Who, What, Where? Residential Property Investment in Australia

Mardi Dungey
University of Tasmania, Australia

Danika Wright
University of Sydney, Australia

Maria B. Yanotti
University of Tasmania, Australia

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María B. Yanotti

Mardi Dungey ,

Danika Wright ,

a University of Tasmania

Private Bag 84, Hobart, TAS, 7001, Australia

b CAMA, Australian National University

J.G. Crawford Building 132, Lennox Crossing, ANU, Canberra, ACT, 0200, Australia

c University of Sydney

125 Darlington Rd (H51), The University of Sydney, NSW, 2006, Australia

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Abstract

Affordable housing includes the provision of affordable rental options. In Australia government incentives, which purport to increase the availability of rental housing through taxation offsets, may actually contribute to decreasing affordability as housing prices increase. This project studies Australian residential property investors accessing finance in order to explore investors’ behaviour, characteristics and motivations in the supply of housing. We study the determining factors for accessing finance for the purpose of residential investment as opposed to owner-occupation. Our new findings show the increasingly non-metropolitan location choice for real estate investment properties, potentially contributing to lack of suitably located housing affordability and increasing transport poverty, but also contributing to small-city development.

JEL classification: R31, G21, O18

Keywords: Housing Supply, Residential Property Investors, Housing Affordability, Mortgage Choice

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1 Introduction

Under an environment of high house price appreciation, a growing and aging population, inelastic housing supply and low interest rates, understanding the motivations for purchasing residential investment real estate contributes to informed debate on housing affordability. Knowledge of investor behaviour may assist with policy design and market based financial instruments to improve access to non-owner occupied housing. We reveal the behaviour, characteristics and motivations of the individuals who are using mortgage finance to become direct residential property investors in Australia during a house price expansion. In particular we assesses who takes a residential investment property loan (RIPL), with particular interest in mortgages for new buildings that increase the current housing stock, where the investment stock is physically located and what features the properties offer. The challenge to government policy around housing is the provision of affordable rental housing, in suitable locations (taking into account work, transport, leisure and educational options) when current policy settings and incentives operate in an environment of rapid real estate price appreciation.

A growing and increasingly urbanised population is spurring concern around provision of appropriate and affordable housing. As in many other modern economies, Australia is facing the challenges of an aging population, with growth mainly due to overseas migration (ABS catalog 3101.0) Older residents, particularly women, and migrants, as well as young residents, often face challenges in accessing affordable and appropriate housing. In addition, Hiller and Lerbs (2016) find negative and economically significant effects of population aging on real sales prices, particularly for condominiums and single-family homes.

House prices have been rising in Australia. The main national indicator is a weighted average of the eight capital cities residential property price index, which grew on average 5.6 percent annually for the period between 2004 and 2017 (ABS catalog 6416.0). However, Australia is large and the housing market is not homogeneous. Since 2010 house prices in Sydney and Melbourne grew on average 9 and 6.5 percent annually respectively, while the average annual growth for Perth and Darwin was 1.3 and 1.6 percent respectively.

Housing affordability has declined over the last two decades, in a period where financial deregulation, bank competition, and low interest rates have resulted in increased
access to credit. The number of mortgages taken to finance the purchase of a dwelling has grown on average by 0.8 percent monthly since 2000. Similarly, the value of housing finance commitments grew on average by 1.3 monthly during the same period (ABS catalog 5609.02). However, affordability indices suggest that the loosening of credit restrictions in the Australian mortgage market has been a major cause of the rise in Sydney house prices between 1996 and 2006; Gan and Hill (2009).

Lower housing affordability, housing access and homelessness are direct consequences of the rapid rise in housing prices. The Australian Bureau of Statistics (ABS) reports that in 2014, 2.5 million people aged 15 years and over had experienced homelessness in Australia at some time in their lives (ABS catalog 4159.0). The report finds that common reasons for experiencing homelessness included a tight housing or rental market and financial problems (14% and 13% respectively). Rising house prices, although beneficial for real estate investors, translate into higher housing consumption costs. The ABS finds that between 1994–95 and 2013–14 financial years, private renters experienced a 62% (or $144) increase in average weekly housing costs, after adjustment for inflation; an overall increase of 42% (or $135) for owners with a mortgage and 45% (or $46) for public renters over the same period.

