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A Survey of Housing Equity Withdrawal and Injection in Australia

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Abstract

Over the past decade or so, aggregate data suggest a trend increase in housing equity withdrawal in Australia, potentially stimulating household spending. However, there has been little disaggregated information on how equity is being withdrawn and injected, the characteristics of households altering housing equity, and how funds from withdrawn equity are being used. This paper uses a survey of 4 500 households commissioned by the Reserve Bank of Australia (RBA) to address these questions.

The results suggest that, during 2004, the most common method of withdrawing equity was for a household to increase the level of debt secured against a property they already owned. In contrast, most of the value of equity withdrawn was associated with property transactions, with the typical property transaction resulting in a net equity withdrawal. Turnover in the property market is therefore likely to be an important driver of cycles in aggregate housing equity withdrawal. Bivariate and logit analysis suggests a significant life-cycle influence, with the bulk of equity withdrawal being undertaken by older households, while younger households typically inject, primarily through mortgage repayments or deposits for property purchase. Finally, the results suggest that the bulk of the value of withdrawn equity was used to increase non-housing assets, although a significant proportion of households used the funds for consumption expenditure.

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A SURVEY OF HOUSING EQUITY WITHDRAWAL AND INJECTION IN AUSTRALIA

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1.   Introduction

Over recent years in Australia, housing-secured debt has increased by more than household spending on new housing, renovations and housing transfer costs. As a result, the household sector has extracted equity from the housing stock, in contrast to the experience of previous decades (Figure 1).[1] The move from a situation of net equity injection to one of net equity withdrawal has coincided with strong household consumption growth and a decline in the household saving rate. A similar phenomenon has been experienced in many other countries.

Figure 1: Housing Equity Withdrawal
Four-quarter moving average
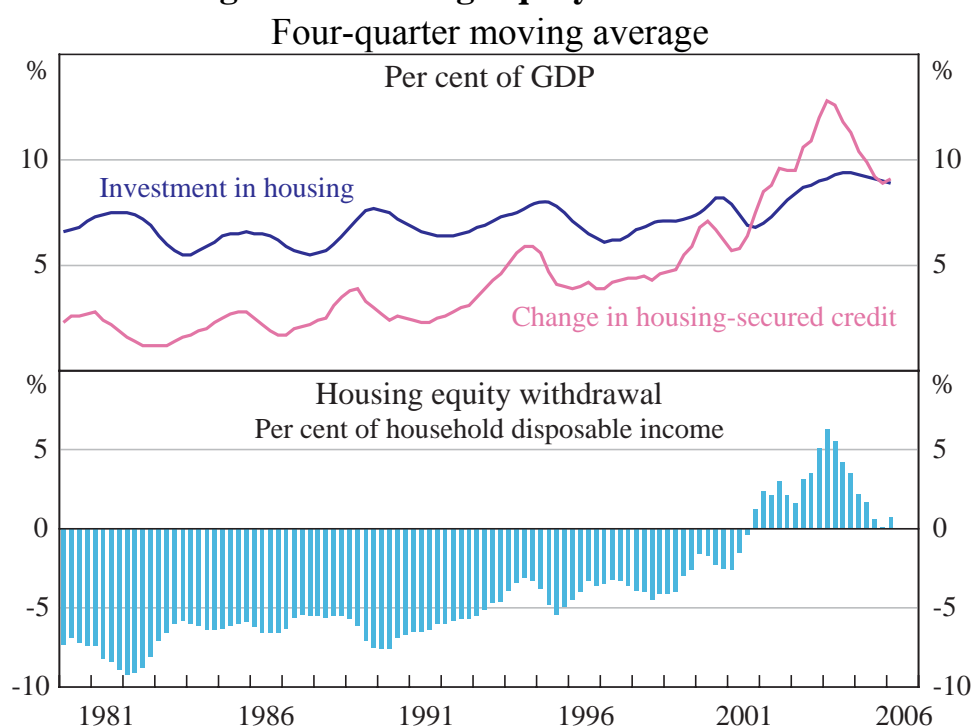
Sources: ABS; APM; Australian Treasury; RBA

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[1]   Measuring aggregate housing equity withdrawal is not straightforward, particularly with regards to spending on new housing, as discussed in Appendix A.

The trend towards housing equity withdrawal in Australia over the past 15 years or so reflects fundamental changes to both the demand and supply side of housing finance. Lower nominal interest rates associated with lower inflation have allowed households to take on larger debts, and the relative stability of interest rates and the economy have given households greater confidence that they can service larger debt burdens. Competition among intermediaries has further driven down interest rates on housing loans and increased households' ability to access equity using more flexible mortgage products. These developments have been associated with strong growth in house prices, which has increased the amount of equity accessible by property owners.[2]

While we can identify macroeconomic factors conducive to housing equity withdrawal in Australia, little is known about the household behaviour underpinning it. Given this lack of information, the RBA commissioned a survey to better understand how households were withdrawing and injecting housing equity, the characteristics of households engaging in these activities, and how the withdrawn funds were used. The survey covered flows over 2004 associated with housing debt, housing transactions, and renovation spending. In addition to being the first of its kind in Australia, this comprehensive survey represents an important extension to the more narrowly focused international literature on this topic.

The rest of the paper is structured as follows. Section 2 discusses key concepts and reviews the international literature on housing equity withdrawal and injection. Section 3 provides details of the survey. Sections 4 through 6 present survey results on how equity was withdrawn and injected, the characteristics of the households that withdrew and injected, what the withdrawn funds were typically used for, and where the injected funds were sourced. Section 7 considers the implications of the survey results for aggregate housing equity flows and economic activity. Section 8 concludes.

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[2] These fundamental changes have been discussed at length in many RBA publications and elsewhere. See, for example, RBA (2002a, 2002b).

2.   Concepts and Literature Review

Housing equity withdrawal and injection refer to the net cash flow by households from transactions in housing-secured debt and housing assets. Withdrawals and injections can occur in many different ways. One way for a household to *withdraw* housing equity is to increase the level of debt secured against a property they already own through methods such as refinancing and increasing the size of the loan, or drawing down a home-equity style loan. Another is by reducing property holdings (for example, by downsizing).[3] Households can *inject* equity into a property they already own by paying down housing debt or undertaking renovations financed, at least partly, from their own funds. Households increasing their property holdings often also inject equity through a deposit.

There are many factors potentially underlying a household's flow of housing equity, including their preferences regarding:

- consumption and saving, such as a desire to smooth consumption over a lifetime or in response to temporary changes in income;

- financial management, such as asset diversification (by using accumulated housing equity to purchase other non-housing assets), replacing higher interest-rate personal debt with housing-secured debt, or using surplus funds to either pay down housing debt or invest in property; and

- living arrangements, often associated with their stage of life (for example, an elderly household selling a long-held owner-occupied property to move into a retirement home is likely to withdraw equity, while a first-home buyer will typically inject equity).

The trend of increased housing equity withdrawal evident in a number of countries over the past decade or so has prompted a number of surveys to help better understand this development. Many of these had a narrow focus on housing equity withdrawal not related to property transactions. Canner, Dynan and Passmore (2002) from the United States Federal Reserve looked at refinancing

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[3] The household sector as a whole typically does not withdraw equity in this way since it implies sales to other sectors of the economy or non-residents.

behaviour of US households for the period January to June 2002. A similar survey of Dutch homeowners that had taken out at least one mortgage between 1995 and 2000 was commissioned by the Dutch central bank (de Nederlandsche Bank 2000) and repeated in 2003 (van Els, van den End and van Rooij 2005).

In late 2000, the Bank of England commissioned a more comprehensive survey of UK households (Davey and Earley 2001). In addition to withdrawals through mortgage refinancing, the survey covered equity flows resulting from some property transactions, including equity injections. The survey covered mortgage holders that had moved house, refinanced, or taken out a further advance or a second mortgage during the previous two years. However, by surveying only mortgage holders, this survey was not able to identify equity flows by those moving into a debt-free property or withdrawals by last-time sellers (that is, those selling their entire residential property portfolio).

To better capture these flows, an additional module was added to the Survey of English Housing in 2003, with the results summarised in Benito and Power (2004). Even so, the last-time sales category still excluded what they considered to be the most significant component – the sale of properties resulting from the death of an owner. Consequently, the authors scaled up the recorded data on last-time sales by a factor of five. This approach was also followed by Smith and Vass (2004), who noted that these data should be treated with caution.

While differences in the samples and timeframes over which these surveys were conducted make it difficult to compare the various studies, some common themes emerge. First, refinancing appears to be a relatively common phenomenon, with between one-fifth and one-half of households with mortgages found to have refinanced during the survey periods.[4] Second, households refinancing their mortgage often increased the size of their loan at that time, with estimates of the share doing so typically ranging from one-third to two-thirds. The share is likely to vary with economic and financial conditions, as a greater number of US refinancers increased their loan in 2002, following strong house prices gains, than did so in 1999 (Canner *et al* 2002). Third, the UK surveys found that households

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[4]   In countries like the US, where the bulk of mortgages are at long-term fixed rates, refinancing is very common when interest rates are falling.

moving house were relatively less likely to access additional funds than refinancers, but accounted for a much larger share of the value accessed.

Information on equity injection was only available from the UK survey discussed in Davey and Earley (2001), and covered equity injection associated with refinancing and property transactions only. Among UK mortgage holders, 18 per cent said they injected equity during the previous two years, made up of 39 per cent of movers and 13 per cent of refinancers. For the majority (55 per cent) of the households that injected equity, the additional funds came from their own savings. In addition, gifts or loans from relatives or friends were more commonly mentioned as a source of funds by movers compared with refinancers, most likely reflecting some assistance for first-time buyers.

These surveys also provide some information on the characteristics of those households accessing funds as a result of the above activities. According to results in Canner *et al* (2002) and Davey and Earley, households were more likely to access additional funds when refinancing or moving if they: had low loan-to-valuation ratios (LVRs); viewed that it was a good time to use credit; or were households that tended not to pay off their credit card balances. Conversely, homeowners that believed that they had a higher chance of losing their jobs were less likely to borrow additional money when refinancing. Factors such as age, education and income were not found to be important determinants. The choice of borrowing against the value of their house as opposed to obtaining funds by other methods also appeared to be importantly influenced by the relative ease of accessing housing equity, with households that had experienced capital gains more likely to access housing equity. Smith and Vass (2004) concluded that households with at least one flexible feature in their mortgage were more likely to withdraw equity, but the authors do not provide details of the 'limited analysis' undertaken.

