

Table 14: Change in debt status of home owners who equity borrowed between 2001–10, by home owner group, per cent

Percentage change in debt status	Australia				UK			
	Ongoing owner	Leaver	Churner	All	Ongoing owner	Leaver	Churner	All
<i>Debt status measured by change in mortgage debt</i>								
Decreased or stayed the same	47.0	35.1	31.9	43.9	48.3	33.3	26.9	47.0
Increased	53.0	64.9	68.1	56.1	51.7	66.7	73.1	53.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<i>Debt status measured by change in mortgage debt to income ratio</i>								
Decreased or stayed the same	60.5	50.8	44.4	57.4	61.0	40.5	41.0	59.6
Increased	39.5	49.2	55.6	42.6	39.0	59.5	59.0	40.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' own calculations from the 2001–2010 HILDA, 2001–08 BHPS and UKHLS wave 2

Table 15 below shows further that, in every group (ongoing owners, leavers and churners alike), those who engineer a net increase in their debt position over their spells of ownership are more likely than those who do not to have also released equity through trading on. In Australia, ongoing owners whose debts increase overall are twice as likely as those who are net equity injectors to have engaged in trading on; among those who eventually leave, the net borrowers are four times more likely as the injectors to have traded on before selling up. Only the churners—who by definition sell and buy at least once—do not show this pattern. The trends are broadly similar for the UK. This again gives support for the ‘cascade out of ownership’ thesis put forward in Ong et al. (2013). A housing system in which the only easy method of mobilising the wealth held in owned homes involves borrowing up is risky: in certain circumstances, there is as great a likelihood of having to trade down and out as there is of consolidating one's wealth-holding and moving into the mainstream.

Table 15: Change in debt status of home owners during 2001–10, by home owner group

Percentage change in debt status	Australia				UK			
	Ongoing owner	Leaver	Churner	All	Ongoing owner	Leaver	Churner	All
<i>Mortgage debt decreased or stayed the same</i>								
<i>In situ</i> equity borrowing	39.9	26.2	44.9	39.2	34.3	20.1	25.0	33.4
O–O property transaction	9.8	5.2	36.7	11.9	4.5	5.4	21.4	4.9
Selling up	0.0	100.0	15.0	10.0	0.0	100.0	36.9	5.9
Any channel	45.5	100.0	69.8	52.5	37.5	100.0	60.7	41.2
<i>Mortgage debt increased</i>								
<i>In situ</i> equity borrowing	98.2	96.9	87.2	95.9	94.7	94.9	81.4	94.1
O–O property transaction	20.0	20.4	35.4	23.1	16.6	21.8	22.9	17.2
Selling up	0.0	100.0	16.9	11.5	0.0	100.0	8.6	5.8
Any channel	98.9	100.0	93.8	98.0	95.8	100.0	87.1	95.6

Source: Authors' own calculations from the 2001–10 HILDA, 2001–08 BHPS and UKHLS wave 2

4.5 Conclusion

This account of housing equity exchange at the edges of home ownership draws attention to three key things.

First, it underlines the role and relevance of equity borrowing: this is the dominant means of mobilising housing equity in the 21st century. It is widespread and substantial, but it can be risky, and to the extent that it pushes people to the edges of ownership, it is worth considering whether other options for mobilising housing wealth *in situ* could be developed.

Second, it draws attention to the extent to which leavers engage in equity borrowing. They do so less frequently than ongoing owners, but their activity is notable, and more likely to lead to a net worsening of their debt position than average. This is the group who are most likely to borrow to the maximum, encounter credit constraints and be forced to trade on as a preface to selling up. Remember that leavers, whose debt position worsens over the study period, are four times as likely as those whose debt position is static or improves to trade on (even though we know that, later, they will leave the sector).

Finally, this part of the study draws attention to the intensive equity exchange activity of churners. They are the most active users of housing equity in the study. We see later in the report that if nothing goes wrong, this can work to improve their housing and wider wealth position. However, it may also be the case that the institutional arrangements of the Australian market are more conducive to a good outcome than those of the UK.

5 PATHWAYS OUT OF OWNERSHIP

In the past, models of owner occupation have been principally concerned with pathways into the sector. Since the GFC, much more attention has been paid to the risks of falling out. The likelihood of exiting ownership in Australia and the UK in the decade 2001–10 was set out in Chapter 2, and some of the characteristic, events and behaviours associated with that have been described in Chapters 3 and 4. Establishing the drivers of transitions out of home ownership is aided now by the presentation of a multivariate modelling exercise. This provides a complementary, and more rigorous, evidence base than descriptive statistics, controlling for the effects of more than one variable at once, and for the interaction between factors.

We begin by explaining our hazard modelling approach, which is capable of estimating how the chances of exit from home ownership change as a spell in ownership lengthens, as well as how those chances are affected by the owner's personal characteristics—age, health, relationship status and so on. UK and Australian findings are then described.

5.1 Regression analyses of pathways: modelling approach²⁵

We choose to model transitions from owner-occupied housing into rental housing as an event that terminates a 'career' (or spell) in home ownership, and is conditional on being eligible to experience the *event* (cycling out of home ownership) in any given year. The timing of this event is the critical variable; we extend the life table approach of Chapter 3 by modelling the factors that our descriptive analysis suggest are influential in shaping the chances of exit out of owner-occupied housing. An advantage of the modelling approach (as compared to descriptive techniques) is that key hypotheses can be examined controlling for confounding variables that can mask important relationships, or be the source of spurious associations that lead to false conclusions.

An important complication is the nature of the event as a conditional probability (typically referred to as the hazard) that must lie between zero and one; the typical regression model is designed to estimate the statistical relationship between a continuous dependent variable that can range across all negative and positive values and its determinants. The complication is resolved by two transformations; one that transforms the conditional probability of an event into the odds of an event occurring as computed from the following quotient:

$$odds = \frac{probability}{1 - probability} = \frac{\hat{h}_{ij}}{1 - \hat{h}_{ij}} \quad (1)$$

Where i denotes the individual, j the time interval/period and \hat{h}_{ij} is the conditional probability. This first transformation frees the variable of its upper bound, as the odds can range over all positive values. The second takes the natural logarithm of the odds which relaxes the lower bound as negative values eventuate when \hat{h}_{ij} is less than 0.5. The resulting transformation is commonly referred to as the logit hazard (logit $h(t)$). It is nevertheless the case that the underlying ordering by \hat{h}_{ij} is preserved—the higher the value of logit hazard the greater the risk of event occurrence.

²⁵ An excellent introduction to the hazard modelling techniques used here can be found in Singer and Willett 2003.

A second complication is time, which is central given the use of panel data and our interest in how the risk of event occurrence (exits from home ownership) unfolds as ‘careers’ in owner occupation lengthen. We also wish to estimate the role of various time varying predictors (e.g. health) and time invariant predictors (e.g. gender). These complications are addressed by estimating a *discrete-time hazard model* with a specification that allows the risk of a move out of home ownership to vary over the course of a spell, while also permitting predictors to determine risk. The discrete time hazard model can be written as:

$$\log it h(t_j) = [\alpha_1 D_1 + \alpha_2 D_2 + \dots + \alpha_J D_J] + [\beta_1 X_1 + \beta_2 X_2 + \dots + \beta_P X_P] \quad (2)$$

On the left-hand side, as already explained, we have a transformed version of the hazard— $h(t)$ —where the subscripts i and j have been omitted for convenience. The right-hand side has two components: D_1 to D_J are J time indicators; each time indicator is set equal to 1 in the time period it represents, and 0 elsewhere. The alphas describe how the hazard changes as spells lengthen. For example, α_2 represents the value of hazard in year 2 of the spell of ownership when all the predictors X_1 to X_P are set equal to 0.

Note that the model does not have an intercept, because the alphas act as multiple intercepts, and can only be identified on omitting the intercept. As a group, these alphas represent the baseline logit hazard function.

The second group of variables on the right-hand side are the predictor variables. The betas when multiplied by unit differences in their respective predictors shift the baseline function, controlling for the effects of other predictors in the model. The betas therefore act as a shift parameter which means that their impact on the *logit hazard* is constant in all time periods. As indicated in the previous paragraph, the alphas profile the value of the logit hazard for the baseline group, where the baseline group is defined by setting the X s to zero. When we add or omit X s the definition of the baseline group changes.²⁶ The logistic regression routine applied to an appropriately defined person-period data set actually provides maximum likelihood estimates of the discrete time hazard model.²⁷ While the model is more complex than standard linear regression models estimated with cross section data, it can be fitted to panel data using standard logistic regression analysis that has been invoked in other AHURI research projects (Wood & Ong 2009; Wood et al. 2010a).

We began by transforming the conditional probability of transition out of home ownership into the odds and then the log of the odds to obtain logit hazard. We can also apply inverse transformations to take us back from the logit hazard to the odds of a move out of home ownership, and from logit hazard to the conditional probability of transition out of home ownership. These inverse transformations are:

$$odds = e^{\widehat{logit}} \quad (3)$$

$$probability = \frac{1}{1 + e^{-\widehat{logit}}} \quad (4)$$

In the logit scale the betas shift the logit hazard in a parallel fashion, so that the distance is the same in each period. When expressed on the odds scale as in equation 3, the relationship is nonlinear; but the odds profiles with respect to one unit differences in the predictor variables turn out to be constant multiples, an outcome

²⁶ If we were to estimate equation 1 without predictors, the baseline hazards will be the same as those reported in the life table in Chapter 3.

²⁷ For details see Singer and Willet (2003, pp.381–84).

that will ease interpretation as logit hazard has no intuitive appeal. A model that has this constant multiple feature is known as the proportional odds model.

5.2 Interpreting parameter estimates

The estimated alphas tell us whether risk is constant, declining or increasing over time for the baseline group, and hence whether there is duration dependence. If they are constant then the risk of a move out of home ownership remains steady over time, and is therefore unrelated to time. When the alphas are larger in the early periods of a spell compared to later periods, the risk declines over time and there is negative duration dependence. But if the alphas are smaller in the early periods of a spell compared to later periods, the risk increases over time and there is positive duration dependence. To ease interpretation, equation (4) is commonly used to transform estimated alphas into conditional probabilities (hazards) that have more intuitive appeal. This is the convention followed below; we are keen to ascertain whether the risk of a shift out of home ownership declines as a person's tenure in ownership increases.

The X_1 to X_P predictors can take on two forms—dichotomous²⁸ and continuous. As with the alphas, it is uncommon to interpret raw parameter estimates. For dichotomous variables, a more common strategy is to report an odds ratio—the odds for the group defined when the predictor takes the value 1 as a ratio to the odds for the group defined when the predictor takes the value 0. Suppose that X_1 is a binary variable; using equation (3) the fitted odds ratio is given by:

$$\frac{e^{\hat{\alpha}_j D_j + \hat{\beta}_1}}{e^{\hat{\alpha}_j D_j}} = e^{\hat{\beta}_1}. \quad (5)$$

Consider the variable separated or divorced in Table 19 below where its estimated coefficient for Australia is 1.229. Applying equation 4 we find $e^{(1.229)}=3.4$. This says that in every year of a spell in home ownership, the odds of a move out of ownership are over three times as high for a divorced or separated person in comparison to marrieds (the omitted).

To use the metric of odds ratios to express the effect of a continuous predictor we first convert a one unit difference into a form that yields meaningful estimates. For example, user cost expressed as a fraction will produce a tiny raw parameter estimate, but when converted into a percentage equation 4 shows that $e^{(0.191)} = 1.2$, indicating that the odds of cycling out of home ownership are 20 per cent higher for those with user costs that are 1 percentage point higher.

5.3 Model findings

Table 16 below lists variable definitions and units of measurement as employed in model estimation.²⁹ Some variables, such as health, qualification and employment status, have been coded as broad binary indicators though the underlying measure in the HILDA survey has polytomous categories. For example, self-assessed health is ranked on a scale of 1 to 5 by interview respondents, where 1 represents excellent health and at the other extreme 5, very poor health (for details, see Chapter 2). Similarly, qualification categories, too, are more varied in the survey data than the simple distinction between tertiary and non-tertiary adopted in the model specification. Furthermore, some labour market phenomena such as job contract and

²⁸ There are also polytomous variables where interpretation is similar to the binary 0/1 predictor.

²⁹ Measurement issues are discussed in detail in Chapter 2.

underemployment status have also been left out of the equation while retaining the employment binary variable.

We were forced to adopt a parsimonious specification because of the highly unbalanced nature of the panel data which is a consequence of the low probability of exit from home ownership in both countries, but particularly in the UK. The majority of home owners are therefore ongoing owners, rather than leavers or churners, over the timeframe of analysis. In the British (Australian) person-period dataset there are 49 538 (50 065) episodes, but only 556 (1333) episodes or 1.1 per cent (2.7%) of the sample is episodes in which an exit from home ownership is recorded. This sample imbalance makes it difficult to identify and estimate the contribution of a large number of variables because there is insufficient variation in the dependent variable. We have adopted the strategy of condensing polytomous categories into dichotomous categories to address this problem.

Table 16: Variable definitions and units of measurement

Explanatory variables	Definition	Binary or continuous
Time indicators	Beginning of home ownership spell (omitted), First year of spell Second year of spell Third year of spell Fourth year of spell Fifth year of spell Sixth year of spell Seventh year of spell Eighth year of spell	Binary
Age bands	Aged <35 years (omitted) Aged 35–44 years Aged 45–54 years Aged 55–64 years Aged 65 years or over	Binary
Marital status	Legally married (omitted) De facto Separated or divorced Widowed Single never married	Binary
Real equivalised gross household income (\$'000)	Amount of equivalised gross household income, expressed in thousands of dollars in 2010 prices	Continuous
Number of children	Number of dependent children	Continuous
Self-assessed health	General health is excellent	Binary
Highest qualification	Highest qualification is tertiary	Binary
Employed	Employed in a full-time or part-time job	Binary
Frequency of housing equity withdrawal	Number of times extracted equity via <i>in situ</i> MEW during home ownership spell Number of times extracted equity via trading on during home ownership spell	Continuous
Calendar year	Pre-GFC period (omitted) 2007, 2008, 2009	Binary

Table 17 below lists coefficient estimates and odds ratio estimates with respect to the D variables when the X predictor variables are all set to zero (the baseline hazard). This relationship between duration and hazard (conditional probability) is in this case charting the prospects of those at the early stages of housing careers (under 35 years of age). The likelihood of transitions out of ownership is then relatively high, but in the UK it falls as ownership careers mature. In the first five years of a spell, young British owners have a conditional probability of moving out and into rental housing of roughly 0.5. There is then a sharp decline to 0.29 in years seven and eight. But in Australia the hazard remains flat and high, varying between 0.53 and 0.68.