Housing affordability is usually defined either in terms of the ratio of income to house prices or the proportion of income to mortgage repayments or rent. The dwelling price to income ratio in Australia has been increasing since the 1980s with an average between 4-6.5 – over 6 in 2017 – depending on the definition of income (however in some areas, particularly in the capital cities, the dwelling price to income ratio reaches 9, Fox et al. (2012)). For December 2016 the average ratio of family income to home loan repayments for Australia was 30.4 percent following a relative downward trend since the beginning of the decade, while the average ratio of family income to rent payments was 24.4 percent following a small declining trend for the same period. The HIA housing affordability index has increased from 70 to over 90 in the last decade showing deterioration in the housing affordability conditions.

On the other hand, the microeconomic benefits of house price appreciation translate into a stronger financial position and opportunities for capital gains for those who hold and invest in real estate. Economic theory suggests that housing supply will increase.

bringing equilibrium house prices down. The current concern over house price growth in Australia, especially in the main capital cities – Shi et al. (2016), has focused attention on inelastic housing supply. For the case of Australia, Ong et al. (2017) estimates that a 1 percent increase in the level of real housing prices produces a 4.7 percent (3.9%) increase in new house (unit) supply. Caldera and Johansson (2013) argues that Australia has an intermediate housing supply responsiveness relative to other OECD countries at 5.3 percent. Gitelman and Otto (2012) find house price elasticities for Sydney around 2-4 percent. To more fully understand why the housing supply response is low we identify the characteristics and motivation of real estate investors in Australia.

This paper studies the main determinants for investing in residential property using mortgage finance during the period between January 2003 to May 2009. Studying residential property direct investors allows us to isolate the investment purpose of housing from that of consumption. While owner-occupiers may purchase a home both for investment and consumption purposes, the residential property investor is only considering the potential returns on the housing asset. These returns are direct contributors to housing affordability for the pool of renters who are not in a position to purchase (for income, wealth, credit or mobility reasons).

This study empirically identifies the characteristics that distinguish residential investors using mortgage finance from the typical mortgage borrower (particularly the owner-occupier). The project utilizes a unique proprietary loan-level dataset on mortgage applications covering the house price and credit expansion period in Australia and including the onset of the Global Financial Crisis. The dataset offers detailed information on mortgage applications from a major bank with national representation for the period between January 2003 and May 2009. The dataset is complemented with CoreLogic RP data on house sale prices and characteristics, and market indicators from the Reserve Bank of Australia (RBA), Australian Prudential Regulatory Authority (APRA) and ABS.

Residential property investment provides housing services and increases housing stock. In the current housing market debate, many argue that house price appreciation is driven by investors’ speculation in the residential property market with expectations on equity gains and the advantages of tax concessions. Residential property investment may be an instrument for young households to access homeownership or for retirees to

\footnote{The study period is limited by the data availability, as the dataset cannot be extended or updated.}
secure a comfortable income stream. With a very small proportion of social housing in Australia, this study will help understand who is willing to invest in housing assets, where the investment is directed, and what type of dwelling is being purchased for investment purposes. Answering these questions will contribute in the design of housing policies, housing tax reforms, and financial products aimed at improving housing affordability.

We find that Australian residential property investors are middle age men, who already receive rent income, tend to be self-employed or small business proprietors or have relatively high income employment. They invest in existing property, as do most Australians, but are more likely to invest in new houses than owner-occupiers. Unlike home-owners we find that direct residential property investors are willing to invest interstate or in a different postcode to their current residential address. They invest in non-metropolitan areas, rather than in the big metropolitan cities. They appear to be well-informed or/and willing to take risk by investing in different housing markets to the ones they currently reside in. This is how they have been extending the housing supply in Australia.

The motivation, behaviour and perceptions of residential property investors affect the quantity, quality and location of the stock of housing supply, affecting many industries such as construction, finance and real estate. All these considerations have important implications not only for the stability of the housing market, but also the stability of banking and financial markets, and the whole macro-economy; Gurran et al. (2015). The aspirations of a housing affordability program are intrinsically tied to the structure and health of the financial sector - as amply demonstrated by the Global Financial Crisis.