On the issue of the use of housing equity withdrawn, these surveys indicate that the most common was spending on renovations, hence not strictly constituting a net equity withdrawal. While some of the funds were also spent on consumption items, significant amounts were used to repay other debts or purchase financial assets. Both the 2000 and 2003 UK surveys show that households that accessed funds by selling property were less likely to spend the funds than non-transactors, opting instead to either pay down debt or acquire financial assets. Nevertheless, most of

the funds accessed by non-transactor households retaining their existing property were used to finance renovations, with only a small proportion consumed.

In Holmans (2001), time-series estimates of the various gross housing equity flows in the UK are presented. His work highlights the importance of property transactions, particularly of last-time sellers, and that withdrawals by last-time sellers are strongly correlated with both house prices and property turnover – a result supported by Greenspan and Kennedy (2005) for the US. Similarly, according to Holmans, injections as a result of property transactions – predominantly deposits by first-time purchasers – account for around half of total gross injections (excluding those associated with renovations).

The common finding to emerge from all of these papers is that households refinancing and increasing the size of their loan used a large share of these funds for renovations, with a smaller share used for consumption. For the limited number of papers that address different methods of withdrawal, the use of funds tended to vary with the method, with equity released via property transactions – which typically accounted for the bulk of gross housing equity withdrawal – less likely to be used on consumption. Information on equity injections is more limited, but injections associated with property transactions appear to be significant relative to overall flows.

3.   The Survey

3.1   Design

The RBA's survey of Australian households builds on these earlier surveys in several important respects. The aforementioned surveys examined the withdrawal or injection of equity associated with individual events, whereas the survey undertaken for this paper focused on net injection or withdrawal over the course of a calendar year. This approach ensures coverage of injections as a result of regular or lump-sum principal repayments – important forms of injection not captured by these earlier surveys. Other forms of injection, including renovations, were also dealt with more comprehensively in this survey by capturing renovations that were financed without debt. In another advance, the survey asked respondents about

inherited residential property and funds received from the sale of inherited property. This is necessary because sales of deceased estates result in an equity withdrawal, which otherwise would not be captured. The survey also collected information on the features of each household's mortgage to assist in gauging the importance of financial innovations to housing equity flows.

The RBA engaged Roy Morgan Research (RMR) to assist in questionnaire design and conduct the survey. The results in this paper are based on 4 500 respondent households, interviewed by telephone in February 2005.

The myriad of ways in which households can withdraw or inject housing equity required a questionnaire with different paths depending on the behaviour of the household. At its core, the questionnaire asked for data relating to changes in housing-secured debt and housing-related transactions over 2004. Respondents were asked about the characteristics of their property holdings, followed by questions to determine how their housing equity had changed over 2004. From these responses, it was possible to determine whether the household was a net withdrawer, injector or neither. Finally, there were questions about the use of funds by withdrawers and source of funds for injectors. Further information on survey design, fieldwork, data preparation and sample characteristics is available in Appendix B. An abridged copy of the survey and the raw data are available on request from Economic Publications.

3.2   Calculating Equity Withdrawal and Injection

Over a given period, households may undertake a number of housing equity withdrawals and injections or take no such actions at all. For the purpose of analysis, households were divided into withdrawers and injectors on the basis of the net result of their actions over 2004. That is, over 2004, a household made a net equity *withdrawal* if the change in housing debt minus the change in housing equity from property transactions (including inheritances flowing from the sale of property) minus renovation expenditure was greater than zero. Similarly, a household made a net equity *injection* if this calculation was less than zero. These calculations are described in further detail in Appendix C.

In analysing the results, households identified as having withdrawn or injected net equity over 2004 were classified into two further broad sub-groups: transactors in the property market, and non-transactors.

The group of households that undertook *property transactions* includes: households that reduced their property holdings; households that increased their property holdings, often as a first-home buyer or an investor; and those that were both buyers and sellers. For the bulk of this group, the housing equity flows associated with their transactions were the main drivers of whether they made a net withdrawal or injection over 2004.

Non-transacting property owners that injected equity did so by paying down principal on existing debt or through renovations financed, at least partly, from their own funds. Those that withdrew equity increased housing-secured debt via methods such as refinancing or drawing down a home-equity style loan. Households that withdrew in this way included some renovators, where the increase in housing-secured debt exceeded the amount spent on renovations.

4. How was Equity Withdrawn and Injected?

Aggregate data on housing equity withdrawal provide little insight into how households withdraw and inject equity, and how widespread such activities are. This section provides results from the survey on these questions.

According to the survey, 42 per cent of households changed their housing equity over 2004; 12 per cent of households made a net withdrawal of equity over 2004, while 30 per cent made a net injection (Table 1). The remaining households neither withdrew nor injected equity, largely because they did not own any property, or owned their property outright.

By number, the bulk of households changing housing equity were non-transactors – 33 per cent of households versus 9 per cent that were property transactors. Around 7¼ per cent of households made a net equity *withdrawal* by increasing debt on their existing property; for these households, the median increase in debt over the year was $20 000, while the mean was considerably larger. A much larger

number of households *injected* equity into their existing property, with 19 per cent of all households injecting equity through scheduled and additional payments on their housing loans, and a further 6½ per cent injecting equity through renovations. The median value of injections by non-transactors was considerably smaller than the median withdrawal made by non-transactors.

Table 1: How Equity was Withdrawn and Injected			
	Share of all households (per cent)	Median value ($)	Mean value ($)
Non-transactors in property			
Withdrawal of equity by increasing debt	7.3	–20 000	–36 700
Injection of equity by:			
Paying down debt	19.0	9 000	19 500
Renovating	6.5	14 000	31 800
Property transactors			
Withdrawing equity	4.4	–82 700	–159 100
Injecting equity	4.6	55 100	122 200

The finding that 9 per cent of households were involved in at least one property transaction in 2004 is broadly consistent with the available housing turnover data. These households were almost equally split between those withdrawing and injecting equity. However, the median change in equity resulting from these transactions was considerably larger than for non-transactors, such that property transactions contributed the bulk of the value of gross injections and withdrawals.

4.1 Withdrawals

Almost three-quarters of the value of all (net) withdrawals by households that were net withdrawers over 2004 were accounted for by those that engaged in property transactions (Table 2). Of the net withdrawals by property transactors, around three-quarters of the value was accounted for by the 2.7 per cent of households that sold more properties than they bought. This large contribution in part reflects the larger median withdrawal by such households – $125 900 versus $33 500 for withdrawals based on other combinations of property transactions. These other property transactions were fewer in number and smaller in value, but nonetheless

remained significant as a share of overall withdrawn equity – accounting for almost one-fifth of the total value withdrawn.

Table 2: Housing Equity Withdrawal by Method			
	Share of all households (per cent)	Median value ($)	Share of value withdrawn (per cent)
Non-transactors in property	**7.3**	**20 000**	**27.9**
Refinancing and new loans	4.5	28 000	20.3
Redraw facilities	1.4	11 000	3.0
Revolving credit	0.7	20 000	3.4
Withdrawal from offset account	0.3	8 000	0.6
Cannot say/other	0.5	6 000	0.6
Property transactors	**4.4**	**82 700**	**72.1**
Sold more properties than bought	2.7	125 900	54.1
Bought more properties than sold	0.9	18 300	10.7
Bought and sold equal number of properties	0.8	54 000	7.4
Downsized	0.4	53 600	4.3
Upsized	0.3	82 700	3.0

Notes: Components may not sum due to rounding. The 'sold more properties than bought' category includes households that sold a property they inherited, and households that received a bequest funded by the sale of a deceased estate.

Sales of owner-occupied property – which include last-time sales of elderly households' properties – appear to be associated with larger net equity withdrawals than sales of investment property. This is consistent with the finding that for those that sold more properties than they bought, the median LVR of owner-occupied properties sold was slightly lower than it was for investment properties (Table 3); this is not surprising given the tax advantages of interest deductibility for investment properties.[5] This is despite the fact that the typical investment property had been held for slightly longer than the typical owner-occupied property, allowing more time to accumulate capital gains and pay down debt. Owner-occupied properties also tended to sell for more than investment properties and

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[5] Valuations were provided by the household. However, we believe that our analysis is unlikely to be biased by subjective valuations for the same reasons described in Ellis, Lawson and Roberts-Thomson (2003). In addition, it may be that households' *perceptions* of their financial position are more relevant to our analysis than is their actual position.

second homes, consistent with investment property being generally more concentrated in cheaper housing stock such as units (see Appendix D).

Table 3: Sales by Withdrawers that Sold More Properties than they Bought

Variable	Units	Owner-occupied property	Investment property	Second home/land
Share	Per cent	36.6	29.1	34.3
Median sale price	$	274 000	258 000	160 000
Median time held	Years	5	6	6
Median debt at sale	$	110 000	104 000	–
Median LVR at sale	Ratio	0.50	0.58	–

Notes: Debt and LVR are only for properties that had debt outstanding at the time of sale. Medians are not reported where sample size is very small.

Of the households that sold more properties than they bought, 36.6 per cent sold their main residence. Of these households, around 40 per cent moved into rental accommodation; most of the rest moved into a property which they already owned. A small number of these transactions appeared to reflect just one leg of a transaction, with households either moving into a property that had been purchased in 2003 or planning to purchase a property in 2005.

Investors selling more properties than they bought appear to have typically been experienced property investors, with a median holding period of six years for the properties that they sold. Despite the sales, these households finished the year with an average of 2½ properties.

Of the non-transacting households that withdrew equity, by far the most common methods were to refinance an existing loan and increase the outstanding balance or to take out a new loan. Two other common methods were drawing upon previous excess principal payments or drawing on a revolving or home-equity type facility. Around 20 per cent of non-transactor households that withdrew equity also undertook renovations. The methods these renovating households employed to increase their debt were in similar proportions to the overall group, though the median amount these households withdrew was slightly larger at $22 500.

4.2 Injections

In contrast to the results for households withdrawing equity, for households that made a net equity injection over 2004, the value of injections was split fairly equally between non-transactors and transactors. This reflected a large number of non-transacting households making small injections by paying down debt or renovating, balanced by a small number of households making large injections through property transactions (Table 4).

Table 4: Housing Equity Injection by Method

	Share of all households (per cent)	Median value ($)	Share of value injected (per cent)
Non-transactors in property	**25.5**	**10 000**	**50.7**
Reducing debt on existing property	19.0	9 000	32.5
Scheduled repayments of principal	9.6	7 000	10.4
Regular repayments greater than minimum required	6.7	10 000	10.6
Irregular lump-sum payments	2.1	21 400	8.4
Refinanced loan	0.3	12 000	1.7
Cannot say/other	0.2	–	1.3
Renovations	6.5	14 000	18.3
Property transactions	**4.6**	**55 100**	**49.3**
Sold more properties than bought	0.4	52 400	2.0
Bought more properties than sold	3.6	58 800	41.0
Bought and sold equal number of properties	0.6	35 600	6.2
Downsized	0.0	–	0.4
Upsized	0.6	35 600	5.8

Notes: Components may not sum due to rounding. The 'sold more properties than bought' category includes households that sold a property they inherited, and households that received a bequest funded by the sale of a deceased estate. Medians are not reported where sample size is very small.