Table 17: Fitted baseline hazard probabilities, Australia and UK

Time period	Predictor	Australia			UK		
		Coefficient	Fitted odds	Fitted hazard	Coefficient	Fitted odds	Fitted hazard
1	First year of spell	0.74	2.09	0.68	0.25	1.28	0.56
2	Second year of spell	0.34	1.40	0.58	-0.08	0.92	0.48
3	Third year of spell	0.37	1.44	0.59	-0.05	0.95	0.49
4	Fourth year of spell	0.43	1.54	0.61	-0.02	0.98	0.50
5	Fifth year of spell	0.38	1.47	0.59	-0.26	0.77	0.44
6	Sixth year of spell	0.12	1.13	0.53	-0.44	0.64	0.39
7	Seventh year of spell	0.52	1.69	0.63	-0.89	0.41	0.29
8	Eighth year of spell	0.12	1.13	0.53	-0.88	0.41	0.29
9	Ninth year of spell	0.44	1.56	0.61			

Source: Authors' own calculations from the 2001–10 HILDA Survey, 2001–08 BHPS and UKHLS wave 2

Note: The fitted hazards are the estimated hazard probabilities in a baseline scenario where all the other explanatory variables in the model take on zero values.

The importance of stage in the life course is evident on inspecting estimates for the age band variables in Table 18 below. The under 35s are clearly more vulnerable; so, for example, the 35–44-year-old Australian's (British) odds of an exit out of ownership are only 36 per cent (23%) of their under 35-year-old counterparts. The young have typically just entered home ownership, with large mortgages and little equity stake in their homes. In Britain, the under 35s have median loan-value ratios of 63 per cent in their first year of ownership spells; a similar picture is evident in Australia where under 35s have equivalently defined median loan-value ratios of 67 per cent. They therefore have relatively little financially at stake on relinquishing ownership, and with only a few years of labour market participation, savings will be quickly depleted if urgent spending needs must be met.

Table 18: Hazard model parameter estimates of age band variables

Explanatory variables	Australia		UK	
	Coefficient	Odds ratio	Coefficient	Odds ratio
Age 35–44	-1.02 (0.07)***	0.36	-1.46 (0.11)***	0.23
Age 45–54	-2.29 (0.08)***	0.10	-2.69 (0.13)***	0.07
Age 55–64	-3.48 (0.10)***	0.03	-3.94 (0.15)***	0.02
Age 65+	-4.10 (0.10)***	0.02	-3.99 (0.14)***	0.02
Sample	50,065		49,538	
Chi-square	57,827.95		62,898.98	
Cox and Snell R-square	0.69		0.72	
Nagelkerke R-square	0.91		0.96	

The importance of relationship status was strongly hinted at in the descriptive analysis, and is confirmed by coefficient estimates in Table 19 below. A young married couple's ownership status is relatively secure, particularly if children are present. Some predicted hazards for young (under 35 years) married owners illustrate the point. If we take a married person with one child and in the sixth year of an ownership spell, and set all continuous variables at their mean values while choosing the reference category for binary variables,³⁰ the Australian (British) model predicts a (conditional) probability of departure from home ownership of 22 per cent (6%). The risk of moves out of home ownership is very low in Britain; though higher in Australia, this is still well below the hazard for the separated or divorced; this demographic group stand out as precariously positioned. In Australia (Britain) their odds of losing ownership status are 3.4 (2.8) times the odds of marrieds. If, for model prediction purposes, we choose other variable values in exactly the same way as above, young divorced and separated owners have a predicted (conditional) probability of exit equal to 49 per cent (15%), a much more tangible risk.

Health is influential, but more so in Britain than in Australia. This may well reflect the larger social housing sector in the British housing system where allocation systems have traditionally prioritised those with adverse health conditions (Smith 1990; Smith et al. 1997). Employment, qualifications and income have the expected influence. In Britain, an employed person's chances of losing ownership status are 46 per cent of those not working, but in Australia the effect is even larger at only 39 per cent. Real equivalised gross household income is influential; a one standard deviation increase in income lowers the predicted conditional probability (for a young person) from 22 per cent to 16 per cent (6% to 3%) in Australia (Britain).³¹ The earnings of those with tertiary qualifications are inclined to be more secure, and this helps to sustain ownership status, though the effect is only statistically significant in Australia.

³⁰ Income has been set at its mean value. The number of times equity is extracted via MEW and number of times extracted via trading on is an ordinal variable rather than continuous, and has been set equal to its median value.

³¹ We follow the same practice as with earlier prediction exercises when choosing values for other variables.

Owners dipping into their housing wealth either by *in situ* equity borrowing or over-mortgaging on trading on are less likely to transition out of home ownership. We know from previous research that owners with income levels that can support higher repayments are inclined to release housing equity, provided property values and their existing leverage leaves them with scope to cash out housing equity (Parkinson et al. 2009; Wood et al. 2013). That is, equity borrowing provides a financial buffer that might support owner occupation, for a while at least. These new findings suggest that those on the *edges of ownership*, who have either exhausted equity borrowing prior to the study period, or lack the incomes to resort to that style of financial buffer, resort to selling up. Those with rising income levels and strong growth in property values release equity (when needed) by equity borrowing and trading on, and if on the edges of ownership they may be able to transition into the mainstream provided their health, employment and relationship stability is maintained.

Our effort to detect a post-GFC impact is the source of one marked divergence in findings across the two countries. While Australian owners appear to have been largely unaffected, the GFC impacts negatively on British owners. In 2007 and 2008 the odds of an exit from ownership are twice those in earlier years and this soars to a multiple of over seven in 2009. The GFC shock to the British economy and labour market was more severe (see Chapter 3), and—it seems notwithstanding state support for mortgage interest and lender forbearance—a likely explanation.

While demographic and socioeconomic variables such as stage in the life course, health, employment status and so on, are found to be influential in determining transitions out of ownership, the same variables may play a different role in shaping pathways back into ownership. In the following section we model the capacity to churn on the edges of ownership.

Table 19: Hazard model parameter estimates of the attributes of sample persons

Explanatory variables	Australia		UK	
	Coefficient	Odds ratio	Coefficient.	Odds ratio
First year of spell	0.74 (0.08)***	2.09	0.25 (0.13)*	1.28
Second year of spell	0.34 (0.097)***	1.40	-0.08 (0.15)	0.92
Third year of spell	0.37 (0.10)***	1.44	-0.05 (0.16)	0.95
Fourth year of spell	0.43 (0.11)***	1.54	-0.02 (0.17)	0.98
Fifth year of spell	0.38 (0.12)***	1.47	-0.26 (0.18)	0.77
Sixth year of spell	0.12 (0.18)	1.13	-0.44 (0.26)*	0.64
Seventh year of spell	0.52 (0.19)***	1.69	-0.89 (0.28)***	0.41
Eighth year of spell	0.12 (0.19)	1.13	-0.88 (0.23)***	0.41
Ninth year of spell	0.44 (0.19)**	1.56		
De facto	-0.17 (0.10)*	0.84	-0.22 (0.14)	0.80

Explanatory variables	Australia		UK	
	Coefficient	Odds ratio	Coefficient.	Odds ratio
Separated or divorced	1.23 (0.07)***	3.42	1.03 (0.12)***	2.81
Widow	0.40 (0.13)***	1.49	0.23 (0.17)	1.25
Single never married	-0.14 (0.10)	0.87	-0.20 (0.16)	0.82
Number of children	-0.52 (0.03)***	0.60	-0.55 (0.05)***	0.58
Self-assessed health rank 1 = Excellent	-0.17 (0.09)*	0.85	-0.50 (0.11)***	0.60
Highest qualification tertiary	-0.14 (0.07)**	0.87	-0.21 (0.13)*	0.81
Employed	-0.93 (0.06)***	0.39	-0.77 (0.10)***	0.46
Real equivalised gross household income (\$'000)	-0.01 (0.00)***	0.99	-0.05 (0.00)***	0.96
No. of times extracted equity via <i>in situ</i> MEW during home ownership spell	-0.42 (0.02)***	0.66	-0.73 (0.05)***	0.48
No. of times extracted equity via trading on during home ownership spell	-0.49 (0.08)***	0.62	-0.47 (0.17)***	0.63
2007	0.01 (0.14)	1.01	0.71 (0.23)***	2.04
2008	-0.31 (0.15)**	0.73	0.79 (0.24)***	2.20
2009	0.22 (0.13)	1.24	2.05 (0.18)***	7.76
2010	0.23 (0.13)*	1.25		
Sample	50,065		49,538	
Chi-square	57,827.95		62,898.98	
Cox and Snell R-square	0.69		0.72	
Nagelkerke R-square	0.91		0.96	

6 THE CAPACITY TO CHURN

Chapter 3 concluded with a brief examination of ex-home owners' subsequent spells in rental housing. In the UK, 38 per cent of spells resulting in a transition out of home ownership rebounded back into ownership by 2010; a somewhat higher proportion, 57 per cent, returned in Australia. We know little about these journeys. This section is designed to address this gap in our knowledge.

First we enlarge on the process of exit, by considering where those who leave end up. As we shall see, there are marked differences between the two countries that reflect their housing systems and the distinctive ways that housing assistance is delivered to ex-home owners. The section then goes on to analyse the process we have called 'churning' on the edges of home ownership. We consider whether demographic and health factors shape the prospects of a return and assess their importance relative to financial and housing market variables.

These descriptive analyses are important because they tell us whether transitions out of home ownership are 'part and parcel' of the normal process of housing adjustment that commonly accompanies a change of job. If this is indeed the case, transitions onto housing assistance programs following exit should not feature along the housing pathways travelled by ex-home owners. Furthermore, job changes and housing moves are normally associated with job career advances. We would not therefore expect to observe signs of financial stress among the churners and leavers.

Our findings point to financial and housing market variables as the key determinants of a bounce back into ownership. There are some intriguing implications for the role of housing assistance programs.

6.1 Housing tenure following loss of home ownership

We have nearly 1500 ex-home owner spells in Australia, and a smaller 574 sample of ex-home owner spells in the UK.³² Their destinations following transitions out of home ownership show one striking divergence—the immediate housing destination of about 1 in 10 of the UK sample is public housing (see Figure 20(a) and (b) below). This pathway is trivially small in Australia; of the nearly 1500 sample only 22 find their way into public housing in the year following loss of ownership. This, of course, reflects the continued importance of social housing in the British housing system, and the long-term residual role played by public housing in Australia. The other especially interesting finding is the importance of rent-free housing in both countries. This provides accommodation to around one-third of ex-home owners. Parents are probably the most important source of cost-free accommodation, and it is the divorced and separated that are most prone to end up in this rent-free situation.³³ Finally, note that churners are more likely to rent from private landlords regardless of country of residence.

These pathways can change direction as spells in rental housing unfold, and a shift seems particularly likely in the case of those accessing rent-free housing. Table 21 below offers a picture of how ex-home owners' journeys in rental housing unfold by aggregating over their rental housing spells, rather than documenting just the immediate outcomes of Table 20. A rise in the prominence of renting from a private

³² In Section 3.1, we estimated 1503 ex-home owner spells for Australia and 577 for the UK. The sample size is smaller in Table 20 because for a very small number of cases we have been unable to accurately identify housing tenure after exiting home ownership.

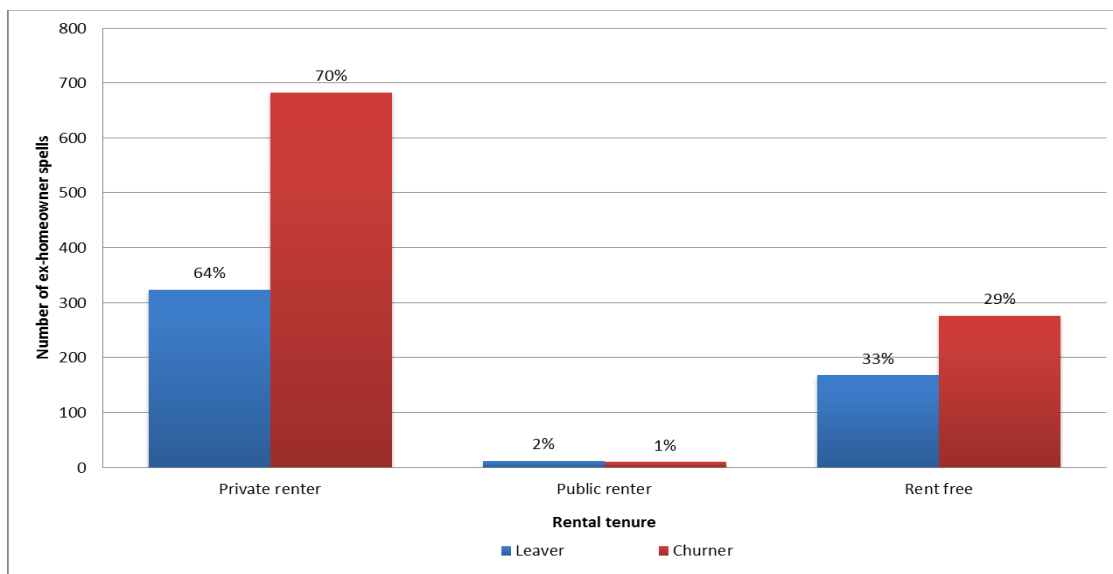
³³ A relatively high 22 per cent (24.4%) of the divorced and separated are cushioned by a move into rent-free housing in Australia (UK).

landlord and a decline in rent-free housing over time are trends common to Australia and the UK. While public housing is increasingly important as a destination, this is markedly so in the UK where ex-home owners rent from a social landlord in 18 per cent of episodes following exits from owner occupation. Australian ex-home owners rent from a public landlord in only 3 per cent of episodes.