The paper is organised as follows. Section 2 offers a review of the literature and provides an Australian context. Section 3 describes the rich dataset used in this study. Section 4 presents the methodological approach, while Section 5 discusses the results. Section 6 concludes presenting future work.

2 Australian Background

The share of the Australian population with one or more investment properties sits at around 10 percent, having grown steadily through the 1990s and early 2000s.\footnote{RBA, ‘Proportion of Investment Housing Relative to Owner-Occupied Housing’, Submission to the Inquiry into Home Ownership, June 2015, \url{http://www.rba.gov.au/}} Most of
these property investors (80%) finance their investment with a mortgage.

The residential investment market is a significant part of the Australian mortgage market. In July 2017 residential investments represented 36.9 percent of all dwellings financed in Australia, and the majority of this (30.6 percent) financed the purchase of existing dwellings by individuals for investment purposes. Only 3 percent of new financings were for new dwellings for rent or resale. This is indicative of the relatively slow rate of increasing supply into the market. Individual households owned on average 83 percent of all existing investment dwellings financed with a mortgage and rented to private tenants or resold during the period under study. During the sample period, institutional residential property investors or others represented only 8.4 percent of all residential property investors for existing dwellings.

Brown et al. (2008) argue that ‘...Australian institutional investors rarely own rental housing because the majority of properties in the rental market are self-standing properties on their own lots. For institutional investors this type of unit carries management inefficiencies without the prospect of exploiting economies of scale.’ (p. 146).

Figure 2(a) shows the rising trend on the value of residential investment financing, which plummeted in June 2015. Figure 2(b) also shows that during the period under study the value of investment dwellings financed represented on average 34.6 percent of all dwellings financed (ABS, catalog 5609011). During the same period, the homeownership rate in Australia was over 70 percent (ABS, catalog 1301.0); private residential investors provide rental housing for approximately 25 percent of Australians (ABS catalog 4130.0). This suggests that accessing a mortgage is a very important element for residential investment and for housing supply.

Residential property investors have been able to access more choice and flexibility in mortgage products and financing options since the financial deregulation of the 1980s in Australia. Lending criteria on investor loans became looser from around 1996 as they moved into line with those that applied to owner-occupiers. By the mid 1990s, ABS household surveys suggest that the proportion of households owning investor or second homes rose from 16 per cent in 2002 to 20 per cent by 2006. Although second homes are bought for consumption purposes, with the modern shared economies many households may rent those holiday homes during parts of the year. This type of rental income is still hard to identify.

These figures are relatively stable. For July 2017, 83 percent of all finance commitments for investment housing were purchased for rent or resale by individuals, while only 8.9 percent were purchased for rent or resale by others.
the interest rate spread (of about 1 percentage point) between residential investment
loans and home loans was removed; loan-to-value ratios (LTVs) have been increasing
and lenders allow the consideration of all equity (even personal homes) against the
mortgage debt. Products such as interest-only loans and flexible loans (loans with no
early payment penalty fees and options such as mortgage offset accounts and redraw
facilities) are particularly targeted to investors. Post the Global Financial Crisis, in
December 2014 the Australian Prudential Regulatory Authority (APRA) announced
measures that included a benchmark for lenders’ growth in investor housing lending of
10 per cent, above which supervisory action may be intensified. The measures were
intended to result in some moderation of investor borrowing and purchasing activity.

The housing market attracts domestic and international investors as it represents an
investment opportunity that offers investment returns and generates wealth, allowing for
smoother life-cycle consumption. Most housing transactions in Australia are performed
between domestic residents; the value of foreign residential approvals as a share of total
dwelling turnover fluctuates around 5-10 percent, and the proportion for the number of
foreign residential approvals is around 2-3 percent; see Gauder et al. (2014) who also
notes that these figures are likely to be overestimates as approvals do not necessarily
lead to sales. Foreign property demand appears to be concentrated in new medium/high
density dwellings, mainly in the inner areas of Sydney and Melbourne.