Within the 19 per cent of households that injected equity by *reducing debt on their existing property*, 9.6 per cent reported that they simply made the regular scheduled repayments, while an additional 6.7 per cent made regular repayments above those required by their lender. A further 2.1 per cent indicated that they made irregular lump-sum repayments. These one-off lump-sum payments tended

to be relatively large, so that they accounted for a disproportionately high share of the total equity injected.

Around 6½ per cent of households injected equity over 2004 through *renovations*, financed, at least partly, from their own savings. In total, this amounted to around 18 per cent of the total amount of equity injected by households that made a net injection over 2004.

Within the 4.6 per cent of households that injected equity and undertook a *property transaction*, most purchased more properties than they sold, accounting for the bulk of equity injected by property transactors. Over half of the properties purchased by this sub-group were owner-occupied homes (Table 5), with around 40 per cent of these purchased by first-home buyers. The owner-occupier purchases tended to be associated with more expensive properties and lower debt levels compared to those for other properties. These results are consistent with investors' preferences for relatively cheaper property and higher gearing mentioned in Section 4.1. It is worth noting that the LVRs on the purchased properties were significantly higher than the overall LVR of households undertaking these transactions (that is, these households often had other, less indebted, property holdings).[6]

Table 5: Purchases by Injectors that Bought More Properties than they Sold				
Variable	Units	Owner-occupied property	Investment property	Second home/land
Share	Per cent	57.5	26.6	15.9
Median purchase price	$	260 000	235 000	160 000
Median debt at purchase	$	210 000	233 000	200 000
Median LVR at purchase	Ratio	0.84	0.99	0.97
Note: Debt and LVR are only for properties that had debt outstanding at the time of purchase.				

A comparison of the results regarding the methods of housing equity withdrawal and injection underscores the importance of transactions to overall flows of housing equity withdrawal. In particular, for the sub-groups of property transactors most important for overall housing equity flows, sellers typically withdrew more equity than buyers injected, partly reflecting much higher debt levels among

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[6]   These LVRs are also higher than previous estimates (Coleman *et al* 2005).

buyers. This is consistent with the influences of life-cycle factors and house price gains discussed in Section 2 and further explored in Section 5. It also follows that shifts in the level of aggregate transaction activity will likely be associated with changes in the value of aggregate housing equity withdrawal, as canvassed in Section 7.

5. Characteristics of Households Withdrawing and Injecting Equity

Having identified the various methods through which households withdrew and injected equity during 2004, it is of interest to consider whether there are common characteristics across households that withdrew or injected equity.

5.1 Key Bivariate Relationships

The survey data confirm that age and income are key variables in distinguishing households that altered their housing equity from the rest of the population. The results are consistent with previous work that show age and income to be important determinants of the incidence of homeownership with debt (see Ellis *et al* 2003). They also confirm that households that own property, particularly those with housing debt, are most readily able to withdraw or inject equity.

Figure 2 shows the age profile of households in the survey – where age is determined by that of the household head, defined as the main income earner. Those aged between 40 and 49 accounted for the highest proportion of households that changed housing equity, and the highest proportion of property owners with housing debt. In comparison, the age profiles for all households and all property owners are much flatter. Also, withdrawers and injectors tended to have higher household incomes than the general population, as did property owners – particularly indebted property owners.

**Figure 2: Age Profile of Surveyed Households**

Per cent of households in each group
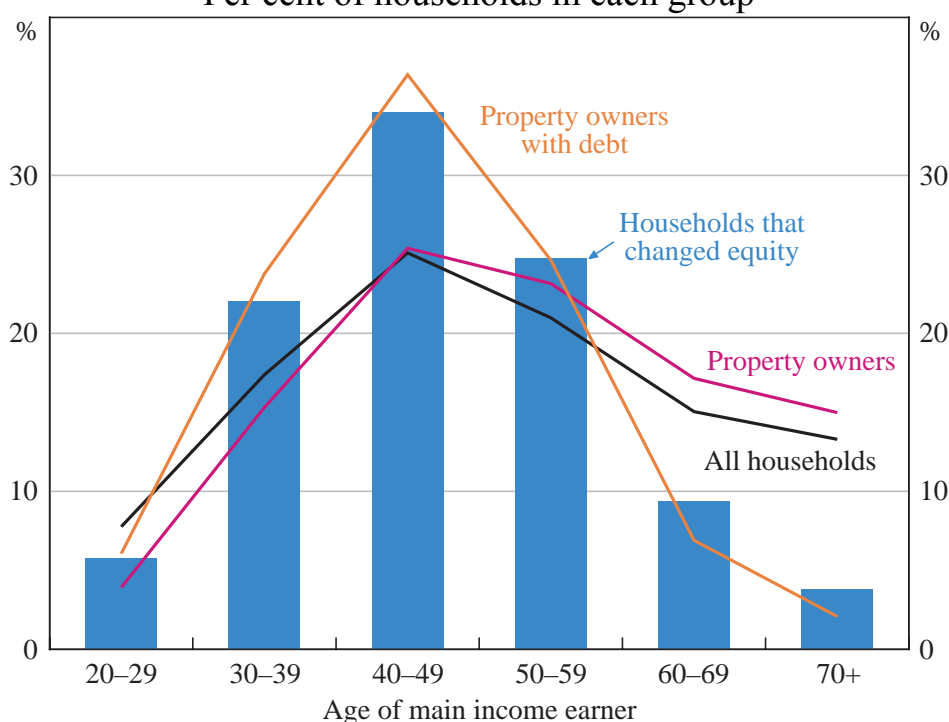
Note: Households with main income earner under 20 years of age not shown

Age also differed notably between households that withdrew equity and those that injected, with withdrawer households typically older. The breakdown of average net housing equity flows from the survey data by age shows that, over 2004, households with a household head aged between 20 and 49 years were typically equity injectors (Figure 3). In contrast, older households were typically net withdrawers, with the size of the average net withdrawal increasing with age. This is consistent with the typical life-cycle pattern whereby younger households inject equity when they purchase their first home and trade up to more expensive housing in mid-life, before withdrawing equity when they sell property in their later years. Such a profile is also implied by the use of housing as an investment vehicle, given households will typically accumulate equity in their peak earning years. Indeed, of households that engaged in a property transaction and withdrew equity, just over half were 50 years of age or older, and they accounted for 61 per cent of the value of equity withdrawn by property transactors. In comparison, the same age bracket accounted for less than 40 per cent of total net injections.

Figure 3: Average Net Housing Equity Withdrawal by Age

All households
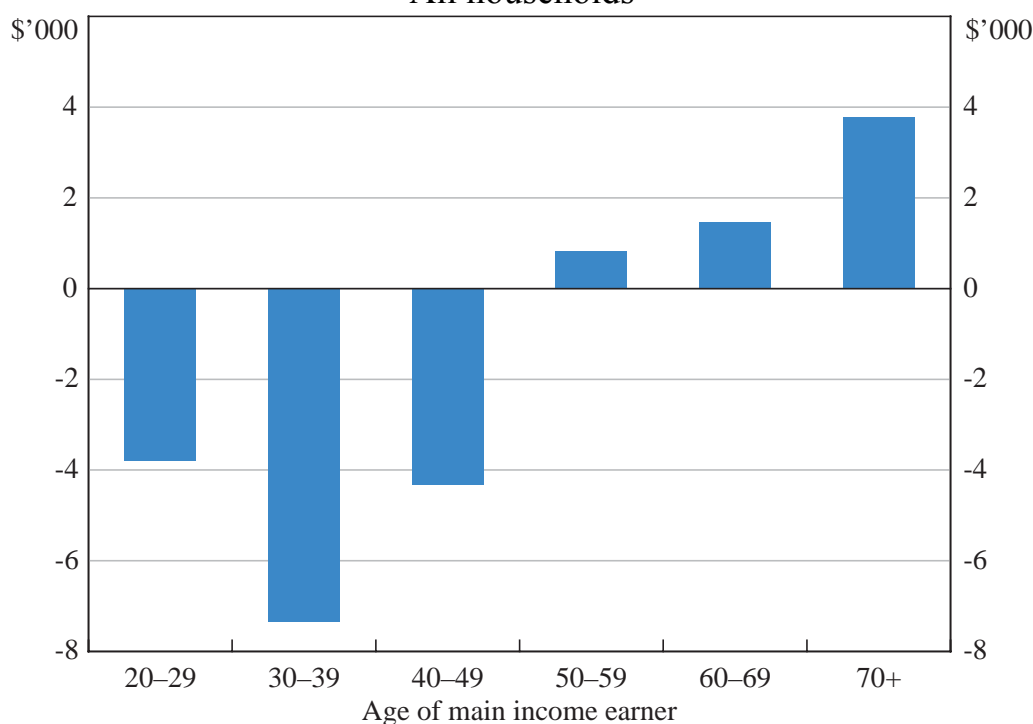
Note: Households with main income earner under 20 years of age not shown

5.2   Empirical Modelling

In this section, we present some formal empirical results that help to further evaluate the relative influence of different household characteristics on their propensity to inject or withdraw housing equity and on the value of such flows. We aim to address three questions, which together build towards an understanding of the drivers of aggregate housing equity withdrawal. First, what characteristics influence a household's decision to alter their housing equity? Second, for households that did alter equity, what influenced whether they injected or withdrew? Third, what factors affect the average value of such adjustments? Throughout this section, we separate households that transacted in property from those that did not (transactors and non-transactors). This treatment, supported by the data, reflects that the decision to alter equity through a property transaction is typically undertaken as part of a change in dwelling ownership, which involves a much larger set of considerations than the decision to alter equity without a property transaction.

Modelling transactor withdrawals and injections

Assessing the characteristics that influence whether transacting households adjust or maintain their housing equity turns out to be a trivial exercise, as no household in the survey that made a property transaction maintained a constant level of housing equity. Given this, we move directly to the second question of what characteristics influence whether such households inject or withdraw.[7]

A logit model is an appropriate tool for modelling the discrete choices of property transactors. The random variable, *y*, is defined so that it is 0 if the household injected equity and undertook one or more transactions, and 1 if the household withdrew equity and transacted. The probability that a household withdrew equity, given it transacted property, is given by:

$$P(y = 1 \mid \mathbf{x}) = \exp(\mathbf{x}\beta_j) / [1 + \exp(\mathbf{x}\beta)] \tag{1}$$

where *x* is a vector of household characteristics and *β* a vector of coefficients.[8]

Results of this logit model are shown in Table 6. The model is able to identify which households injected and which households withdrew equity, with an overall accuracy rate of 77 per cent.