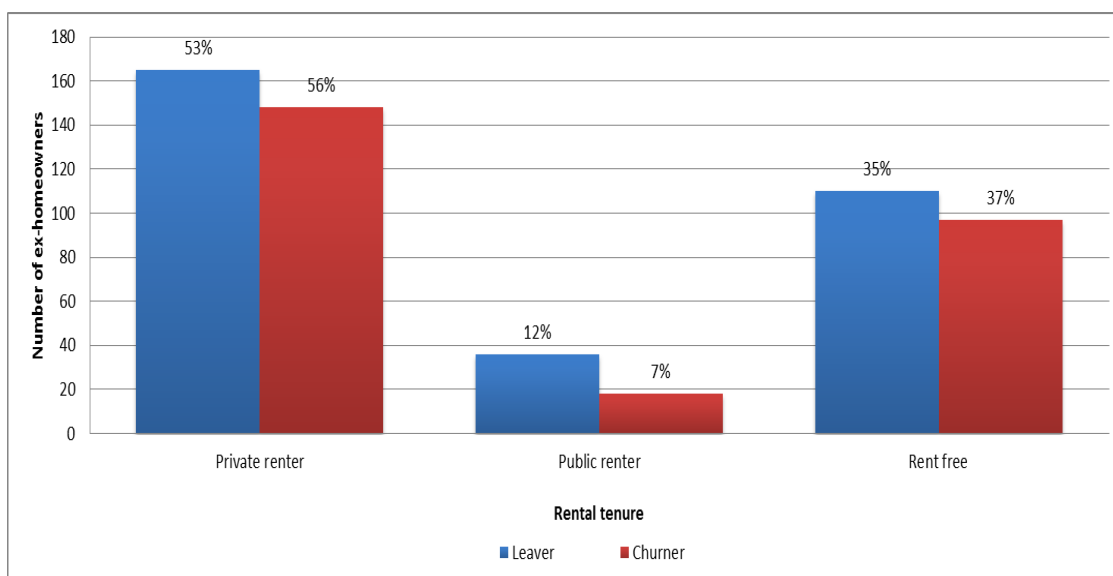
The routes followed by those enduring in rental housing are not the same as those taken by those who later rebound back into home ownership. Rent-free accommodation is a favoured destination of churners (particularly in the UK), which hints at the importance of low-rental housing costs as a way to conserve or build equity to provide a platform supporting return to ownership. On the other hand, entry into public housing is associated with more durable spells in rental housing, with the UK leaver group accessing public housing in 23 per cent of waves following transitions out of ownership. Public housing offers security of tenure that could appeal to those in precarious circumstances, who therefore welcome the opportunity to rent permanently from a public landlord. This option is not as widely available in Australia, and is one likely explanation for the more robust churning witnessed on the edges of Australian home ownership.

Figure 20: Rental tenures of leavers and churners in the first wave after each departure from home ownership

(a) Australia



(b) UK



Note: Some churners leave home ownership multiple times. For these repeat churners, their rental tenure status in the first wave after leaving home ownership is recorded multiple times as though their spells are independent of each other.

Table 20: Rental tenures of leavers and churners in all waves during which they are not in home ownership

		Australia			UK		
		Leaver	Churner	All	Leaver	Churner	All
Private renter	Number	1,476	1,294	2,770	549	250	799
	Column %	70.5%	70.9%	70.7%	57.5%	58.1%	57.7%
Public renter	Number	97	30	127	217	38	255
	Column %	4.6%	1.6%	3.2%	22.7%	8.8%	18.4%
Rent free	Number	521	501	1,022	189	142	331
	Column %	24.9%	27.5%	26.1%	19.8%	33.0%	23.9%
All	Number	2,094	1,825	3,919	955	430	1,385
	Column %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

6.2 Housing assistance following loss of home ownership

From a housing policy perspective, loss of home ownership has at least two potentially important implications. Owner-occupiers in both countries receive generous tax expenditures such as the exemption of imputed net rents and capital gains from income taxation, as well as favoured treatment under income and asset tests governing eligibility for income support programs (see Stewart 2010 for details on the Australian taxation of housing). These benefits are lost on transitioning out of home ownership, though the typically high loan-to-value ratios of those on the edges of home ownership imply a less favoured outcome for this group.³⁴ On the other hand, departures from ownership could herald added pressure on housing assistance programs targeted on rental housing.

We gauge additional demand for rental housing assistance by identifying eligible recipients among those losing home ownership between 2001 and 2009. In the UK, a housing assistance (HA) recipient is defined as someone who is either:

1. a public housing tenant
2. a community housing tenant (i.e. renting from a housing association), or
3. a renter who is a housing benefit recipient.

Groups (1) and (2) are mutually exclusive, but groups (1)/(2) and (3) can overlap because a public/community housing tenant can also receive housing benefit.

In Australia, we use AHURI-3M a micro-simulation model of the Australian housing market to identify private rental tenants that are eligible for Commonwealth Rent Assistance (CRA). Public housing and community housing tenants are explicitly identified in the HILDA survey data, so we have three groups of HA recipients defined as:

1. public housing tenants
2. community housing tenants, or
3. CRA recipients.

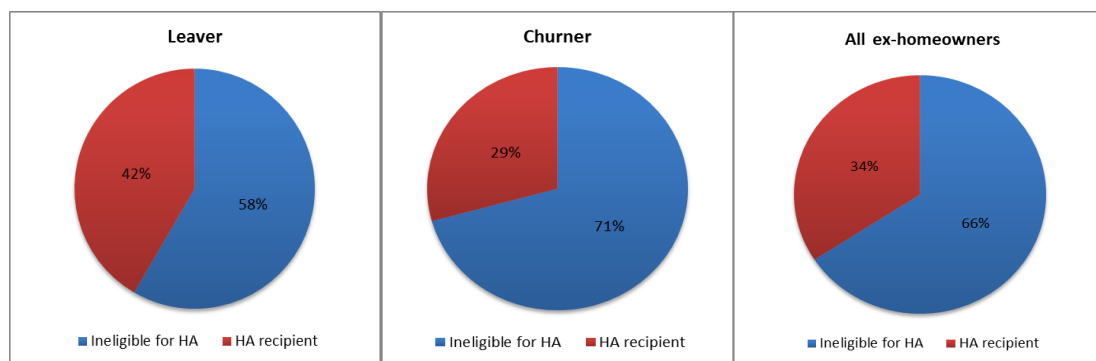
³⁴ The value of the tax exemption granted to home purchasers is smaller the higher are loan-to-value ratios (Wood & Ong 2010).

Groups (1) and (2) are mutually exclusive while Groups (1) and (3) are also mutually exclusive. However, groups (2) and (3) may overlap, that is, a community housing tenant can be eligible for CRA.

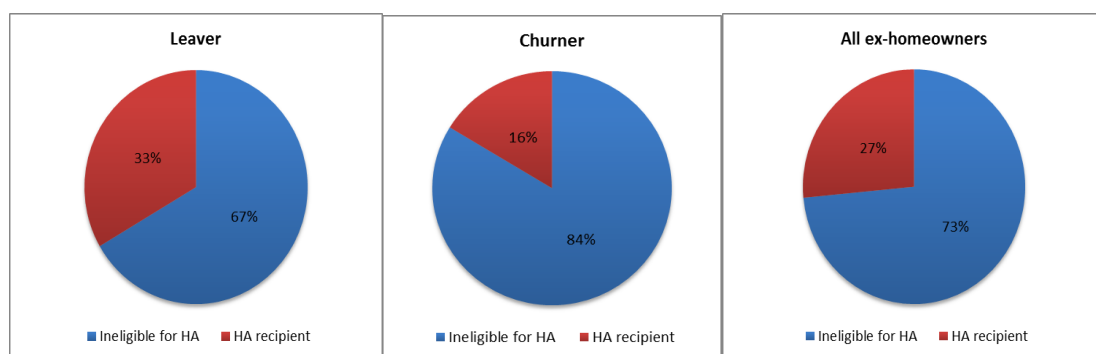
Figures 21(a) and (b) below illustrate the percentage of renters in the sample who received housing assistance in at least one episode over the time frame 2001–10. Transition onto housing assistance programs is common in the UK, occurring for 27 per cent of all ex-home owners, but among those continuing in rental housing through to 2010 the incidence reaches one-third. Despite the small public housing sector, an even higher proportion (34%) of Australian ex-home owners enrolls on housing assistance programs. Indeed over 40 per cent of those who endure in rental housing through to 2010 are recipients of one form of housing assistance or other. Churners rebound back into home ownership, but nearly 30 per cent do so from rental housing circumstances that include housing assistance of one kind or another.

Figure 21: Percentage of leavers and churners who journey into housing assistance programs at least once 2001–10¹

(a) Australia



(b) UK



Note: ¹ The unit of analysis is persons.

Table 21 below breaks these findings down by type of housing assistance. Sample numbers are small in the UK so caution is warranted and conclusions are therefore tentative. Over one-third of UK housing assistance recipients receive it in the form of social housing only. If a churner becomes eligible for assistance it is most likely public housing only. Just over one in four leavers are entitled to two types of HA. Housing benefit alone is uncommon because private rental housing is a relatively small share of the stock of UK housing.

The Australian findings reveal a strikingly different delivery of housing assistance. This is dominated by the direct subsidy program (Commonwealth Rent Assistance), with

81 per cent coverage of ex-home owners receiving assistance, whereas its equivalent in Britain—Housing Benefit—is seldom (12%) the sole assistance program. A small Australian public housing sector means that it is a minor source of support, as is community housing, indeed even more so.

The differences in the two countries' housing systems are flagged rather strongly in these research results. Australians falling out of home ownership will largely rely on the private market, and assistance will typically take the form of a cash supplement to income support programs. But British ex-home owners will more likely access social housing (public and community housing), and the receipt of housing benefit alone is uncommon. This reflects the continued importance of the social housing sector in Britain.

We are able to use the AHURI-3M simulation model to estimate the Australian government budget cost of the CRA received by Australian ex-home owners. The year 2009 has been chosen for analysis; those ex-home owners eligible for CRA received an average of \$2739 as an annual supplement to assist in meeting rent payments. In aggregate, these payments added \$393 million to government spending on the CRA program in 2009. To put this in perspective we estimate that total CRA was \$2.2 billion, of which ex-home owner entitlements accounted for 17.9 per cent. Loss of home ownership is now a more common phenomenon; but these figures show that it is also driving increases in government spending on housing assistance.

Table 21: Types of HA program that ex-home owners journey onto during 2001–10, HA recipients only

		Australia			UK		
		Leaver	Churner	All ex-home owners	Leaver	Churner	All ex-home owners
Public housing only	n	11	18	29	38	15	53
	%	6.1	8.4	6.6	36.5	44.1	38.4
Community housing only	n	1	7	8	26	9	35
	%	0.6	3.3	1.8	25.0	26.5	25.4
Housing benefit/CRA only	n	168	189	357	13	4	17
	%	93.3	88.3	81.0	12.5	11.8	12.3
Combination	n	34	13	47	27	6	33
	%	15.9	5.7	10.7	26.0	17.6	23.9
All HA	n	214	227	441	104	34	138
	%	100.0	100.0	100.0	100.0	100.0	100.0

6.3 Modelling return to home ownership

Our modelling of transitions out of home ownership suggested that moves into rental housing are typically the result of adverse circumstances and binding constraints. With policy parameters at their current settings, we may conclude that rental tenure outcomes for this group were constrained choices, and not the preferred tenure. Many, if not most, will strive to climb back into owner-occupied housing. In this section we identify the personal characteristics distinguishing those making it back into ownership from those enduring in rental housing.

Our approach is to estimate a probit regression model³⁵ of tenure outcomes (ownership versus renting) in 2010 using a sample of those who have lost home ownership status between 2001 and 2009.³⁶ The right-hand side variables include the same personal characteristics we employed in the hazard models of Chapter 5. These personal characteristics are measured at their values in the wave immediately following exit from home ownership. We also add some new variables, again measured immediately following exit. The equity released on selling up is one new variable; the larger is the cash unlocked on sale the bigger is the potential deposit on subsequent purchase and so a return to home ownership is more achievable. The annual net rent is also a new addition. It has an ambiguous impact; higher rents make home purchase a financially more attractive proposition (all else equal). But higher rents also make saving for a deposit more difficult. Finally we have user cost, a measure of the effective annual after-tax cost of owner-occupied housing (see Wood & Ong 2008). A higher annual user cost relative to annual rent makes owner-occupied

³⁵ A probit regression model is appropriate when a dependent variable is binary. For a housing application, see Wood et al. (2010a, Chapter 2, pp.6–22) and an accessible introduction to probit modelling is found in Pindyck and Rubinfeld (1998) and Wooldridge (2009).

³⁶ We have smaller sample numbers as compared to the models estimated with respect to exits from home ownership. Furthermore, rental spells are shorter. As a consequence, estimation of hazard models such as those in Chapter 5 is not practical.

housing less financially attractive.³⁷ The estimated coefficients in a probit model have no ready interpretation, and so we also report marginal effect estimates that can be derived from coefficient values. For a zero-one explanatory variable they represent the percentage point increase or decrease in the probability of a return to ownership by 2010 when the variable takes the value 1, all other variables held constant at their mean values. When computed for a continuous variable (e.g. gross income) the marginal effect is the increase or decrease in probability for a one unit change in the variable (\$1000 in the case of gross income). Once again, the other explanatory variables are held constant at their mean values. This tactic aims to measure impacts for the typical person in the sample.