Residential property investment in Australia is mainly carried out by individual
households, rather than institutional investors. As long ago as the 1997 ABS rental
investor survey, ABS catalog 8711.0, small scale petty landlordism has characterised the
Australian rental market, with a majority of rental stock owned by individuals; Berry
(2000). Yates (1996) found that landlord investors were in the 35-54 age bracket and their
income profile was skewed towards the top end of the income distribution with median
income 50 percent above that of the population as a whole. Australian landlords were
mainly employed people, although some were retirees or self-employed, where private
rental income was considered a supplement to the household’s primary source of income.

More generally, Brown et al. (2008) find that property investors in Australia are
married wealthy individuals with high income. Wood and Ong (2013) find that middle-aged
investors are more likely to hold rental investments than younger investors, but

once retired there is an increase in the likelihood of exit from rental investments. Parlett and Rossiter (2004) find that Australian residential property investors are 45-54 year old, high income individuals – many of whom are self-employed – who have high net wealth and are also homeowners of their current residence. RBA (2015) also finds that the probability of being a real estate investor in Australia increases with age and with owner-occupation, but declines after the age of 65.

Both Brown et al. (2008) and Wood and Ong (2013) study the determinants of holding residential income property; the current paper examines the determinants of entry to the residential property investment market via financing choices.

Residential property investors can be classified by purpose. Individual investors choose to invest in residential properties because they perceive it as a secure long-term investment; Berry (2000), Yates (1996). Many choose to become landlords to generate a supplementary income from rent; Ioannides and Rosenthal (1994). Both these motivations apply especially for those close to or in retirement; Berry (2000), Beer (1999).

The expectation of wealth accumulation and capital gains are cited in the literature as factors motivating residential property investment; Seelig et al. (2009), Brown et al. (2008), Shroder (2001), Ioannides and Rosenthal (1994), Beer (1999), Wood and Tu (2004). Some housing investors are unintentional investors owning investment property due to inheritance, temporary change of residency or division of assets; Yates (1996) and Kemp and Rhodes (1997).

Taxation regulations also affect housing investment decisions. The main taxation schemes affecting housing investment in Australia are the capital gains and the negative gearing provisions.

Capital gains taxation was introduced in Australia in 1983. Capital gains are realised when the value of the asset (in this case the property) increases and when the sale of the asset allows for the capital gains. Currently, and since September 1999, for the sale of properties acquired after 1985 and held for more than twelve months, individuals pay tax on 50 per cent of the nominal capital gain.

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7The capital gain is the difference between the sale price and the cost base of the property. Before taxation changes in 1999, the tax applied to full real capital gains – based on the consumer price index (CPI).
capital gains tax on the sale of the primary residence, although interest payments are not tax deductible. Brown et al. (2011) argues that the 1999 capital gains tax changes reduced the user cost of housing for investors.

Negative gearing – the ability to deduct investment losses (including interest on mortgage payments) against personal income – was introduced in 1985 in Australia. Negative gearing was suspended in 1986, and a depreciation allowance was introduced. Residential investors were eligible for a depreciation deduction on construction and improvements to a property. In 1988, negative gearing was re-activated, and the depreciation allowance was removed; see Badcock and Browett (1991), Paris et al. (1985) and Paris et al. (1993). Deductions for depreciation were reintroduced in 2001. Seelig et al. (2006) argue that the negative gearing strategy is most effective for investors paying the highest marginal tax rate and those servicing fixed interest only loans. Wood and Watson (1999) posits that investors paying higher marginal tax rates purchase more expensive dwellings to maximise the taxation benefits of negative gearing. Paris et al. (1985) and Paris et al. (1993) argue that the negative gearing provision has stimulated the development of the private rental housing market in Australia.

Some existing work argues individuals invest in residential property to take advantage of the ability to reduce taxable income through negative gearing; see Wood and Ong (2013), Beer (1999), Wood and Ong (2010). The share of geared investments - where the investor claimed interest deductions - increased steadily over the 2000s, reaching over 80 percent. Almost two-thirds of investors declared a net rental loss in 2012/13, compared with around half in the late 1990s, taking advantage of the tax benefits of negative gearing. However, Berry (2000) finds that a large majority of landlord investors reported negative gearing not being a significant factor affecting their investing behaviour, and argues that the option is more valuable to high income investors.