The role of the life-cycle is clearly evident, consistent with the bivariate analysis in Section 5.1. Households whose main income earner was in their 30s, 40s or 50s predominantly injected equity following a property transaction, while households whose head was in their 60s or 70s predominantly withdrew equity.[9]

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[7] While it is probable that households purchasing property inject and households selling property withdraw, and hence that our model partly captures factors influencing the decision to buy or sell property, there are a number of households for which this is not true.

[8] For details on the construction of variables used in the regressions, see Appendix D.

[9] The age variable is categorical, with an open-ended '70 years and older' bracket. The income variable is similarly constructed (with '$130 000 or more' the open-ended response). The results are relatively insensitive to the use of larger intervals or dummy variables for these variables, and to the exclusion of households in these categories, suggesting that the results would be robust to the use of better-measured age and income variables.

Table 6: Propensity to Withdraw Rather than Inject Housing Equity
Property transactors

	Coefficient	Marginal effect	Mean	Units
Demographic characteristics				
Age	–0.125*	–0.05	47.7	5 year intervals
Age^2	0.001*			
Employed	–1.588**	–0.35	0.80	Dummy variable
Retired	–2.262***	–0.43	0.13	Dummy variable
Couple	–0.513*	–0.13	0.66	Dummy variable
University educated	–0.646**	–0.16	0.38	Dummy variable
Investor	–0.354	–0.09	0.29	Dummy variable
Financial characteristics				
Household income	0.020	0.09	$71 700	$10 000 intervals
Household income^2	0.000			
Housing equity	0.191***	0.43	9.02	Log dollars
Number of properties	0.693***	0.17	1.27	Number
In debt	–1.317***	–0.31	0.34	Dummy variable
LVR	–0.697	–0.07	0.18	Ratio
Constant	2.445			
Per cent correctly predicted	77			
Pseudo-R^2	0.248			
Number of observations	386			

Notes: ***, ** and * represent significance at the 1, 5 and 10 per cent levels. Marginal effects are calculated: for dummy variables as a change from 0 to 1; for the number of properties as a change from 1 to 2; and for age and income as 1 interval change from the mean. Age and income are both categorical variables that enter as the midpoint of each range (with income expressed in thousands). Marginal effects for other variables are calculated as elasticities ($\delta lnx/\delta lny$). Housing equity, number of properties, presence of housing-secured debt (in debt) and LVR are defined as at 31 December 2003.

The results also suggest that portfolio rebalancing plays a part in determining the likelihood of withdrawal. For example, households with greater housing equity were more likely to withdraw equity following a transaction than those with less housing equity. Households with relatively easy access to housing equity as a source of funds were also found to be more likely to withdraw than inject, as evidenced by a positive coefficient on households with a larger number of properties (such that they were more readily able to liquidate part of their holdings). However, some surprising results are also evident; retirees that

transacted in property were found to be *less* likely to withdraw than were other households, as were property-transacting couples.

To model the *value* of injections and withdrawals undertaken by property transactors, we use sub-sample ordinary least squares (OLS), with separate equations for injectors and withdrawers.[10] The decision to use sub-sample OLS rests on a desire to model *actual* decisions, rather than *possible* decisions. In other words, our approach is to estimate what factors influenced the value injected or withdrawn, given that a household had already decided to inject or withdraw (the conditional probabilities). This is preferable to estimating the unconditional probabilities if the decision to inject or withdraw was taken *prior* to the decision regarding the amount, as we assume. The results are shown in Table 7.

Table 7: Value of Injections and Withdrawals
Property transactors

	Withdrawers	Injectors		Withdrawers	Injectors
Demographic characteristics			**Financial characteristics**		
Age	0.564**	0.042***	Number of properties	0.346**	
Age^2	–0.012**		Household income	0.000	0.007**
Age^3	0.000**		Housing assets	0.252***	
Professional		0.519**	Housing equity		–0.114***
Couple	–0.430*		In debt	–0.425*	0.390
Investor	–0.147	0.786**	LVR	–1.356***	0.166
Metropolitan	–0.384**		Constant	–0.203	8.498***
Adjusted R^2	0.472	0.172	Number of observations	184	201

Notes: ***, ** and * represent significance at the 1, 5 and 10 per cent levels, calculated using robust standard errors. The dependent variable is defined as the log of the absolute value of injection or withdrawal. Age and income are both categorical variables that enter as the midpoint of each range (with income expressed in thousands). Housing assets, equity, number of properties, presence of housing-secured debt and LVR are defined as at 31 December 2003.

Age appears to play an important role in determining the average value of withdrawals, in addition to the role it plays in influencing the propensity to withdraw. The value of withdrawals tended to be higher for households whose head was in their mid to late 30s, lower for those nearing retirement, and higher again for older households trading down or selling outright. In contrast, there is

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[10] The value of injections or withdrawals is specified in log terms.

little variation in the value of injections as households aged. Diversification considerations seem to influence the values withdrawn and injected; households with large asset holdings tended to withdraw more, and those with more housing equity tended to inject less. Also, high levels of borrowing (measured by the LVR) tended to reduce the amount withdrawn, perhaps reflecting constraints against further borrowing or even that they had withdrawn substantial equity previously.[11]

Modelling non-transactor withdrawals and injections

The appropriate framework for modelling non-transactors' *propensity* to inject or withdraw equity is less clear than for transactors. It is theoretically desirable that the three choices facing non-transactors – to inject, withdraw or maintain their equity – be modelled in a single framework to take account of the simultaneity of these decisions. However, estimates from a multinomial model that includes these three decisions indicate that there is little distinction between households that injected and households that withdrew.[12] Consequently, we first model the decision of households to adjust their housing equity or maintain it using the logit framework represented by Equation (1) above. We restrict the sample to households that owned property at some time during the year, in order to abstract from households whose tenure choice precluded them from injecting or withdrawing equity. We then model the choice to either inject or withdraw equity for those households that made one of these choices, again using a logit framework. There is little loss of efficiency but a gain in clarity from this approach.

The fit of the model for the first regression is very good, with almost 90 per cent of households correctly identified. This partly reflects the fact that most households with a loan are required to make principal repayments irrespective of their other activities. Nevertheless, over 70 per cent of the households in the sample are still

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[11] Capital gains was excluded as an explanatory variable as this information is only available for properties still owned at the end of 2004.

[12] An alternative to the multinomial logit model is the ordered probit approach. However, this method suffers to an even greater extent from the similarity in character of injectors and withdrawers, given that it treats withdrawals as negative injections.

correctly identified in a model that removes all loan variables.[13] Table 8 (left-hand side) presents the results from this model.

The most notable influence on the decision to adjust equity, rather than maintain it, is the age of the household. Consistent with the results for transactors and those shown in Section 5.1, middle-aged non-transacting households are found to be particularly likely to have adjusted their housing equity. In contrast, older households typically did not make such adjustments. The implied probability for households to adjust their housing equity peaks when the household head is aged 40–44 years, and remains above 50 per cent until the household head is beyond retirement age.

Portfolio-rebalancing motives again appear to be important, as investors in housing and households with larger annualised capital gains were more likely to adjust their housing equity. Furthermore, households that were more easily able to access their funds – due to loan features such as an offset account – were also more likely to adjust their housing equity. One of the potential benefits of using these facilities (as opposed to selling other assets for example) to access funds is that the household retains ownership of the (property) asset, and hence the potential to benefit from any capital gains. Finally, and somewhat surprisingly, households with lower incomes were found to be more likely to adjust their equity than those with higher incomes.

In contrast to the high prediction rate for the first regression, the second model cannot correctly identify non-transactor households as either injectors or withdrawers, with all but five households estimated to have injected – suggesting caution in interpreting the results.[14] There are very few characteristics that are

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[13] An alternative approach would be to exclude non-indebted households from the regression. However, it is possible for such households to have withdrawn equity by taking out a loan during 2004, or to have injected through renovations, so we feel it is better to include this variable as a control, rather than restrict our sample.

[14] The model predicts most households to be injectors, rather than withdrawers, because the number of injectors by far exceeds the number of withdrawers. Excluding small withdrawals and injections (those under $20 000 in absolute value) modestly improves our ability to separate these two groups, with 33 per cent of withdrawers correctly identified. Under this alternative specification, income, LVR and housing assets all become significant.

Table 8: Decision to Adjust Housing Equity

Non-transactors

	Alter rather than maintain equity			Withdraw rather than inject equity			Units
	Coefficient	Marginal effect	Mean	Coefficient	Marginal effect	Mean	
Demographic characteristics							
Age	0.067**	0.01	53.9				5 year intervals
Age^2	–0.001**						
Employed	0.421	0.10	0.69				Dummy
Retired	0.566	0.14	0.27	–0.783**	–0.11	0.08	Dummy
Investor	0.387*	0.10	0.16	–0.359	–0.06	0.21	Dummy
Number of incomes				–0.109	–0.02	1.6	Number
Financial characteristics							
Household income	0.003*	0.09	$61 100	–0.002	–0.12	$74 400	$10 000 intervals
Housing assets	–0.020	–0.07	12.8	–0.162	–0.35	12.8	Log dollars
Number of properties	–0.162	–0.04	1.21	0.187	0.03	1.27	Number
Capital gains	0.021***	0.01	10.4	0.013**	0.01	11.1	% pa
In debt	3.114***	0.65	0.51	–0.163	–0.03	0.88	Dummy
LVR	0.201	0.02	0.17	–0.139	–0.03	0.30	Ratio
Ahead of schedule	1.145***	0.27	0.24	–0.521***	–0.09	0.44	Dummy
Redraw account	0.247	0.06	0.31	0.510***	0.08	0.55	Dummy
Offset account	0.732**	0.18	0.07	–0.025	0.00	0.14	Dummy
Line of credit				0.591***	0.11	0.19	Dummy
Other characteristics							
Detached house	–0.467**	–0.12	0.10				Dummy
Metropolitan	0.309**	0.08	0.37				Dummy
Constant	–5.703***			–0.415			
Per cent correctly predicted	88			78			
Pseudo-R^2	0.511			0.036			
Number of observations	2 861			1 443			

Notes: ***, ** and * represent significance at the 1, 5 and 10 per cent levels. Marginal effects are calculated: for dummy variables as a change from 0 to 1; for the number of properties as a change from 1 to 2; and for age and income as 1 interval change from the mean. Age and income are both categorical variables that enter as the midpoint of each range (with income expressed in thousands). Marginal effects for other variables are calculated as elasticities ($\delta lnx/\delta lny$). Housing assets, number of properties, presence of housing-secured debt and LVR are defined as at 31 December 2003.

found to distinguish the two groups (Table 8, right-hand side), with many characteristics that were important in determining whether such households adjusted equity not found to be important in determining whether they injected or withdrew equity. Those households with easy access to funds (due to a line of credit or redraw facility) were more likely to withdraw housing equity, as were households that had experienced larger annualised capital gains on their property. This adds to evidence suggesting that an extended period of strong house price growth is likely to support aggregate housing equity withdrawal. In contrast, households that were ahead of schedule on their loan repayments were more likely to inject equity, perhaps indicating a pre-established preference towards investing in their homes. Retirees are also (counter-intuitively) found to inject more often than withdraw, reflecting the high incidence of renovation spending by such households.