6.3.1 Australian findings

There are 1178 cases forming the sample for estimation. Individuals can have multiple terminated spells in home ownership; each prospective return is added to the sample as if it belonged to different individuals.³⁸ Descriptive statistics for the model's variables are presented in Table 24 below. There is much to remark on in these figures. The majority of Australian ex-home owners return to ownership by 2010—nearly two-thirds. They are evenly spread across the life course. Roughly 50 per cent are married and another 25 per cent divorced or separated, so the latter group are over-represented among those dropping out of owner occupation. At 14 per cent, a sizeable minority have only fair to poor health at the start of their new spell in rental housing; however most (just over two-thirds) are employed and one in four have a tertiary qualification. Household income, housing equity and rent variables vary across a dispersed distribution with their standard deviations exceeding the mean (median in the case of household income). On the other hand, user cost is tightly concentrated around a mean figure of 5.8 per cent. Average housing equity released on selling up is not far short of \$200 000 (at 2010 prices), a large capital sum that is potentially available to fund a deposit on purchase and return to home ownership. To put this in context, it exceeds the median deposit of \$69 470 (at 2010 prices) that those purchasing (between 2002 and 2010) put down on buying their homes. Finally, around one-third of spells began after the onset of the global financial crisis.

³⁷ As mentioned above, all explanatory variables are measured at their values in the wave immediately following exit from home ownership. However, it is not possible to observe user cost when a person does not have owner status. Hence, the user cost variable value is obtained from the most recent wave before exit from home ownership.

³⁸ This is technically dubious as the error term for observations belonging to the same individual will be correlated and estimates ignoring this correlation will be inefficient. A future program of research will address this issue.

Table 22: Descriptive statistics: Mean, median, minimum and maximum values¹

	Mean	Median	Standard deviation	Minimum	Maximum
Return to HO	0.66	1.00	0.48	0.00	1.00
Age band under 35 years	0.25	0.00	0.43	0.00	1.00
Age band 35–44 years	0.29	0.00	0.46	0.00	1.00
Age band 45–54 years	0.19	0.00	0.40	0.00	1.00
Age band 55–64 years	0.13	0.00	0.34	0.00	1.00
Age band 65 years	0.13	0.00	0.34	0.00	1.00
Legally married	0.46	0.00	0.50	0.00	1.00
De facto	0.12	0.00	0.32	0.00	1.00
Separated or divorced	0.26	0.00	0.44	0.00	1.00
Widowed	0.05	0.00	0.22	0.00	1.00
Single never married	0.12	0.00	0.32	0.00	1.00
Number of dependent children	0.72	0.00	1.05	0.00	6.00
Fair to poor health	0.14	0.00	0.35	0.00	1.00
Highest qualification tertiary	0.25	0.00	0.43	0.00	1.00
Employed	0.67	1.00	0.47	0.00	1.00
Real equivalised household gross income (\$'000 in 2010 prices)	52.56	43.24	44.15	0.42	620.72
User cost from last HO spell in per cent	5.77	5.73	1.04	3.60	9.18
Amount of housing equity released upon selling up (\$'000 in 2010 prices)	258.03	187.45	285.49	0.00	2,919.49
Annual rent (\$'000 in 2010 prices)	9.00	7.64	9.24	0.00	91.21
2007	0.11	0.00	0.31	0.00	1.00
2008	0.09	0.00	0.29	0.00	1.00
2009	0.12	0.00	0.33	0.00	1.00

Note: ¹ For binary variables, the means represent the proportion of cases that fall under each category.

Table 23 below presents the results from our probit model. Demographics are not as important in shaping the chances of a return to home ownership as they are in relation to the risk of falling out of ownership (see Chapter 5). The ‘marrieds’ are more likely to rebound than are the divorced and separated or the single ‘never marrieds’. The effect is especially strong in relation to the divorced and separated that have a probability of return that is 20 percentage points lower than ‘marrieds’. The other marital status categories, age and number of dependent children, are all found to be unimportant. Below par health, which was influential in driving people out of home ownership, is a ‘sideshow’ as far as capacity to churn is concerned.

While demographics and health are generally a minor influence, a number of financial and labour market variables are prominent. The employment coefficient estimate is particularly robust, with a marginal effect estimate of 10 per cent, and high educational achievers are also more inclined to return, a reflection perhaps of mortgage lending criteria. The price variables—rent and user cost—struggle to achieve significance, but the equity that ex-owners roll out is precisely estimated and its impact on pathways back into ownership is important. A one-standard deviation increase in the equity variable lifts the probability of a return to ownership by 19.1 percentage points.

Table 23: Probit model of capacity to churn, ex-home owners, AU¹

Explanatory variables	Coef.	Std. Err.	Sig.	Marginal effects
Aged 35–44	-0.01	0.11	0.96	0.00
Aged 45–54	-0.14	0.13	0.28	-0.05
Aged 55–64	0.03	0.15	0.82	0.01
Aged 65+	-0.06	0.18	0.75	-0.02
De facto	-0.20	0.14	0.14	-0.08
Separated or divorced	-0.54	0.10	0.00	-0.20
Widow	-0.32	0.20	0.10	-0.12
Single never married	-0.29	0.14	0.04	-0.11
Number of dependent children	-0.03	0.05	0.58	-0.01
Fair to poor health	-0.14	0.12	0.23	-0.05
Tertiary qualifications	0.23	0.10	0.02	0.08
Employed	0.28	0.10	0.01	0.10
User cost from last observation in home ownership (%)	-0.09	0.05	0.08	-0.03
Real amount of equity released upon selling up (\$'00,000s, in 2010 prices)	0.06	0.02	0.00	0.02
Real net annual rent (\$'000, in 2010 prices)	0.00	0.01	0.89	0.00
2007	-0.18	0.14	0.22	-0.07
2008	-0.41	0.17	0.02	-0.16
2009	-1.00	0.13	0.00	-0.38
Constant	1.08	0.34	0.00	
N	1178.00			
LR Chi-sq(17)	171.34			
Prob>Chi-sq	0.00			
Pseudo R-sq	0.11			

Note: ¹ An income variable had to be omitted due to multicollinearity. This is common in models of tenure choice with a user cost variable (see Hendershott et al. 2009).

6.3.2 UK Findings

The UK sample is 333 spells of rental housing following moves out of home ownership. At 53 per cent, the proportion of spells ending in a return to home

ownership is noticeably below the two-thirds achieved by Australian ex-homeowners. But the descriptive statistics presented in Table 24 below show that, like their Australian counterparts, UK ex-home owners are evenly spread across the life course. Nearly 50 per cent are married, and an additional 20 per cent are divorced or separated. Roughly 1 in 10 ex-owners have only fair to poor health. It is the employment and qualification profile that distinguishes British ex-owners from their Australian counterparts. Employment rates among the former dip below 50 per cent, but are 67 per cent for the latter, and a higher proportion of Australian ex-owners possess tertiary qualifications. A median £87 000 equity is released on selling up, though the variability and range of the British distributions is even greater than that of the Australian distribution of equity roll outs on selling up.

Table 24: Descriptive statistics: Mean, median, minimum and maximum values of regression variables¹

	Mean	Median	Standard deviation	Minimum	Maximum
Age band under 35 years	0.20	0.00	0.40	0.00	1.00
Age band 35–44 years	0.30	0.00	0.46	0.00	1.00
Age band 45–54 years	0.17	0.00	0.37	0.00	1.00
Age band 55–64 years	0.12	0.00	0.32	0.00	1.00
Age band 65 years	0.21	0.00	0.41	0.00	1.00
Legally married	0.48	0.00	0.50	0.00	1.00
De facto	0.12	0.00	0.33	0.00	1.00
Separated or divorced	0.20	0.00	0.40	0.00	1.00
Widowed	0.08	0.00	0.28	0.00	1.00
Single never married	0.11	0.00	0.31	0.00	1.00
Number of dependent children	0.68	0.00	1.00	0.00	6.00
Fair to poor health	0.11	0.00	0.31	0.00	1.00
Highest qualification tertiary	0.19	0.00	0.40	0.00	1.00
Employed	0.47	0.00	0.50	0.00	1.00
Real equivalised household gross income (\$'000 in 2010 prices)	20.16	16.88	14.23	0.00	84.19
User cost from last HO spell in per cent	6.22	6.17	0.63	4.46	8.04
Annual rent (\$'000 in 2010 prices)	4.56	3.81	4.43	0.00	22.69
Amount of housing equity released upon selling up (\$'000 in 2010 prices)	137.39	87.49	149.88	0.00	916.00
2007	0.17	0.00	0.38	0.00	1.00
2008	0.12	0.00	0.32	0.00	1.00

Note: ¹ For binary variables, the means represent the proportion (out of 1) of cases that fall under each category.

The modelling estimates in Table 25 below confirm the Australian conclusion that demographics are not an important factor shaping the chances of a rebound into home ownership. In the Australian case, employment and some financial variables are the more important, but the British model places emphasis on the financial variables.

First, consider the demographics. There is some evidence to suggest that the young ex-home owner is more likely to repurchase, particularly relative to those in their middle years. The only other relevant demographic is separation and divorce, which is just statistically significant at the 5 per cent level, but in lifting the probability of return, its effect is the opposite of that in the Australian data. One could speculate that those moving out of owner occupation *because of* relationship breakdowns are doing so as part of a settlement that involves the break-up of the couple's assets. The couple's home is typically the most important asset, and until this is divided up between the ex-partners, a return to ownership for the partner moving out is not possible. Once a settlement is reached then the asset share that has been cashed out can be used as a deposit on a new purchase. On the other hand, married couples moving out of home ownership are adjusting to different adverse circumstances and having to rent for different reasons, which seem to do more damage to the prospects of a return to ownership. Perhaps the equity that is cashed out by married couples shifting into rental housing is needed to meet urgent budget needs that take priority. But it is nevertheless puzzling that our Australian data fail to substantiate such speculation.

Common ground is evident when we examine the role of housing equity. The British model confirms that ex-home owners realising large amounts of housing equity on moves out of ownership, have better chances of a return. A one-standard deviation increase in equity lifts the predicted probability of a return (by 2010) from 53 per cent to 61 per cent.³⁹ Income had to be omitted from the Australian model, but proves a positive influence here; a one-standard deviation increase in income boosts the predicted probability of a return (by 2010) from 53 per cent to 65 per cent. But perhaps as a consequence employment becomes insignificant in the British model.

A marked difference with the Australian findings is apparent on inspecting the price variables. Both are negative, statistically significant and the magnitude of their impacts is very similar.⁴⁰ User cost is commonly found to be a significant influence in economic modelling of ownership decisions; the annual rent finding is intriguing as it may well reflect the faster accumulation of required deposits when housing costs are low. Income-related housing subsidies targeted on tenants may therefore have an unintended effect—helping ex-home owners restore their tenure status.

³⁹ These simulations hold the values of all other variables constant at their actual values while increasing each person's equity by one standard deviation. The average predicted probabilities of a return to home ownership for the sample, before and after increasing equity by one-standard deviation, are then calculated.

⁴⁰ A one-standard deviation increase in the user cost variable depresses the predicted probability from 53 per cent to 42 per cent, and a one-standard deviation increase in annual rent depresses the predicted probability from 53 per cent to 43 per cent.

Table 25: Probit model of capacity to churn, ex-home owners, UK

Explanatory variables	Coef.	Std. Err.	Sig.	Marginal effects
Aged 35–44	-0.25	0.24	0.30	-0.10
Aged 45–54	-0.86	0.30	0.00	-0.33
Aged 55–64	-0.91	0.34	0.01	-0.35
Aged 65+	-1.01	0.34	0.00	-0.38
De facto	0.29	0.28	0.31	0.11
Separated or divorced	0.46	0.23	0.05	0.17
Widow	-0.08	0.30	0.80	-0.03
Single never married	-0.19	0.27	0.49	-0.08
Number of dependent children	-0.08	0.10	0.43	-0.03
Fair to poor health	-0.19	0.25	0.45	-0.08
Tertiary qualifications	0.72	0.24	0.00	0.26
Employed	-0.30	0.20	0.13	-0.12
Real equivalised gross household income (\$'000 in 2010 prices)	0.03	0.01	0.00	0.01
User cost from last observation in home ownership (%)	-0.55	0.18	0.00	-0.22
Real net annual rent (\$'000, in 2010 prices)	-0.07	0.02	0.00	-0.03
Real amount of equity released upon selling up (\$'00,000s, in 2010 prices)	0.16	0.07	0.02	0.06
2007	-0.09	0.25	0.71	-0.04
2008	-0.21	0.32	0.51	-0.08
Constant	3.61	1.22	0.00	
N	333.00			
LR Chi-sq(17)	105.62			
Prob>Chi-sq	0.00			
Pseudo R-sq	0.23			

6.4 Summing up

The pathways followed by Australian and British ex-home owners have markedly different features. Those falling out of Australian owner occupied housing are unlikely to access social housing, while their British counterparts are more likely to secure a social tenancy. Nevertheless a higher proportion of Australian ex-home owners receive housing assistance during their spells in rental housing. Their demand for housing assistance is a substantial addition to governments' housing budgets.

About two-thirds of the Australian sample who leave ownership subsequently rebound into the sector before the end of the study period; in Britain it is closer to one-half. In both countries, it seems that demographics and health are not as important in shaping the chances of returning as they appear to be in relation to the risk of losing home ownership in the first place. On the other hand, labour market, price and equity

released on selling up are variables flagged as critical factors. In Australia, the price variables are unimportant; but in Britain they are a strong influence. Rent has an intriguing effect, as the modelling estimates indicate that those with relatively low rent obligations during rental spells are better able to accumulate a deposit. Australian and British models agree on the importance of equity rolled out on selling up; those able to extract relatively large amounts of equity on leaving home ownership find it easier to return to ownership status.

7 HOUSING PATHWAYS THROUGH THE EDGES OF OWNERSHIP

This report has documented the factors associated with housing transitions on the edges of ownership. We now bring the different elements together by presenting a series of vignettes to illustrate the typical pathways followed by Australian and UK home occupiers.

For this part of the analysis we take as our starting point the predicted probabilities of exit from home ownership derived from the estimated hazard models presented in Chapter 5. This effectively identifies the key characteristics that shape or determine the likelihood of exit. From each group—ongoing owners in the mainstream, ongoing owners on the edge, leavers and churners—we selected the five individuals with the highest probability of exit as predicted by this model. For each group of five, we reviewed the personal and life course characteristic captured by the longitudinal records in the two data sets, and made generalisations from them. These have been translated (for reasons of both privacy and for heuristic purposes) into a ‘composite biography’ for each typical pathway. These pathways are stylised versions, or what sociologists might call ‘ideal types’, of pathways through the edges of ownership. They are the product of a novel combination of modelling techniques with detailed inspection of the life courses of individuals. To be clear, none of the composite biographies presented in this section describe specific individual persons. Any resemblance to a real person is entirely fortuitous. At the same time, all else equal, we might expect some, perhaps the majority, of individuals in the different ownership categories that are represented in this section to follow pathways that have some things in common with the ‘average’ positions we have assembled as vignettes.

The vignettes are presented diagrammatically in Figures 22 to 27 below. Note that these vignettes are designed to represent both Australia and the UK. The differences between the fortunes of each group tend to exceed the differences between jurisdictions, and where important differences do occur these are explained in the text.

The horizontal axis on each figure represent years from the time a householder is first recorded as an owner in the dataset (i.e. whether they were ongoing owners in 2001, or attained ownership during the following nine years of the study period). The left-hand side vertical axis represent a variety of financial variables measured in thousands of dollars; the right-hand side vertical axis capture demographic and health (5 indicates very poor health, 1 indicates excellent health) measures which are presented as categorical variables.

7.1 Ongoing owners

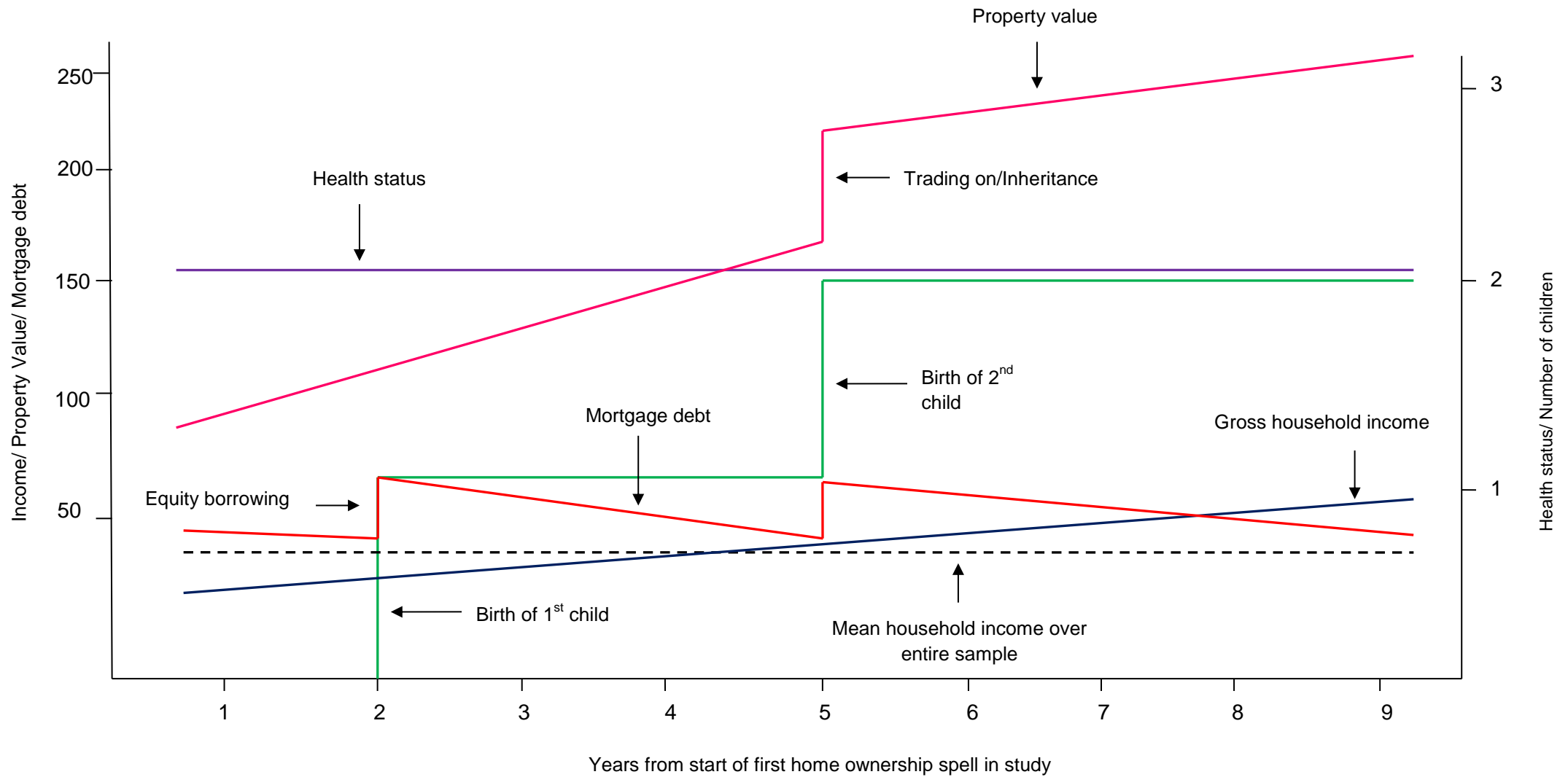
Throughout this study, ongoing owners have effectively provided a reference category against which the fortunes of those on the edges of ownership are measured. To create the vignette which appears as Figure 22 we selected from ongoing owners in 2001. We chose not to represent those who are already very well established, for example as outright owners or making the transition to older age. Instead, the figure is based on the experiences of a group who in 2001 looked close to the edge, but who were known by the end of the study period to have established themselves in the mainstream. So this vignette captures what is needed to transition from the precarious margins to the sustainable mainstream of owner occupation.

Our composite stayer is operating for the most part against a background of rising property values and is experiencing steadily increasing incomes rising to levels above average for home owners, reflecting their secure position in the labour market. The

ongoing owner is a steady equity injector, inbetween bouts of equity borrowing (in the presence of pressing spending needs, for example associated with the birth of children), and occasional trading on, usually to improve on their position in the housing market.

In the end, having experienced no major shocks or biographical disruptions, equity injections and extractions balance out. There is no net gain in debt, but a considerable accumulation of housing equity against a background of rising house prices. Ongoing owners making this transition to the mainstream are typically partnered, allowing risk sharing and scale economies, and are generally in good health (which is an important part of the story of sustaining owner occupation). These owners may or may not be in a position to save regularly, but they report no difficulty in paying for housing and are generally positioned in buoyant segments of the market, which remain unscathed in the aftermath of the GFC.

Figure 22: Ongoing owners transitioning to the mainstream

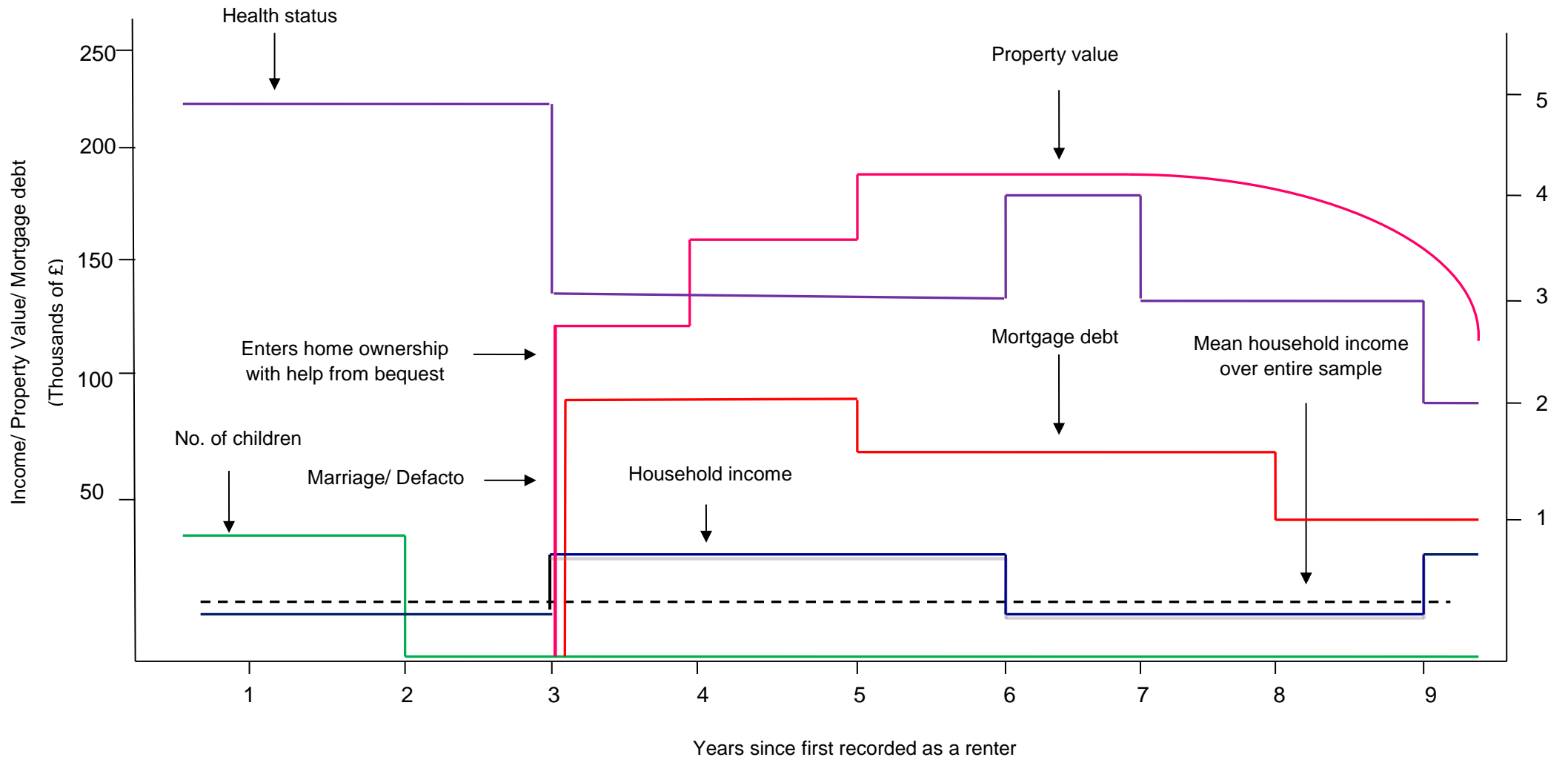


7.2 Ongoing owners on the edge

This vignette (Figure 23 below) traces the fortunes of those whose first spell of ownership in this study occurred after 2001. That is, they are early in their ownership career, and are defined as 'on the edge' because, for different reasons, their position seems precarious. They have not made the transition to the sustainable mainstream; indeed a key feature is instability, whether financial or biographical.

Ongoing owners on the edge occupy modestly-priced properties that may have been attained with the help of gifts or bequests. Incomes are fluctuating, reflecting a precarious labour market position as well as relationship formation and dissolution. There is a steady stream of equity injection as relatively low mortgages are paid down, but no capacity to smooth incomes and expenditures through equity borrowing. This reflects both income and house price constraints, since this group operates against a less confident experience of home prices than ongoing owners; their home prices rise for a while, but they are in weaker segments of the housing market and suffer following the GFC. This adds to the risks occasioned by spells of poor health that can prompt withdrawal from the labour market. By the end of the study period, this group is still in owner-occupation, thanks partly to low loan-to-value ratios and a balance sheet saved by little or no equity borrowing. Their position is precarious, however, as house prices are falling and there is still outstanding debt.

Figure 23: Ongoing owners on the edge



7.3 Leavers

The traditional leaver trades out of owner-occupation in older age (as cash or care needs increase, and the bequest motive wanes) and does not feature in this study. The modelling exercise draws attention, rather, to the risks of exit much earlier in the life course—a hazard that has received rather less attention until recently.

Exit from the edges of ownership is relatively uncommon and reflects the impact of major unanticipated disruptions on highly indebted households with limited housing equity (i.e. with high loan-to-value ratios) and weak property values. Figure 23 below represents the effects of an accident; Figure 24 below charts the impact of relationship breakdown. In each case, the events have repercussions on a household's labour market position and wider balance sheet. In some cases, not represented here, the interaction between health and relationship breakdown is also critical in creating a situation in which everything is limited by income uncertainty and other outgoings.

Figure 24 represents a typical single person household starting in full-time employment. Accidental injury requires them to reduce paid employment and household income falls sharply. There is insufficient equity to secure extra borrowing and no prospect of borrowing with reference to current income (in advance of its loss), as the accident could not have been anticipated. Without the prospect of regaining sufficient income to sustain future mortgage payments, the home is sold or repossessed, and this can sufficiently depress wellbeing to result in complete withdrawal from the labour market and therefore no prospect of re-entering home ownership.

Figure 25 below represents the effects of relationship breakdown when there is a background of high indebtedness (loan-to-value ratios) and weak property values. This stylised example depicts a couple with children whose volatile household income only just meets expenditures, neither of whom (and certainly not the stylised individual tracked here) can bear the loss of scale economies when the relationship dissolves. The property is sold, but there is little equity once debts are repaid and neither partner takes a substantial sum away.

Subsequently, the composite single-parent household we follow re-partners and thanks to this, the household income receives a boost. Then there is the birth of another child: the costs associated with this (both loss of earnings and higher expenditures), and the absence of an equity injection to roll into new home purchase, may be key factors preventing re-entry to ownership.