Our difficulty in modelling decisions regarding injecting versus withdrawing equity may reflect our inability to proxy what are likely to be significant distinguishing characteristics. For example, we have no proxy for households' tolerance for risk – those that are less risk averse are more likely to be willing to make withdrawals. Similarly, we do not have information on whether households suffered temporary shocks to their income during the year, with adverse shocks likely to encourage withdrawals and positive shocks encouraging injections. A second (potentially related) possibility is that middle-aged households tend to *both* inject and withdraw in regular succession, depending on their spending needs at the time. This would be consistent with the finding that households that can access their housing equity relatively cheaply (through loan features such as an offset account) are more likely to adjust their equity.

To model the *value* injected and withdrawn by non-transactor households, we use the same methods as for transactors – that is, sub-sample OLS. This regression is better able to distinguish between injectors and withdrawers than the previous logit regression. For households injecting equity, the value of these injections tended to be largest for those in their middle years, while there was little effect of age on the value of withdrawals (Table 9). Injector households whose heads were employed full-time also tended to make larger injections, consistent with consumption-smoothing motives, although there is no evidence that larger withdrawals were made by those not working. Households with multiple incomes were found to

inject less and withdraw more, perhaps reflecting the greater stability of their incomes. However, some surprising results are also evident; for example, households with high LVRs were found to adjust their equity by large amounts, regardless of whether injecting or withdrawing.

Table 9: Value of Injections and Withdrawals
Non-transactors

	Withdrawers	Injectors		Withdrawers	Injectors
Demographic characteristics			**Financial characteristics**		
Age	–0.004	0.050**	Household income	0.003	0.002**
Age^2		–0.001**	Housing assets		0.630***
Employed full-time		0.318***	Housing equity	0.391***	
Number of incomes	0.278*	–0.274***	In debt	–0.873***	–0.921***
Couple, no children		0.258***	LVR	1.251**	1.100***
Investor	–0.060	0.042	Capital gains	0.000	0.009**
Number of properties	0.152**		Payments ahead of schedule	–0.443***	0.331***
NSW	0.169	0.040	Redraw account		0.038
Victoria	0.313*	0.158	Offset account		0.262**
Queensland	0.397**	0.193*	Line of credit		0.223**
Constant	4.360**	–0.830			
Adjusted R^2	0.193	0.217	Number of observations	319	1 111

Notes: ***, ** and * represent significance at the 1, 5 and 10 per cent levels, calculated using robust standard errors. The dependent variable is defined as the log of the absolute value of injection or withdrawal. Age and income are both categorical variables that enter as the midpoint of each range (with income expressed in thousands). Housing assets, equity, number of properties, presence of housing-secured debt and LVR are all defined as at 31 December 2003.

Looking at both the propensity and value of injections and withdrawals by non-transactors, it is clear that total non-transaction-based housing equity withdrawal was underpinned by households in their middle years. Such households were more likely to inject and withdraw, and, when they did inject, tended to inject larger amounts than other households. Given the similarity of both injectors and withdrawers, it is also not surprising that those with relatively cheap access to their funds were more likely to adjust (and particularly withdraw) housing equity. Portfolio-rebalancing motives appear to have had a smaller, but still important, influence on non-transaction-based housing equity withdrawal. However, it is

difficult to distinguish households that injected from those that withdrew, although age, income stability and gearing ratios do appear to have had different effects on the average value of injections and withdrawals.

6. Uses and Sources of Funds

6.1 Uses of Funds by Equity Withdrawers

The survey asked all households that withdrew equity (in net terms) over 2004 what they did with the funds withdrawn. Respondents were prompted with a number of possible answers, including using the funds for various types of consumption, the purchase of various assets, and the repayment of non-housing-related debt. Overall, the results suggest that, while a significant share (18 per cent) of the equity they withdrew over the year was used mainly for consumption, the bulk (58 per cent) was used mainly for asset accumulation, with an additional 8 per cent used mainly to pay down other debt (Table 10).[15] Around 10 per cent of funds withdrawn were associated with a respondent that could not (or would not) say how the funds had been used.

The largest category of assets accumulated with withdrawn funds was deposits, accounting for around one-third of all withdrawn funds. Over a half of these deposits (by value) were from households that intended to use these funds to either purchase or renovate residential property at a later date, with only 16 per cent (by value) intended to be left on deposit during 2005. Other forms of asset accumulation included investing in household businesses (3 per cent of withdrawn funds), commercial property (2 per cent), superannuation (5 per cent) and other non-property investments (16 per cent) such as equities.

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[15] This analysis apportions the full value of equity withdrawn by each household to the main use. An alternative approach is to split the withdrawn funds evenly between the identified uses when multiple uses were identified, and to assume that all households that did not report a use used the funds for consumption. This suggests that around 30 per cent of the funds withdrawn by all households withdrawing equity over 2004 were used for consumption.

Table 10: Households Withdrawing Equity: Main Use of Funds

Per cent

	Non-transactors		Property transactors		All methods	
	Share of all households	Share of value withdrawn by this method	Share of all households	Share of value withdrawn by this method	Share of all households	Share of total value withdrawn
Household expenditure	**3.4**	**29.7**	**0.7**	**13.0**	**4.0**	**17.6**
Of which:						
Redecorations/ durables etc	1.5	13.0	0.3	6.9	1.8	8.6
Car	1.3	12.0	0.2	3.6	1.5	5.9
Holiday	0.5	2.9	0.2	1.3	0.6	1.7
Living expenses	0.1	1.8	0.1	1.2	0.2	1.4
Asset accumulation	**1.6**	**41.0**	**2.3**	**65.2**	**3.9**	**58.5**
Of which:						
Deposits	0.6	18.6	1.3	38.6	1.9	33.0
Superannuation	0.0	1.5	0.2	5.8	0.2	4.6
Household business	0.3	4.9	0.1	2.0	0.5	2.8
Commercial property	0.1	5.9	0.1	0.4	0.1	1.9
Other non-property investments	0.5	10.2	0.6	18.4	1.2	16.1
Repay other debt	**0.7**	**8.3**	**0.4**	**7.4**	**1.2**	**7.7**
Other	**0.6**	**4.6**	**0.4**	**7.1**	**1.0**	**6.4**
Cannot say	**1.1**	**16.4**	**0.6**	**7.3**	**1.7**	**9.8**
Total	**7.3**	**100.0**	**4.4**	**100.0**	**11.7**	**100.0**

Notes: Components may not sum due to rounding, and calculations involve some imputation. Also, for each household, the full value of withdrawn equity has been apportioned to the specified main use of funds.

The results also show that the use of funds varied considerably with the method of equity withdrawal. Non-transacting households that withdrew equity were much more likely to mainly use the funds to finance consumption than were households that engaged in a property transaction and withdrew equity. Of non-transactors that withdrew equity and identified a specific use for the funds, over half indicated consumption spending, including home redecorations, holidays, consumer durables

and motor vehicles. A further 5 per cent of these households cited consumption as one, but not the main, use of the withdrawn equity.

In contrast, only about one-fifth of transactors that withdrew equity and identified a specific use for the withdrawal indicated that the main use was to finance consumption. The more typical response was that the funds withdrawn were allocated to other assets. Households that withdrew larger amounts were more likely to specify a use of funds, probably reflecting the greater significance attached to larger expenditures.

6.2 Alternative Sources of Funds for Equity Withdrawers

Households that withdrew equity over 2004 were also asked what they would have done had they not been able to withdraw equity from their residential property. This provides some indication as to the role of housing equity in facilitating these transactions. Over half of those that withdrew equity during 2004 said that they would not have otherwise raised the funds; over a quarter said they would have applied for a loan or used their credit card; and around 10 per cent said they would have run down their savings (Table 11).

Table 11: Alternative Source of Funds if not Withdrawn Housing Equity
Per cent of net withdrawers that would have:

	Non-transactors	Property transactors	Total
Not raised funds at all	54.4	61.0	56.8
Other secured loan	19.5	11.9	16.7
Run down savings	9.9	10.5	10.1
Credit card	8.6	5.9	7.6
Other unsecured loan	8.7	2.4	6.3
Other property-secured loan	1.1	0.0	0.7
Other sources	6.6	8.3	7.2
Cannot say	1.1	3.6	2.0

Notes: Columns sum to more than 100 per cent as some households provided multiple answers. Calculations involve some imputation.

Transactors were less likely than non-transactors to seek alternative sources of funds if they had not been able to access them via housing equity withdrawal – consistent with the earlier discussion that transactors' decisions to withdraw or

inject equity may often be secondary to their decisions to undertake property transactions. Those households using the funds for consumption were slightly more likely than other withdrawers to say that they would have accessed the funds from other sources if housing equity withdrawal had not been available to them.

The large proportion of non-transactor households that would not have otherwise raised funds suggests that their withdrawal of equity was in large part supported by the ease and relatively low cost of obtaining funds in this way. For transacting households the implications are less clear – raising funds may have been a by-product of their decision to transact for other reasons.

6.3   Sources of Funds for Equity Injectors

Just as the use of withdrawn funds has implications for household spending, so too may the source of injected funds, since these funds could otherwise have been used for consumption purposes. For the 16 per cent of households that injected equity solely by making regular payments on their mortgage, income was presumably the main source of funds. Of the households making typically larger lump-sum injections, around half reported that they financed those injections primarily through drawing on savings and other assets, and around a quarter reported that they financed them from their regular income, with the remainder coming from various other sources (Table 12).