Figure 24: Leaver type 1: effect of change in health status

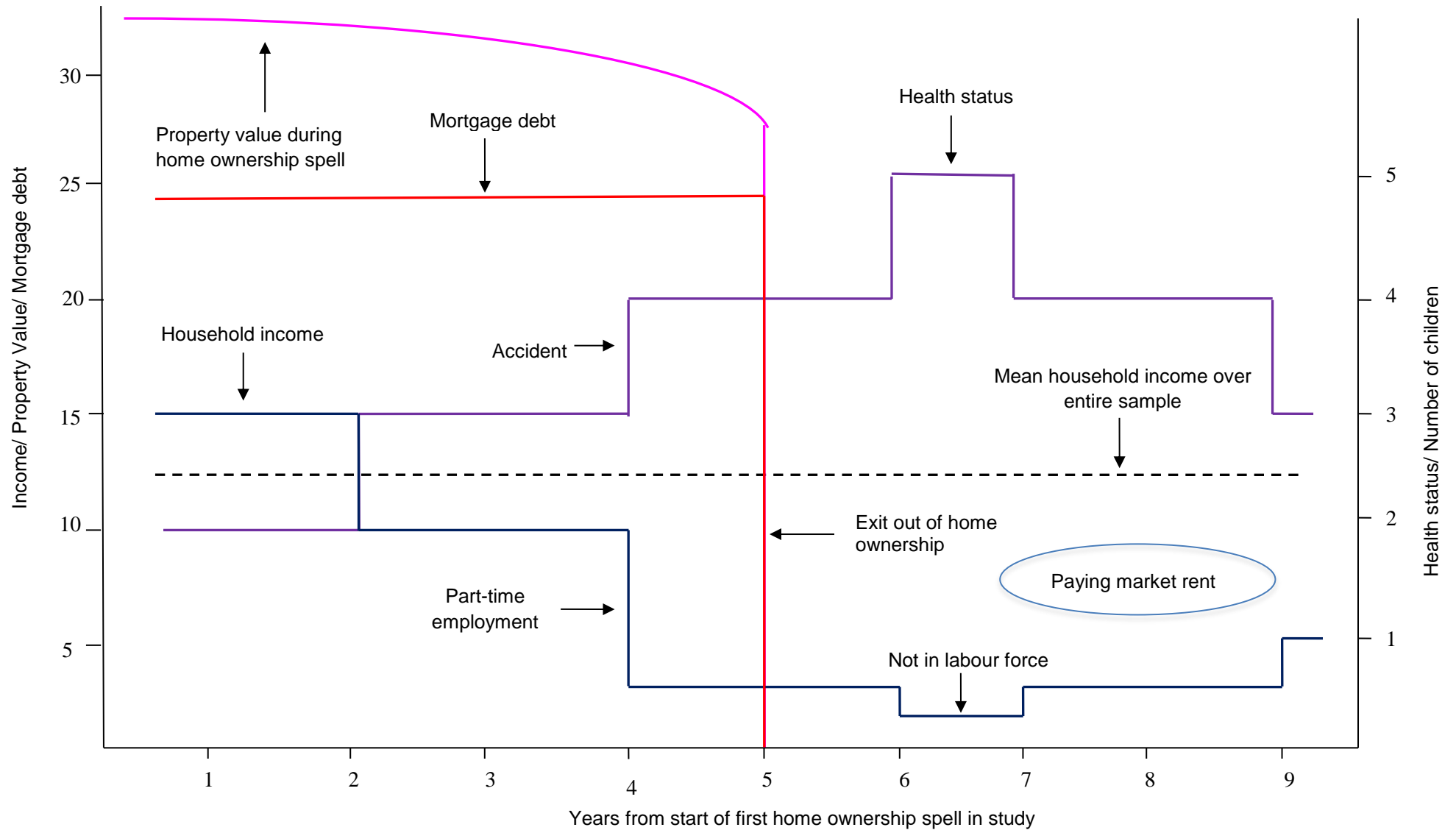
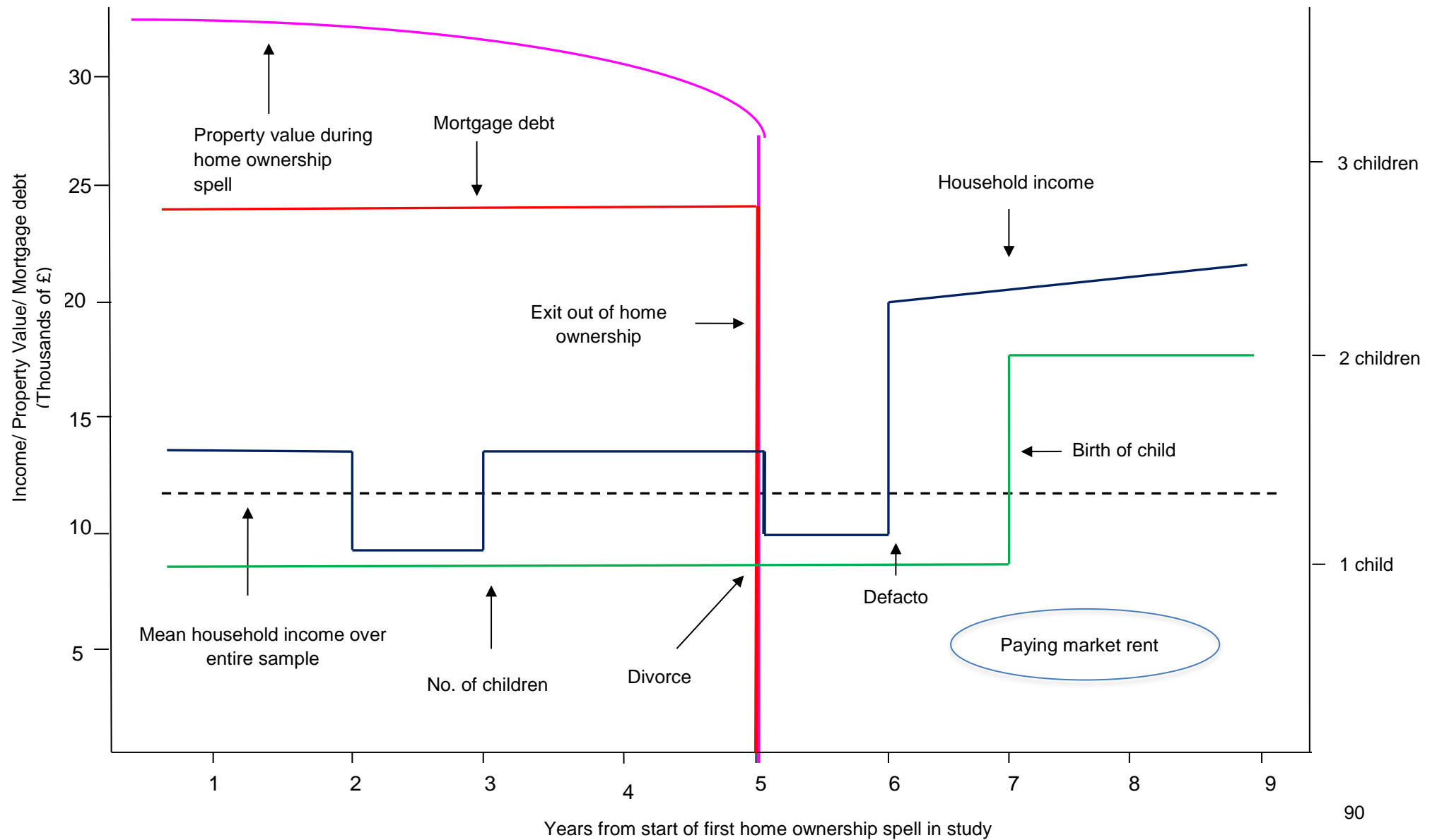


Figure 25: Leaver type 2: effect of relationship breakdown



7.4 Churners

Financially, churners do not look as if they are perched precariously on the edges of home ownership, especially in Australia: their home values are higher than all but sustained ongoing owners, their employment rates are high, and their health is variable but generally good. But they are less likely to be married and more likely to be divorced or separated than ongoing owners, which reduces their scope for scale economies. The spotlight with churners is therefore on what happens to housing equity as people rove across the edges of ownership. Again there appears to be two stylised pathways and these are represented in Figures 26 and 27 below.

Figure 26 represents the churner who may be on the way to the mainstream. The vignette depicts a typical single childless person without the spending pressures associated with family life, and with health that varies between fair and good, and does not disrupt labour market position or income. There is no obvious trigger for exiting ownership though labour market mobility may be a factor. Selling up releases a reasonable sum of housing equity that is not needed while renting and can thus be rolled over into new home purchase. Successful churners typically pay no or low rent in their period out of ownership (perhaps returning to the family home or staying with relatives or friends) and can save to accumulate a deposit sufficient to enable a move upmarket. Sometimes the price differential is so substantial that we also suspect assistance from gifts or inheritances. This does not preclude a substantial addition to mortgage debt on re-entry to ownership, but against an improved labour market position, and in the absence of biographical or financial shocks, this is sustainable.

Figure 27 represents a different pathway shaped by relationship change. Health is variable, perhaps reflecting the stresses of relationship instability. There is a trading down event prior to exit from ownership, occasioned by divorce. Both parties leave with a modest share of the outstanding equity. There is re-partnering in the ownership gap that helps launch re-entry to ownership. However, the presence of a new child triggers a cycle of equity borrowing, and health does not prove to be resilient. Property values weaken, eating into housing equity and thereby simultaneously limiting its use as a financial buffer and increasing loan-to-value ratios. There may even be a risk of negative equity. Incomes are no more than average, and there are spending pressures to add to stress. If trends continue, ownership may not be sustainable.

It is among churners that cross-country variability is most evident. The Australian model tends more towards the first 'ideal type'—the use of churning to improve housing and labour market positions. The British norm (where churning is less common and the downturn in the housing market more evident) may more readily signal a move down-market and closer to the precarious edges of home ownership. It is tempting to attribute this to differences in the role and relevance of the rented sectors in the two societies, but it is striking that in both settings a rent-free gap between spells of ownership occurs in about one-third of churning events.

Figure 26: Churner type 1: possibly transitioning to the mainstream

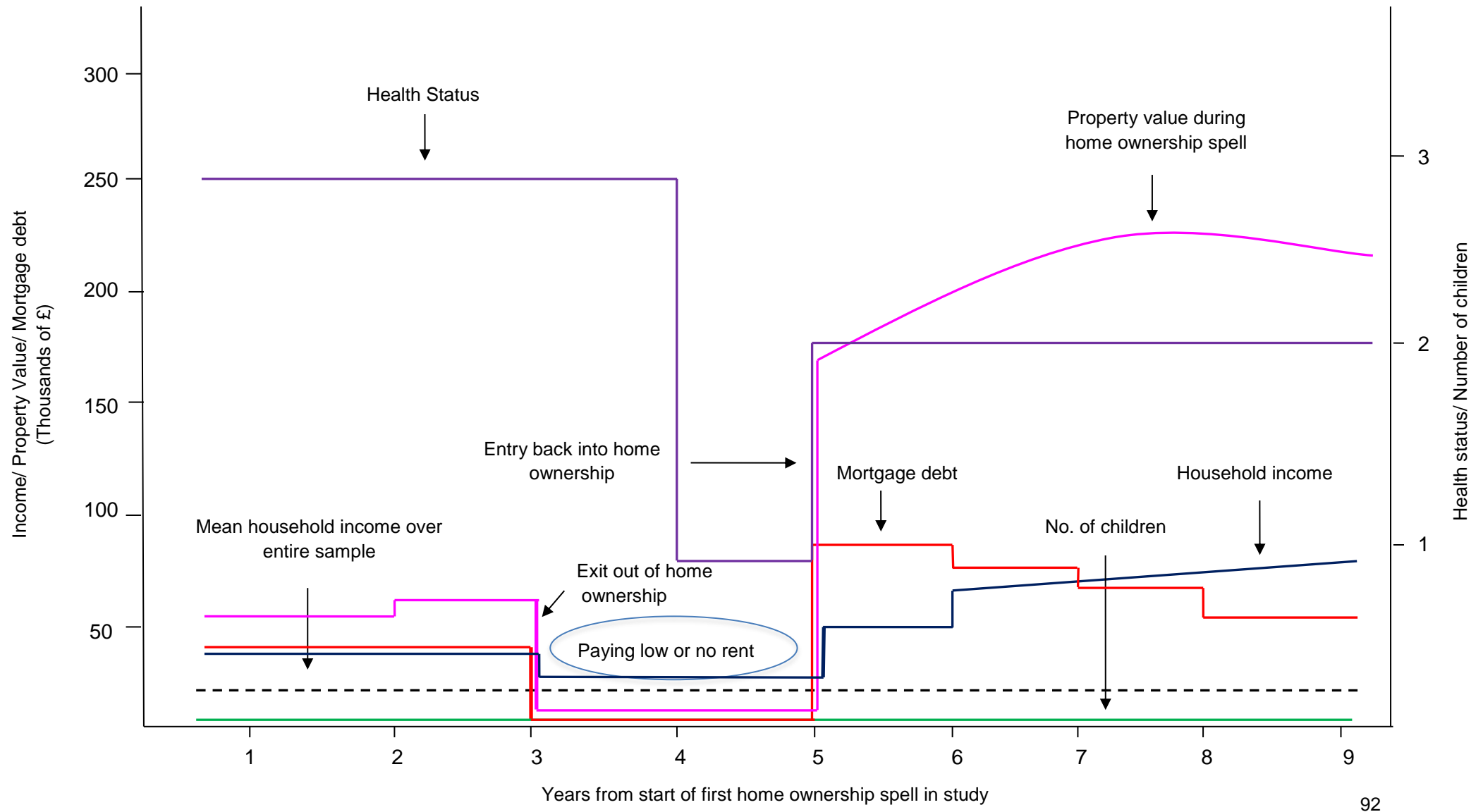
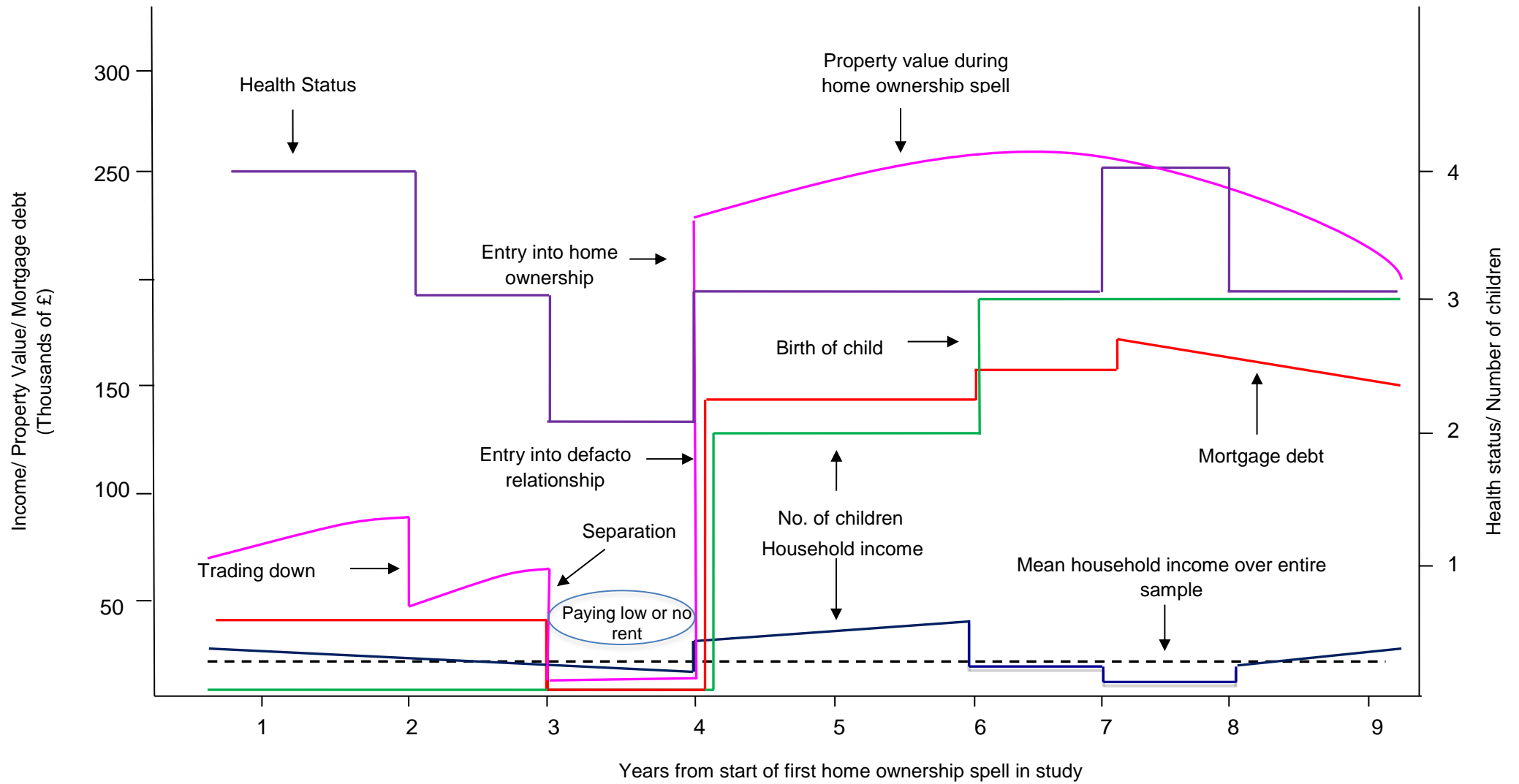