Table 12: Source of Funds for Lump-sum Injectors

	Non-transactors (per cent)	Property transactors (per cent)	Total (per cent)	Median ($)
Savings	34.8	22.9	30.4	19 000
Income	25.0	23.7	24.5	20 000
Sale of other assets	15.0	30.4	20.6	73 000
Inheritance	4.1	2.7	3.5	80 000
Loan from friends or family	0.5	2.7	1.3	–
Gift received	1.0	2.7	1.6	–
Other	19.6	15.0	17.9	20 900

Note: Medians are not reported where sample size is very small.

7. Aggregate Implications of the Survey

Thus far, we have concentrated on the microeconomic results for 2004 arising from the survey. This section aims to draw some aggregate implications from these results. First, we consider what the survey results imply for aggregate flows of housing equity over 2004. Second, we consider factors contributing to movements in aggregate housing equity withdrawal over time. Finally, the implications of housing equity withdrawal for key uses such as consumption over time are considered in light of the survey. As the survey was only for 2004, inference on earlier periods assumes that the findings are broadly representative of how equity was withdrawn and used in other years.

7.1 Aggregate Flows of Housing Equity in 2004

The sample results were aggregated to economy-wide flows by multiplying each household's net injection or withdrawal by the frequency weight attached to that household (that is, the number of Australian households the respondent household represents). Housing equity flows over 2004 based on aggregated survey responses suggest that:

- households that were net withdrawers of equity by increasing debt on already-owned property withdrew around $20 billion;

- households that were net injectors of equity by reducing debt injected around $28 billion;

- households that were net injectors of equity primarily through renovations injected around $16 billion;[16] and

- households engaging in property transactions were responsible for the largest flows of equity. Of these, net equity withdrawers extracted around $53 billion, while net equity injectors added around $43 billion.

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[16] These households accounted for around half of overall renovation spending identified in the survey. Remaining renovation spending was dominated by other equity actions, and is captured in other categories.

Combining these, the survey findings suggest a net equity *injection* of around $13 billion in 2004. This contrasts with the favoured aggregate measure, which shows a net *withdrawal* of $17 billion.[17] Given the vagaries of measuring the flows involved, both at a household and aggregate level, it is not unexpected that the measures do not line up, though it is a caveat to bear in mind.

7.2 Housing Equity Flows Over Time

Section 4 shows that, over 2004, the largest aggregate flows of housing equity came from households *transacting* in the housing market. The typical housing transaction gave rise to net equity withdrawal, with vendors tending to have less debt remaining than was taken on by buyers, a pattern likely to be exacerbated by a period of rising house prices.

These findings suggest that movements in turnover and house prices are important for movements in housing-secured credit and aggregate housing equity withdrawal, a point borne out by the data. Figure 4 shows that the turnover rate of the national housing stock rose consistently over the mid to late 1990s, reaching a high level in 2002 and 2003 – a period in which housing equity withdrawal was also strong. Turnover then fell sharply through 2004, at the same time as housing equity withdrawal declined. Similarly, nationwide house prices rose rapidly up to late 2003, but have subsequently increased only modestly.

Another relevant consideration for housing equity flows is the activity of property investors. The share of housing loan approvals made to investors rose from around ⅓ in 2000 to a peak of around 45 per cent in 2003, followed by a subsequent decline. This may have contributed to rising housing equity withdrawal up to 2003 because, according to the survey results, investors tend to purchase with relatively higher LVRs.

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[17] See Appendix A for discussion of the aggregate measure. The discrepancy between the survey and aggregate data is likely to partly reflect survey respondents reporting less debt than is suggested by aggregate figures, a feature also observed in household surveys in other countries. See Redwood and Tudela (2004).

The survey results suggest that flows of housing equity due to *non-transactors* are of less importance. Nonetheless, partial data on these flows, where available, are also consistent with developments in aggregate housing equity withdrawal in recent years. The survey identifies mortgage refinancing as one of the main methods of *withdrawing* equity by non-transacting households. Australian Bureau of Statistics (ABS) data on refinancing of owner-occupier mortgages show rapid growth in loan refinancing during 2002 and 2003. In addition, borrowing through home-equity line-of-credit products increased by more than 30 per cent over 2003, before slowing. Movements over time in equity *injection* by non-transactors, however, are difficult to gauge, with various influences likely to have shaped any overall trend in principal repayments over recent years. These include ongoing growth in wealth and income, the increased share of interest-only loans, and flexibility of many mortgage products.

Figure 4: Drivers of Housing Equity Withdrawal
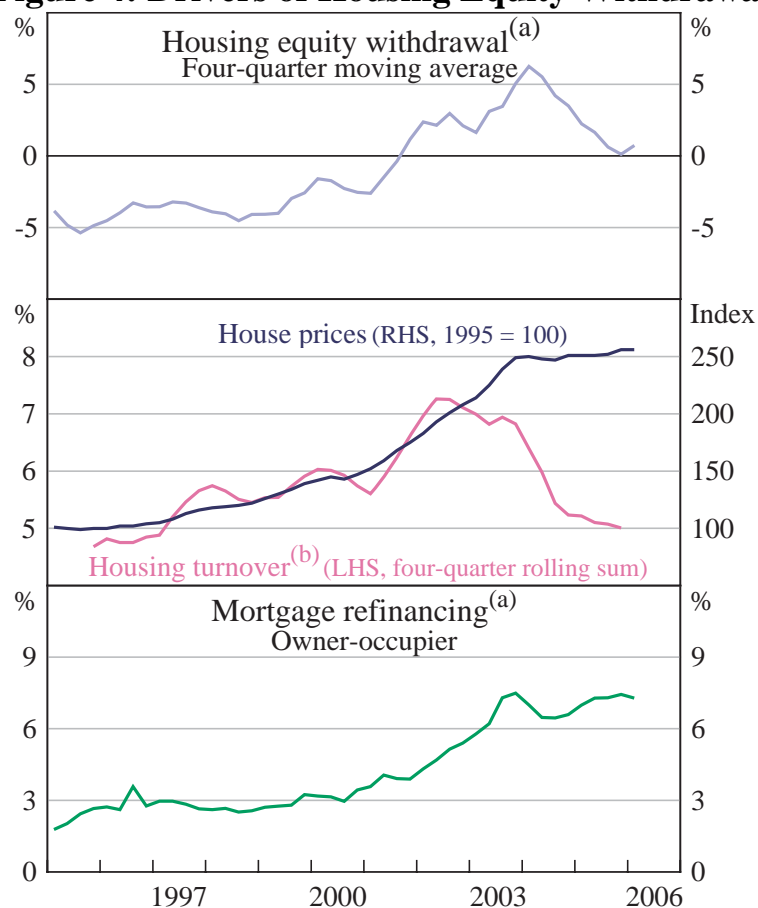
Notes: (a) Per cent of household disposable income
 (b) Per cent of dwelling stock

Sources: ABS; APM; Australian Treasury; RBA

7.3 Housing Equity Flows and Economic Activity

The survey results suggest that movements in housing equity withdrawal need not be associated with large swings in consumption. To the extent that property transactions are a key driver of movements in net housing equity flows, and the bulk of equity extracted from transactions appears to be used to acquire non-housing assets, changes in housing equity flows are likely to be only partly reflected in changes in consumption. Nevertheless, it remains likely that the trend rise in equity withdrawal evident for much of the past 10 to 15 years has been one of the factors supporting strong growth in consumption over that period.

For 2004, the results suggest that around 18 per cent of the aggregate equity withdrawn by net withdrawers was used for consumption, which represents around 2½ per cent of the level of aggregate household consumption. However, this estimate may understate the amount of gross withdrawals used for consumption (see Footnote 15).

The static nature of the survey means that it is not possible to assess contributions to growth from the survey data alone. Nonetheless, it seems likely that the strong growth in housing equity withdrawal over 2001 to 2003 contributed to strong growth in consumption relative to income (and a corresponding decline in the saving rate) over that period (Figure 5). Trends in aggregate financial variables over that period are also consistent with the survey findings on uses of withdrawn equity. Flows into financial assets were above average, and personal credit growth was well below that of housing credit, consistent with households withdrawing housing equity as a substitute for other debts. These trends have subsequently abated.

Another channel through which swings in household borrowing affect economic activity is spending on renovations. Borrowing to finance this form of spending does not necessarily lead to a withdrawal of equity, if the borrowed funds are used solely to increase the value of the household sector's housing assets. Nevertheless, the effect on overall activity can be significant. Over recent years, annual spending on renovations has averaged around 4½ per cent of household disposable income, up from an average of around 3½ per cent between 1990 and 1998. The survey data suggest that, in many cases, renovations have been partly funded by drawing

down on the equity built up as a result of the large house price increases since the mid 1990s. Around 11 per cent of surveyed households spent money on renovations in 2004, with the median amount spent on the main home equal to $14 000. Around 40 per cent of these households used housing debt to at least partly finance their renovation expenditure, with debt finance being used more often for larger renovations.

Figure 5: Selected Uses of Household Funds

Per cent of household disposable income
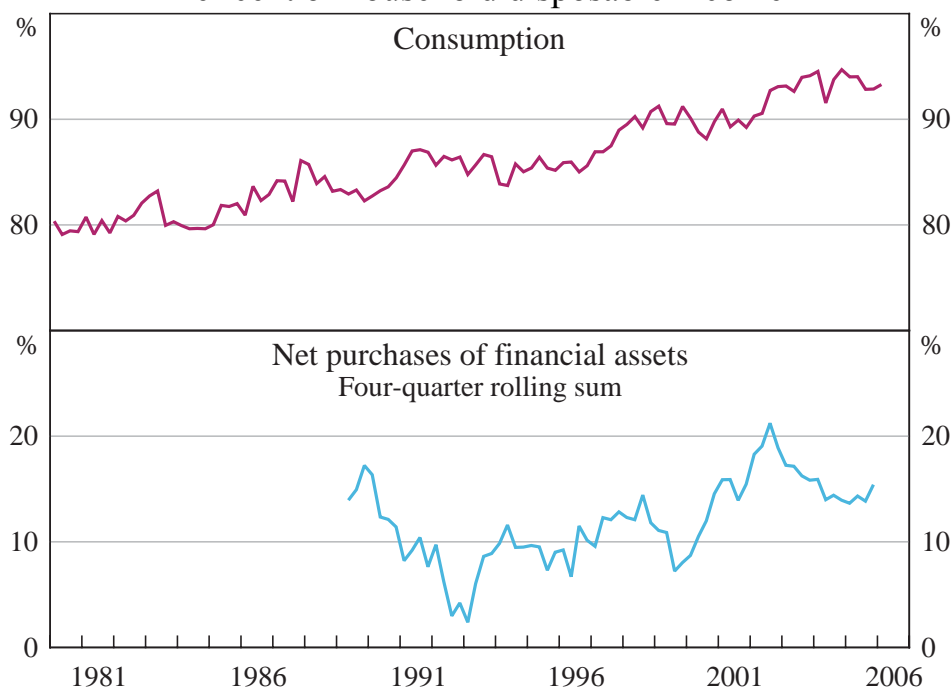
Source: ABS

8.   Conclusion

The survey results provide a wide range of information relating to housing equity flows. In addition to being the first survey of its kind in Australia, the comprehensive approach extends the more narrowly focused surveys conducted internationally on this topic. This survey captured flows of both housing equity withdrawal and injection by all households including flows associated with deceased estates, non-transaction-related debt repayments, and non-debt-financed renovations. Another innovation is information gathered on the features of each household's mortgage, to help gauge the importance of new financial products to housing equity flows.