Figure 27: Churner type 2: precarious housing position



8 CONCLUSIONS, RESEARCH IMPLICATIONS AND POLICY RECOMMENDATIONS FOR THE EDGES OF OWNERSHIP

8.1 Key findings

This project has drawn attention to the myriad housing positions and transitions which make up the edges of ownership. It does so using a mix of descriptive statistics and modelling exercises based on the national panel surveys of Australia and the UK. In line with a number of previous studies by the authors, the analysis points to some remarkable similarities between two institutionally contrasting jurisdictions. These are linked to the degree of internationalisation of mortgage markets and synchronisation of housing cycles in the run up to the GFC. However, at the very edges of ownership—in a zone of transition between the dominant tenure sectors—institutional differences play a particularly important role in mediating the sometimes-diverse life chance and housing opportunities of the Australian and British public. The edges of ownership thus enable us to think not only about the properties associated with, and required of, a well-functioning housing system, but also about the scope that policy-makers have to improve housing outcomes, even in a globalising world.

8.1.1 *A variety of pathways through the edges of ownership*

The study follows the fortunes of three groups of owner-occupiers, in each of the two countries.

'*Ongoing owners*' are those who, having attained owner-occupation, sustained their position in that tenure sector throughout the study period. These are the mainstream majority, accounting for 78 per cent and 91 per cent of the Australian and UK samples, respectively. For some parts of the analysis, it was helpful to distinguish between those who entered the study as owners (and thus were to endure in the mainstream for over a decade) and those who became owners later (and might be said to be closer to the edges of ownership at least until they established themselves). These form 15 per cent of Australian, and 7 per cent of UK, ongoing owners. As a group, however, the ongoing owners provide the benchmark for sustainable owner occupation, providing clues about the circumstances and characteristics that make home ownership viable.

Second, the study turned the spotlight onto those who drop out of ownership. In the combined observations for the two countries, one in seven (15%) dropped out, though the likelihood of this was much higher for Australia (22%), than for the UK (9%).

The group that conventionally receives most attention here are the *leavers*—those who drop out for the long run. They account for 9 per cent of the Australian sample and 5 per cent of the UK sample. These groups score highest on nearly every indicator of financial stress; it appears that they mainly drop out for economic reasons (in combination with other life events). As these households make the transition out of ownership and into the rental sector, they mark out precisely where the edges of ownership lie.

Third, and most critically, the study followed the fortunes of '*churners*'—a newly-identified group who, contrary to assumptions of most standard economic models and sociological theories, move back and forth between owner-occupation and rental housing. Thirteen per cent of the Australian sample, but just under 4 per cent in the UK consists of churners. Another way of specifying this is that, overall, roughly half of those who exit subsequently return. The findings suggest that it is right to be curious

about this sizeable group. They show a mix of characteristics, some of which show affinities with the mainstream, while others place them close to the edges. The indication in this study is that the experiences and fortunes of the churners may turn out to be a litmus test for the wider workings of the housing market.

Comparing and contrasting the fortunes of ongoing owners, leavers and churners in Australia and the UK produces a wealth of interesting findings. These are detailed in the text. The major findings are as follows.

8.1.2 High rates of exit among Australian owner-occupiers

Our modelling exercise shows that, in both countries, being young and single, and notably being separated or divorced increases the risk of falling out of ownership (as does ill-health, but only in the UK). Favourable employment, educational qualifications and sustained incomes likewise have a common protective effect. However, a first important finding from the study is that rates of exit from ownership are higher (typically more than twice as high) among the Australian sample than among their British counterparts, despite that country's better insulation from the fallout of the GFC. Moreover, while the likelihood of exit falls over time (the highest risk being in the first year of the ownership spell), the hazard rate is higher in every subsequent year for Australians than for the UK sample.

The evidence suggests that the higher hazard rate for Australian owners might partly be a reflection of the financial pressures of high leverage, together with a lack of social security support for Australian mortgagors in distress. But we argue that it must also reflect the larger, more diverse rental sector in Australia as compared with the UK, which makes early exit feasible. British households are more supported than their Australian counterparts to survive as owners, thanks to state support for mortgage interest payments and coordinated lender forbearance. But there is also the possibility that the UK's smaller rented sector forces Britons to struggle longer in ownership than is good for their health or their wealth in the longer run.

8.1.3 Churning is not uncommon

A second key observation is that rates of churn are high in both countries, certainly compared with the conventional wisdom. We show that ex-home owners have a good chance of returning to ownership—60 per cent in Australia, 41 per cent in the UK—as long as they do so quickly. The chances of returning diminish significantly with time spent renting.

This high rate of 'churn' is a surprising finding, and one that has hitherto received rather little attention. We find for both countries that demographics and health are not as important in driving return to ownership as they are in predisposing exit from it, though labour market variables are salient. More critically, as well as returning quickly, a key determinant of churning successfully—that is, of regaining owner occupation and moving towards the mainstream—is the ability to maintain or enhance wealth-holdings while renting. Churners are more successful than leavers in carrying equity over from a previous sale, and in securing accommodation with low or no rental costs while out of ownership. This prevents assets being eroded, allows savings to accumulate, and is sometimes combined with the receipt of gifts or inheritance.

8.1.4 Churning is jurisdiction-specific

We have already noted that the level of churn in Australia is substantially higher than in Britain (available to three in five dropouts in Australia, and just two in five in the UK). The difference in levels of churn may be accounted for by the larger Australian rental sector which is sufficiently flexible and diverse to allow households to adjust their housing outlays to income by changing tenure. That is, Australian owners may

have the option to exit earlier than their British counterparts, perhaps before financial resources are too depleted to allow for later return. This puts them in a better position to 'churn' back in. They are perhaps further encouraged to do so by the high costs and tenure insecurities that go with long-term occupation of the private rented sector. Conversely, the larger social rented sector in the UK could offer a 'soft' landing for some exiting owners (those who have sufficient priority needs), offering a mix of costs and security of tenure that are less likely to propel social tenants back into ownership.

8.1.5 Leavers are in a precarious position

Finally, the findings underline the precarious position of leavers, whose experience in both countries suggests that both housing systems have expanded beyond sustainable limits. Leavers have least educational qualifications, spend the highest proportion of time outside the paid labour force, and are the only group whose median incomes fall across the study period. They also have least housing wealth, fare badly on all indicators of financial stress, show a worsening of these positions over the timeframe of the study, and fall out of owner-occupation primarily because of this.

There is one notable difference between Australia and the UK and this relates to the role of the social rented sector, which is small in both countries, but still much larger in the UK than in Australia. The social rented sector in the UK traditionally offers priority access to households with pressing health-related needs. It is significant that, among those in this study who exit from ownership, the British are more likely to report adverse health conditions (two-thirds report poor health *immediately* prior to exit), and have a much higher likelihood than their Australian counterparts of securing a social tenancy. Intriguingly, leavers in both countries experience a slightly buffering effect on their wellbeing from renting. It seems that, in the end, for those on the edges of ownership, it is more stressful to stay than to go.

8.1.6 Equity exchange at the edges of ownership

Innovations in credit and mortgage markets, together with the high liquidity of housing markets in the early 21st century, encouraged households to roll housing equity into routine decisions around savings, spending and debt, more fully than ever before. This changes the stakes at the edges of ownership where those who have accumulated any housing equity at all tend to hold the majority of their wealth (and anchor most of their debts) in their home. In the face of financial shocks or pressing spending needs households at the edges of ownership must constantly weigh up whether to borrow more (if they can), trade down, or sell up. These are the only options owner occupiers currently have to dip into their housing wealth, and an important finding is that this is a majority activity: over half those in the study engaged in equity borrowing, or released cash by trading down, or sold up at some point during the study period. Equity borrowing is particularly widespread.

We show further that ongoing owners use equity exchange, if at all, to their advantage, engaging freely in equity borrowing for income smoothing and financial buffering across the study period, but balancing equity borrowings and extractions, with equity injections of all kinds, especially mortgage repayments. Churners engage even more intensively in equity exchange, and can use this to improve their housing outcomes and wider wealth position, providing nothing goes wrong. The findings suggest that the institutional arrangements of the Australian housing market are more conducive to a good outcome in this respect than in the UK, whose churners are more likely to sell for a second time.

Leavers in both countries fare least well in the equity exchange market. Despite having least housing equity and high leverage, a relatively high proportion (50% in Australia, 40% in the UK) engaged in at least one cycle of equity borrowing, while

around one in ten traded on at least once, prior to exiting altogether. Exit typically occurs at a point where the only remaining option to manage debts and mobilise equity is to trade in a primary residence. So even though, overall, leavers are the least active in equity exchange, their pathway out of ownership is often preceded by one or more equity extraction event. This is consistent with other work, including our own, which shows how equity exchange can prompt indebted households with pressing spending needs to cascade through equity borrowing to trading down and out of ownership altogether.

8.2 Research implications

This study casts new light on the character of the edges of owner-occupation, and identifies some new research questions for the future. We highlight four in particular.

8.2.1 Cross-national calibration

The findings of this study draw attention to commonalities between Australia and the UK that might reflect the convergence of housing and mortgage markets in an internationalising economy. It has equally drawn attention to the continued importance of national institutional differences that shape opportunities in the housing system. It is hard to disentangle the effects of factors that are within and beyond the control of national governments, but a step in that direction can be made by developing the international research agenda. One obvious next step for the edges of ownership is to look at other jurisdictions with comparable data resources and similar, ownership-centred, housing markets. Adding a perspective from the USA's Panel Study for Income Dynamics, for example, could provide valuable 'triangulation' for some of the findings of the present study.

8.2.2 Housing and the wider wealth portfolio

The edges of ownership are shaped by financial characteristics and behaviours, the most critical of which relate to decisions that have only become possible in the 21st century with the advent of equity borrowing, and the changing attitudes to housing wealth attendant on it. Although economists have written a great deal about the size of housing's wealth effects (relative to other financial wealth effects) in the aggregate, and while it is common to read about the investment anomaly constituted by housing-centred wealth portfolios, there is surprisingly little social research on the construction and management of household wealth portfolios in the presence of high home ownership. Therefore the motivations, beliefs and behaviours that lead households to concentrate wealth into residential property, at the expense of (or to substitute for) other savings, investment and pensions are poorly understood, and merit a new program of research.

8.2.3 Equity exchange at the edges of ownership

This study is one of a series conducted by the present research team that focus on equity exchange behaviours at the household level. The findings of this study are consistent with the 'cascade hypothesis' developed in Ong et al. (2013) which suggests that selling up is a last resort to mobilise housing wealth once equity borrowing opportunities have been exploited, perhaps to a level in which debts are not sustainable. Given the importance that some attach to personal debt as a contemporary cause of financial stress, further research on this 'cascade effect' is warranted.

8.2.4 Housing prospects in the 'rent-free' sector

The importance of rent-free housing as a destination for many of those falling out of ownership in this study is an important finding for both countries. The modelling

exercise shows that exit is precipitated by unemployment, relationship breakdown and (in the UK) poor health. These qualities may make rental housing as hard to sustain as ownership (except for social renters). The rent-free period identified in the study could therefore be a period of actual or hidden homelessness. It does sometimes form a bridge back into ownership, when combined with employment and good financial fortune, but where this does not occur, it is not clear where households end up. More should be known about the longer term destination of those who exit ownership at various stages across the life course.

8.3 Policy recommendations

It cannot be said that levels of exit from ownership are very high in either country, given the economic shock waves of the GFC. Nevertheless, they are higher in Australia than in the UK, and the study shows that exiting makes demands on the public purse. This raises the question of whether there are gains to be made by encouraging greater lender forbearance and improving state assistance with a view to keeping Australian home buyers *in situ*. Certainly, if trends persist, high rates of exit and increasing indebtedness across the life course might threaten an Australian retirement incomes policy which is based on low housing costs in older age. Evidence of churning at the edges of ownership raises a further suite of questions, relating in particular to the targeting of grants on first home buyers (on the one hand) and tax subsidies on high income, outright owners who are over 65 (on the other). There are many such policy recommendations for the current funding environment that could be motivated by the findings of this study. Two of the present authors have described relevant initiatives elsewhere in AHURI final reports (see especially Wood & Ong 2011, pp.12–15, but also Wood et al. 2010a, pp.59–61). Instead, in this report, we choose to profile a suite of options that would follow from paying more attention to equity finance.

Equity finance is a method of funding for owner-occupation and a way of managing financial stress at the edges of ownership that has barely been tried. Oddly, housing has always been almost exclusively debt-funded, even though a more logical sequence for the development of a 'small business' like residential property ownership, would be to include other investors to take an equity share. Equity finance has been under consideration for housing for some time, and Australia (with the UK) has been a key, if not all that substantial, player in this area to date. There is also growing international interest in housing market solutions that balance a generation of debt-funding with innovations on the equity side of the equation (Smith 2013; Smith et al. 2013). Some policy solutions to the problems identified in this report that could make use of equity finance are as follows.

8.3.1 Managing housing-centred wealth portfolios

The degree of equity exchange on the edges of ownership is much higher than anticipated. Equity borrowing is by far the most common method of mobilising wealth among all groups in the study. Even marginal home buyers, where their incomes and housing equity allow it, turn to equity borrowing to meet pressing spending needs. We have shown in other work that this style of borrowing is most common among those with least liquidity elsewhere in their wealth portfolio, and that it is in that sense a last resort among those who typically hold the majority of their wealth in their homes. However, while it is a cheap and easy way to raise cash, it is neither as safe nor as logical as using instruments specifically designed to enable owner-occupiers to mobilise housing wealth *in situ* by selling price risk, rather than by adding to debt.

8.3.2 Swapping the (high) costs of home purchase for (lower) rental outlays

The high level of churn in Australia may be an indicator of a well-functioning rental sector, which enables households to adjust readily to financial shocks and biographical disruption. However, in the modern financial world, requiring people to incur the costs and upheaval of moving home simply in order to exchange their high housing outlays as owners for the lower costs of renting is cumbersome. Theoretically, it is possible for owners to stay where they are but adjust their housing costs year on year, or even continuously, according to whether or not they want to 'rent' (and simply pay the user cost of occupancy) or 'own' (and also reap the investment return) across a particular reference period. This would reduce the level of churn, reduce the costs of housing assistance for temporary renters, and protect those at the edges of the ownership from the costs of residential relocation.

This theoretical possibility seems set to become a reality in Australia. DomaCom is deploying an internet based equity exchange market that allows Self-Managed Superannuation funds and other interested investors to invest in fractional equity shares in real property (DomaCom.com.au). The platform will ultimately enable investors to get into the property market in a similar manner to investing in shares on the stock market. For the home owner seeking to release a fraction of their housing equity, it represents an opportunity to be matched with investors who wish to hold assets supported by residential properties, but uneasy about over-exposure to a single asset risk. The owner pays an annual 'rent' on the equity share released, and hands over the part of the underlying property value represented by the fractional equity share on selling up. As such the market separates the right to occupancy, which is retained by the resident, from the investment return which is collected by the investor. While the concept may have obvious appeal for asset rich older home owners, it could also prove attractive for those struggling to sustain home ownership. They do not relish the disruption and costs of moving into cheaper rental housing, and so might be prepared to exchange future capital growth for lower housing costs that accrue on using capital sums to pay down mortgage debt.

8.3.3 Managing house price risks

Leavers who fail to regain ownership are distinctive for their financial stress. What is not widely recognised, and what the present analysis draws attention to, is the extent to which the little housing wealth they ever access and own is vulnerable. The credit risks facing this group are well documented, but the investment risks are not, even though being forced to exit owner occupation usually means losing everything, including the future worth of an asset whose title the occupant owns. This is the group whose wealth is most concentrated within housing, who have least control over when they may need to cash it in and are therefore most vulnerable to the hitherto-uninsurable ups and downs of the property market. A great deal of protection can be offered to those at the edges of ownership by developing a new style of mortgage contract with a wider range of risk sharing, which could include protection against negative equity. This will not only protect individuals but might also help stabilise the wider economy, or at least insulate it from the risks of price volatility in housing markets.

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APPENDICES

Appendix 1: CPI inflators

Table A1: CPI inflators, Australia and UK, 2001–10

Year	Australia		UK	
	CPI	Inflator	CPI	Inflator
2001	74.6	1.29	94.2	1.22
2002	76.9	1.25	95.4	1.20
2003	79	1.22	96.7	1.18
2004	80.8	1.19	98	1.17
2005	83	1.16	100	1.15
2006	85.9	1.12	102.3	1.12
2007	87.9	1.09	104.7	1.09
2008	91.8	1.05	108.5	1.06
2009	93.4	1.03	110.8	1.03
2010	96.1	1.00	114.5	1.00

Source: ABS 2012, Rate Inflation 2013

Appendix 2: User cost

Following the user cost expression derived in Wood (2003) we have:

$$u = (1 - \tau)i + \pi\alpha + u - \frac{\tau\pi_h\alpha}{1 - \tau} - \pi_h$$

where

u = home owner's user cost

τ = marginal income tax rate of home owner

i = home loan interest rate (LTV)

α = loan to value ratio

u = operating costs

π_h = house price appreciation rate

Table A2: User cost components

	Australia	UK
Marginal income tax rate	2001–10 progressive tax rates applied to taxable income as estimated in AHURI-3M	2001–10 progressive tax rates from the HM Revenue and Customs website http://www.hmrc.gov.uk/statistics/tax-structure/table-a2.pdf applied to personal gross income
Home loan	2001–10 financial year average of monthly standard home loan interest rates from the Reserve Bank of Australia on http://www.rba.gov.au/statistics/tables/index.html#interest_rates	2001–10 financial year monthly average of UK resident monetary financial institutions' (excl. Central Bank) sterling standard variable rate mortgage to households (in percent) not seasonally adjusted from http://www.bankofengland.co.uk/boeapps/iadb/index.asp?first=yes&SectionRequired=I&HideNums=-1&ExtraInfo=true&Travel=NIxSCxSUx
LTV	Mortgage debt as a proportion of primary home value at the start of the home ownership spell (or previous home ownership spell in the case of ex-home owners)	Mortgage debt as a proportion of primary home value at the start of the home ownership spell (or previous home ownership spell in the case of ex-home owners)
Operating costs = Maintenance rate + property taxes + building insurance premium	<p>Following Tanzer (1987), we assume that a property owner would typically have to spend 1.5 per cent of property value to reverse depreciation.</p> <p>Average property taxes are divided into average primary home values by state/territory using data from the 2009–10 Survey of Income and Housing (SIH) and applied to each year in the HILDA Survey</p> <p>Building insurance premium are set at 0.2 per cent in keeping with parameters in AHURI-3M.</p>	<p>Following Tanzer (1987), we assume that a property owner would typically have to spend 1.5 per cent of property value to reverse depreciation.</p> <p>Property taxes are derived from average council tax per dwelling from the https://www.gov.uk/government/statistical-data-sets/live-tables-on-council-tax website. It is then divided into average owner-occupied property value from BHPS and UKHLS to derive average property tax rates.</p> <p>Building insurance premium are set at 0.2 per cent in keeping with parameters in AHURI-3M.</p>
House price appreciation rate	Reserve Bank of Australia's target inflation rate of 2.5 per cent plus 1 percentage point = 3.5 per cent	Bank of England's target inflation rate of 2 per cent plus 1 percentage point = 2 per cent

Note: All parameters were derived from the relevant websites during April and May 2013.

Appendix 3: List of key variables

Table A3: List of key variables

Variable	Measurement	Definition
Age	Log of age	Continuous variable indicating the age of persons in the sample.
Age bands	Binary; equals 1 if persons fall under age band x , zero otherwise	Vector of dichotomous variables indicating the age band that persons fall under. Age bands are divided into five categories: (1) aged <35 years (omitted); (2) aged 35–44 years; (3) aged 45–54 years; (4) aged 55–64 years; and (5) aged 65 years or over.
Time indicators	Binary; equal to 1 if home ownership spell commenced in year x , zero others	Vector of dichotomous variables indicating year of home ownership spell; beginning of home ownership spell is the omitted category.
Self-assessed health band	Binary; equal to 1 if person's self-assessed health falls under band x , zero otherwise	Vector of dichotomous variables indicating the self-assessed health band that persons fall under. We divide the health bands into two categories: (1) persons who report that their health status is excellent (HILDA and BHPS/UKHSL), very good (HILDA/UKHSL) or good (HILDA and BHPS/UKHSL; omitted category); and (2) persons who report they their health status is fair (HILDA and BHPS/UKHSL), poor (HILDA and BHPS/UKHSL) or very poor (BHPS).
Self-assessed health	Categorical; equal to 1 if person's self-assessed health is excellent; 2 if it is very good etc.	Categorical variable denoting self-assessed health categories; there are five categories of self-assessed health: (1) excellent; (2) very good/good (HILDA and UKHSL/ BHPS); (3) good/fair (HILDA and UKHSL/BHPS); (4) fair/poor (HILDA and UKHSL/BHPS); and (5) poor/very poor (HILDA and UKHSL/BHPS);
Spell	Continuous;	Number of spells person has had in home ownership.
Marital status	Binary; equal to 1 if person's marital status is x , zero otherwise	Vector of dichotomous variables indicating marital status of persons. There are five categories of marital status: (1) Legally married (omitted); (2) De facto; (3) Separated or divorced; (4) Widowed; and (5) Single never married.

Variable	Measurement	Definition
Home ownership status	Categorical; denoted as 'In' if person is in home ownership, and 'Out' if person is out of home ownership.	Categorical variable denoting whether person is in or out of home ownership.
Number of children	Continuous	Number of dependent children living with self
Highest qualification	Binary; equal to 1 if person's highest qualification is tertiary, zero otherwise	Dichotomous variable to denote persons whose highest qualification is tertiary
Tertiary qualification	Binary; equal to 1 if person has tertiary qualification, zero otherwise	Dichotomous variable to denote persons who have a tertiary qualification
Employed full time	Binary; equal to 1 if person is employed full-time or part-time, zero otherwise	Dichotomous variable to denote persons who are employed in either a full-time or part-time job
Employed part-time	Binary; equal to 1 if person is employed full-time; zero otherwise	Dichotomous variable to denote persons who are employed on a full-term basis
Housing equity extraction via trading on	Continuous	Number of times persons extracted equity via <i>in situ</i> MEW during home ownership spell
Housing equity extraction via <i>in situ</i> MEW	Continuous	Number of times persons extracted equity via trading on during home ownership spell
Post-Global Financial Crisis (GFC) calendar years	Binary; equal to 1 if survey conducted in year <i>x</i> and after 2006; zero otherwise	Vector of dichotomous annual time variables that capture yearly effects of the GFC in post-GFC years (from 2007 onwards)

Variable	Measurement	Definition
User cost from last observation in home ownership (%)	Continuous	Ex-home owner's user cost in last home ownership spell as a percentage of home's value
Amount of housing equity released upon selling up	Continuous	Person's home value minus their mortgage debt in last home ownership spell; expressed in thousands of dollars in 2010 prices
Annual rent	Continuous	Mean amount of annual rent paid net of Commonwealth Rent Assistance, expressed in thousands of dollars/pounds in 2010 prices
Real equivalised household gross income	Continuous	Amount of equivalised gross household income, expressed in thousands of dollars in 2010 prices
Stayer	Binary; equal to 1 if person has remained in home ownership; zero otherwise	Dichotomous variable to denote home owners who remained in home ownership over the entire sample period
Leaver	Binary; equal to 1 if person has left home ownership; zero otherwise	Dichotomous variable to denote ex-home owners who transitioned from home owner to renter over the sample period
Churner	Binary; equal to 1 if person has had more than one spell of home ownership; zero otherwise	Dichotomous variable to denote persons who have had multiple spells of home ownership
Permanent contract	Binary; equal to 1 if person has permanent employment contract; zero otherwise	Dichotomous variable to denote persons who are employed on a permanent or ongoing basis
Fixed term contract	Binary; equal to 1 if person has fixed-term employment contract; zero otherwise	Dichotomous variable to denote persons who are employed on a fixed-term contract
Casual contract	Binary; equal to 1 if person has casual employment contract; zero otherwise	Dichotomous variable to denote persons who are employed on a casual basis

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