The results of the survey suggest that any aggregate series for net housing equity withdrawal or injection masks large aggregate withdrawals and injections by households. Over 2004, 30 per cent of households made net equity injections, while 12 per cent made net equity withdrawals. The values injected were, however, typically much less than those withdrawn.

The most common methods of withdrawing or injecting housing equity were through altering debt levels on already-owned property holdings. Households that were net withdrawers over 2004 tended to favour methods such as refinancing and increasing loan size, or drawing down home-equity loans. Net injections were most commonly made through regular principal repayments. In addition, a number of households injected equity into already-owned properties through renovations.

Though fewer in number, withdrawals and injections of housing equity associated with property transactions were typically significantly larger in value, accounting for the bulk of the value of housing equity flows. In turn, the most important property transactors by value were those changing the number of properties owned.

The survey data show a significant life-cycle influence on housing equity flows, particularly among property transactors. Over 2004, the bulk of equity withdrawal was undertaken by older households, while younger households typically injected through deposits for property purchase or mortgage repayments. To our knowledge this intuitive result – evident both in bivariate and logit analysis – has not previously been demonstrated empirically. Age aside, there were few differences in the characteristics of households that injected without transacting and those that withdrew without transacting, although access to flexible mortgage features appeared to play some role in explaining household behaviour.

The use of equity withdrawn tended to vary with the method by which it was accessed. Withdrawals associated with property transactions were used significantly more for accumulation of non-property assets than consumption, a preference less evident for non-transaction-based withdrawals. Overall, around two-thirds of equity withdrawn by net withdrawer households in 2004 was mainly invested in other assets or used to pay down other loans. In contrast, only a relatively small proportion of equity withdrawn was mainly used to fund consumption in that year.

These results have some potentially important aggregate implications. Swings in housing equity withdrawal are likely to be heavily influenced by turnover in the property market, given the importance of such transactions to gross equity flows and the observation that the typical property transaction results in net equity withdrawal. This effect is likely to be amplified following a period of sustained house price growth, and is consistent with the large increase in aggregate housing equity withdrawal in Australia between 2001 and 2003, along with its subsequent decline. Secondly, the survey results also suggest that a significant number of households have used refinancing opportunities over recent years to increase the size of their debts, for purposes including consumption and renovation. Thirdly, only a relatively small portion of overall equity withdrawn from the housing stock in 2004 was used for consumption.

Appendix A: Measurement of Aggregate Housing Equity Withdrawal

Conceptually, the amount of equity withdrawn or injected at the macroeconomic level is the difference between the change in the household sector's total debt secured against the housing stock, and net spending by the household sector on dwellings.[18] One approach using readily available data is to calculate the spending component as the sum of investment in dwelling structures (dwelling investment) and ownership transfer costs.[19] While a useful indicator of broad trends, this approach understates the true level of housing equity injection. In particular, the land content (both the cost of undeveloped land and development costs) of a new dwelling typically represents a significant part of the purchase price. If the land is purchased from the business or government sector, then its cost should also be included in calculations of housing equity flows by the household sector.

Figure A1 presents aggregate measures of housing equity withdrawal that make some attempt to capture land purchases by the household sector. The land component is calculated by multiplying an estimate of the average land cost per dwelling by an estimate of the number of dwellings built on land newly acquired from outside the household sector. There are no hard data on the proportion of new dwellings built on land acquired from outside the household sector. One measure in Figure 1 assumes 50 per cent of new dwellings are built on such land (as presented in RBA 2005). An alternative measure can be constructed with a time-varying proportion of dwellings built on new land by making use of information provided by various state planning authorities. This suggests that around 60 per cent of new dwellings are built on such land – down from around 85 per cent in the mid 1980s. In Figure A1, these two measures are compared to the measure of housing equity withdrawal that ignores land costs completely.

Average land costs are calculated as the difference between estimates of the price of a new dwelling (including the land) and the average cost of building a new dwelling (the latter based on new dwelling investment and dwelling completions in each quarter). These data imply that land currently accounts for around 40 per cent

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[18] Not including rent paid to the business or government sector for housing services.

[19] This methodology has been used by the Bank of England and several other central banks.

of the price of the average new dwelling, and that this ratio has been trending up over time.

Figure A1: Housing Equity Withdrawal

Per cent of household disposable income, four-quarter moving average
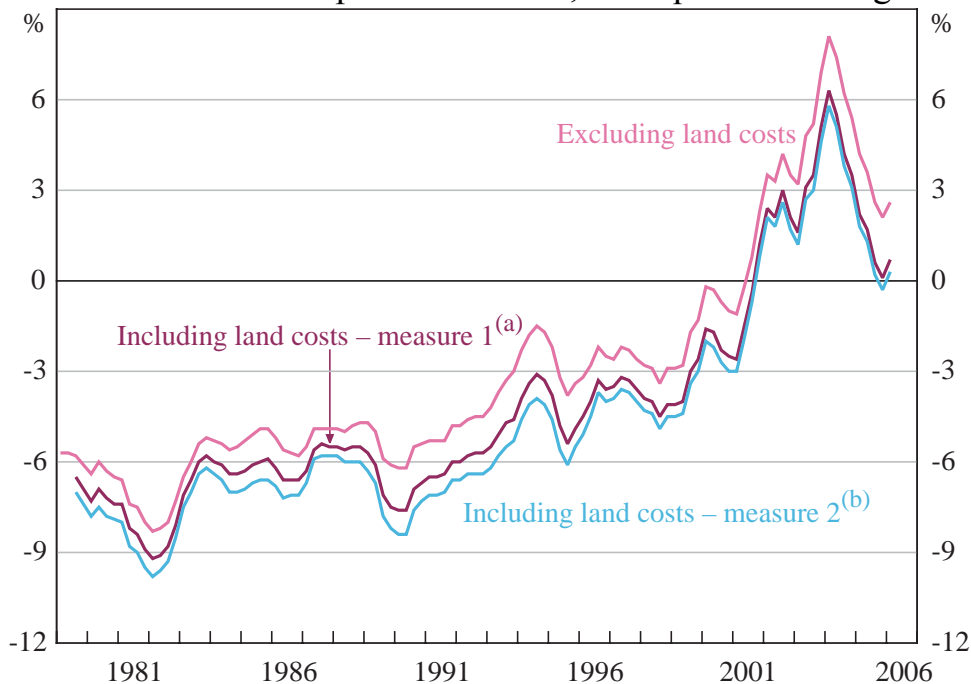
Notes: (a) Assumes the household sector incurs land costs on 50 per cent of new dwellings

(b) Assumes the household sector incurs land costs on a decreasing proportion of new dwellings

Sources: ABS; APM; Australian Treasury; RBA

If every household in Australia were surveyed, and their net injections and withdrawals were summed together, this measure should, in principle, correspond with the aggregate measures. The net change in debt for all households would match the change in total housing-secured debt. Households that injected equity by purchasing a dwelling would exactly offset all of those that withdrew by selling a dwelling – except for those that purchased a newly built dwelling. In practice, however, a small sample survey like the one undertaken for this paper will suffer from measurement error, including from a limited overlap between surveyed dwellings purchased and sold.

Appendix B: Survey Details

Design

The survey sample was selected from Roy Morgan Research's (RMR) Single Source database, which RMR assess to be an accurate representation of Australian households. From this database, households were drawn based on 2001 Census information on the proportion of households living in each region and dwelling type.[20] To raise the accuracy of responses, households were sent a letter indicating the financial information that would be asked in their subsequent telephone interview. Around the time the letters were sent, the Bank issued a media release informing the public of these activities.[21] The survey was tested extensively, both in-house and on a pilot sample of 50 households, before final implementation in February 2005.

In order to achieve the 4 500 responses, RMR endeavoured to contact 10 859 households, broadly in line with expected refusal rates. The average survey length was just over eight minutes, although there was a wide dispersion around this, mostly reflecting variation in the extent of property market involvement. After analysing the responses, RMR endeavoured to re-contact 301 households to clarify ambiguities, a normal part of their surveying process. This occurred in early March 2005; 260 households were successfully re-contacted.

To reduce complexity, respondents were instructed to exclude any transfer costs when answering questions about the sale or acquisition of property. These costs were accounted for by imputation in the data preparation phase according to the location and value of the property, including state-based duties and ownership assistance schemes, and agent and legal fees. Although incorporating these housing expenditures resulted in modest changes in the net values injected or withdrawn, it had very little impact on whether households were classified as net equity injectors or withdrawers. To help limit the length of the survey, some demographic data were instead extracted from RMR's Single Source database.

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[20] Households living in multi-storey units are under-represented in RMR's database, as they are more likely than those in other dwellings to refuse RMR's door-to-door interviewers.

[21] See <http://www.rba.gov.au/MediaReleases/2005/mr_05_01.html>.

Although efforts were made to ensure that the sample was representative of the overall population in terms of geographic coverage and dwelling type, the survey results were re-weighted marginally to further refine the representativeness with respect to these two parameters. As part of this process, the 4 500 household responses were scaled up to correspond to the 2001 Census estimate of around 7.6 million households in Australia. This re-weighting and scaling had minimal impact on the distributions of the variables in the survey.

Imputation

RMR checked the data thoroughly, focusing on the internal consistency of responses. RBA staff also performed similar tests and extended them to assess plausibility in a range of areas. Cases of inconsistencies and missing responses were generally corrected using answers provided elsewhere in the survey.

Household income was the dominant missing item among the remaining data, with 641 households (14 per cent of respondents) having no response for this variable. Fortunately, all other demographic data, including the income of the main earner, were complete. Other questions also had missing responses, but generally to a much lesser extent or for variables of lesser interest.

To impute household income, we adopted the hot-deck methodology, which is used in the British Household Panel Survey (BHPS) (ISER 2006) and discussed in Watson and Wooden (2003). As in the BHPS and Yates, Wulff and Reynolds (2004), we used variables that are predictive of household income (main earner's income, number of full-time workers and number of adults in the household) to group similar households together. We then populated the missing income observations with values from randomly selected households in the same group. Hot-deck imputation was preferred to deterministic methods, such as mean imputation, because it maintains an element of randomness and should not bias the distribution (Kalton and Kasprzyk 1982). Nonetheless, the standard error of the income coefficient is likely to be underestimated, and covariances between income and variables other than the selected explanatory variables are reduced. More sophisticated imputation methods could address these problems, but were considered too resource-intensive for the purposes of this paper.

Following Watson (2004), we undertook several checks of the quality of the imputed data, including: comparing the distribution of household income before and after imputation; undertaking within-sample testing; comparing the distribution to external data; and including a dummy variable for the imputed values in our modelling of housing equity changes (Ellis *et al* 2003). The imputed data performed reasonably well against all of these tests.

Characteristics of the Sample

The distribution of household income shifted slightly lower after imputation, since it allowed us to include relatively more low-income earners (Figure B1). The profile of the imputed household income series is fairly close to 2004 Household, Income and Labour Dynamics in Australia (HILDA) Survey data, although our sample contains relatively more households earning less than $40 000 per year.

Figure B1: Distribution of Household Income and Effect of Imputation

Weighted

Household income – $'000
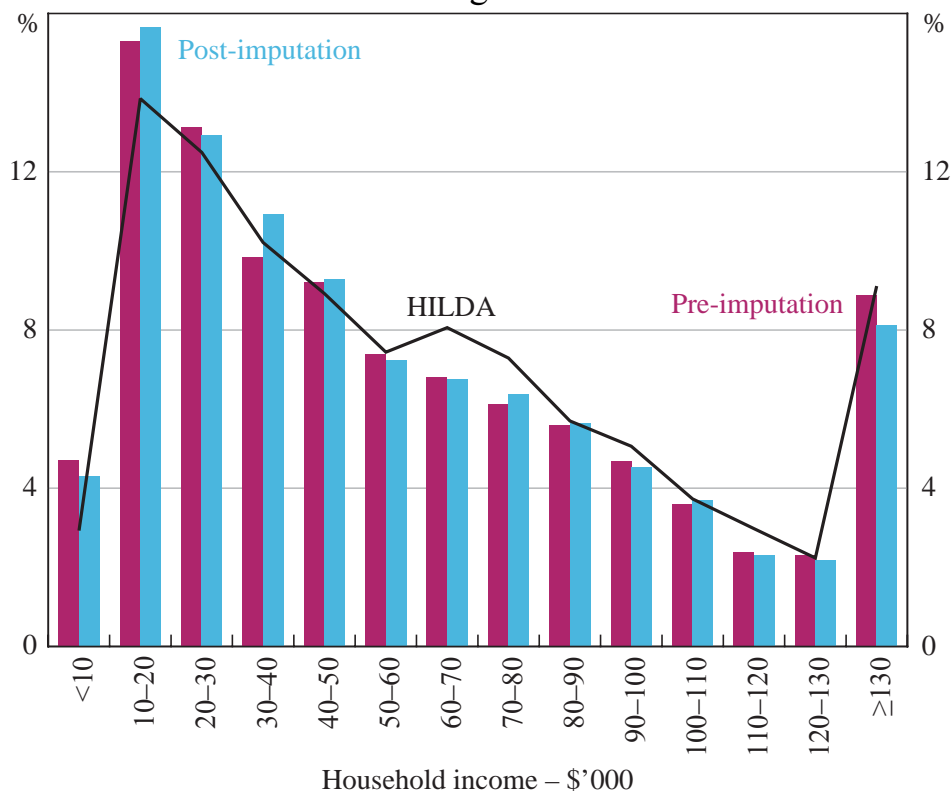
Sources: HILDA Survey 2004, Release 4.0; RBA

With respect to other relevant household characteristics, the sample appears reasonably representative (Table B1). Of the main household characteristics of interest, the greatest discrepancies between the sample and population estimates (based on ABS and HILDA Survey data) relate to the age of the main income earner (Figure B2); a considerable overweighting of 45–64 year olds means that the overall sample is older than the population.

Table B1: Representativeness of the Sample

Per cent

	RBA	ABS/HILDA
Housing tenure[a]		
Own the property outright without debt	34.8	34.9
Own the property with debt	37.4	35.1
Rent	26.7	27.6
Other	1.1	2.4
Total	100.0	100.0
Labour-force status of main income earner[b]		
Employed full-time	57.6	53.4
Employed part-time	10.7	13.4
Unemployed	1.7	2.5
Not in the labour force	29.9	30.7
Total	100.0	100.0
Other demographic information[a]		
Average number of people in household	2.8	2.5
Average number of employed persons in household	1.3	1.2

Notes: (a) ABS '2003–04 Survey of Income and Housing'
(b) HILDA Survey 2004

Sources: ABS; HILDA Survey 2004, Release 4.0; RBA

Figure B2: Age Distribution of Households

Share of all households
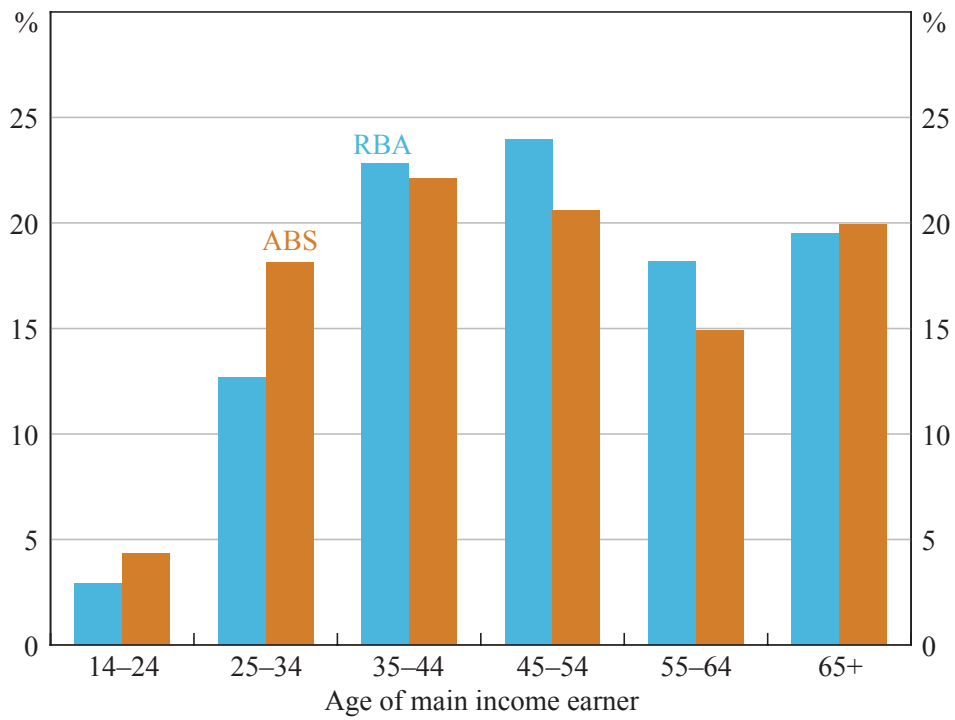
Sources: ABS; RBA

Appendix C: Defining Equity Withdrawers and Injectors

Table C1: Classification of Equity Injectors and Withdrawers

Component	Calculation	Notes
Change in housing debt	Outstanding housing debt at end 2004 *minus* Outstanding housing debt at end 2003	Households with offset accounts separately provided information on offset account balances at end 2003 and end 2004, which were used to obtain net loan balances.
Change in housing equity from transactions	Value of properties purchased (including transfer costs) over 2004 *minus* Value of properties sold (net of transfer costs) *minus* Value of funds obtained through sale of inherited property	Households provided information on the value of residential property purchases and sales, including funds flowing from the sale of inherited property, either by the household selling the property directly, or receipt of funds arising from trustee sale. This ensured that equity withdrawals arising from death were captured. The value of any properties inherited and retained during the year were not counted as an injection, largely because such transfers did not involve spending by the inheriting household. Transfer costs associated with the acquisition were, however, counted as housing spending.
Renovations	Amount spent on renovations	Attempts were made throughout the survey to ensure that renovation spending captured only alterations of a structural nature in accordance with national accounts definitions; that is, not redecorations and maintenance such as repainting, for example.

Note: Housing equity withdrawal is calculated as change in housing debt, minus change in housing equity from transactions, minus renovations.

Appendix D: Variable Definitions and Summary Statistics

Three types of variables were used in the logit regressions presented in this paper: numerical variables; categorical variables; and dummy variables.

Numerical variables include the (absolute) value of housing equity withdrawal and injection. Housing assets and housing equity are also numerical variables and are for all properties. Housing equity withdrawal and injection, and housing assets and equity enter in logarithmic form. The LVR for each household is based on all houses and loans held by that household. Capital gains are annualised (calculated across all properties) and include unrealised capital gains. The current value of each house was subjectively determined by survey respondents.

Where the household's response to questions on housing asset values or loan balances produced clearly implausible estimates, the variables were adjusted if sufficient information existed to correct the answer. Where there was insufficient evidence to be certain of the correct response, the household was excluded from the regression.

Categorical variables include age (eight five-year intervals) and income (ten $5 000 intervals and nine $10 000 intervals). When used in the regression, these variables were converted to a dollar value by taking the midpoint of each range.

The remaining regression variables entered as dummy variables. These were, in general, defined by the household's response to a multiple choice question.

In most cases, the explanatory variables were defined according to the household's situation at the beginning of the year, to avoid problems of endogeneity. The exceptions to this were being ahead of schedule on loan repayments and the various loan features, which are only available as responses during the course of the year.

Table D1 presents some additional summary statistics from the survey.

Table D1: Characteristics of Property Ownership

As at December 2004

	Units	Owner-occupied property	Investment property	Second home/land	All properties
By property					
Median value	$	320 000	270 000	230 000	300 000
Median capital gain	$	175 000	90 000	98 000	154 000
Median time held	Years	10	4	4	8
Share with debt outstanding	Per cent	50.2	59.7	42.1	51.2
Median debt outstanding	$	104 500	154 000	100 000	111 600
Median LVR	Ratio	0.33	0.58	0.57	0.39
By household					
Share owning that property	Per cent	72.2	9.8	5.0	74.3
Median total assets	$	345 000	817 500	650 000	340 000
Median total property debt	$	108 000	310 000	161 000	109 000
Median total LVR	Ratio	0.33	0.41	0.41	0.34

Notes: Households could provide multiple responses for the purpose for which they owned properties other than their home. Properties were classified as investment properties if one of these purposes was to rent it out. Debt and LVR are only for properties that had debt outstanding.

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