Both Yates (1996) and Berry (2000) find only a small proportion of individual investors reporting capital gains and negative gearing as important factors in their decision to invest in real estate to become landlords, although they did consider these factors when making their decision. In contrast, Wood and Ong (2013) conclude that fiscal and

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monetary policy settings play an important role in shaping rental housing investment decisions, since interest rate and tax parameters are important in determining investors negative gearing status. Moreover, Brown et al. (2011) argues that the tax treatment of negative gearing and capital gains are beneficial to investors; the two benefits are of a similar order of magnitude, however they argue that in practice tax policy has far less effect on the user cost of housing than interest rate policy.

The argument that investment in housing for rental is a pathway to better financial security is supported by Wood and Watson (2001) who find that investors from the top tax brackets are a minority of all investors in Australia. It also presents an option value for possible personal use of the property in the future; Seelig et al. (2009), Berry (2000). Wood and Tu (2004) argues that low-tax-bracket investors invest in low value rental housing which attract high rents relative to the property value, while high-tax-bracket investors invest in high value rental housing but charge low rents relative to the property values; see also Steele (1993). Yates (1996) suggest that rental rates of return are lower for markets with strong capital gains expectation, while rental rates of return are higher for lower-cost markets. In particular, Waltl (2018) finds decreasing rental yields for Sydney when moving from the low-end of the house price distribution to the top-end, and systematically larger yields when restricting the analysis to houses bought-to-let. Brown et al. (2011) find that the user cost of housing for an owner-occupier without debt is nearly always lower than for the corresponding property investor; however the reverse is true for an owner-occupier with debt.

Other taxation costs apply for residential investors, which may vary across jurisdictions, such as stamp duties, land titles fees, land taxes and local government rates. Fees may also apply in particular for units, flats or apartments, and body corporate. Maintenance and insurance costs need to be accounted for. Residential investors may also have real estate management services costs.

City and regional planning and urban development programs have encouraged residential investment. Rent control and other rental legislative securities and controls are minimal in Australia relative to other OECD countries. In 2009, Australia ranked at 22 of 33 OECD countries for protection of tenants; Andrews et al. (2011). Laws regulating landlord-tenant relations are imposed at the state government level, and tend to be biased in favour of landlords rather than tenants; Yates (1996). However, Paris and Weeks (1991) and Kennedy et al. (1995) argue that tenancy legislation does not affect
residential investment.

In general, residential property direct investment is pursued by different types of Australian households. The ABS Survey of Investors in Rental Dwellings suggests that rental income was the most important reason for choosing to be a residential direct investor for low income households, while the ability to engage in negative gearing was an important determinant for high income households. However, the survey also reveals that over a third of respondents did not know their net annual return, and a lot of them were incurring into a loss. For an review of Australia’s residential investment market see CoreLogic (2016).

The contribution of this paper is to characterise both the type and location of the residential property investment coupled with the characteristics of the residential property investors themselves. In this way we achieve a better understanding of the extent to which investment incentives and financial product design contribute or detract from the desired outcome of supply of affordable housing.

3 Residential Investment Property Loans: Data

We have access to a unique dataset of over 1.1 million mortgage applications originated by a major Australian bank, limited to the period between January 2003 to May 2009. Its loan-level richness provides a unique overview of the Australian housing finance and housing investment markets. Unfortunately more recent similar data are not available.

Residential investment property loans (RIPLs) are mortgages destined to investors who purchase an income producing property; 21%, or 239,255, of the applicants in the database are residential investors; see Figure 2.

Residential investors can choose between fixed- and variable-rate mortgages or ‘split loans’, where a proportion of their debt has a variable interest rate, and the remaining is set with a fixed rate. The Australian mortgage market is dominated by variable-rate loans, with the distinguishing characteristic that rate changes may be initiated by the corresponding mortgage issuer at their own discretion - unlike in other markets they are not based on a market indicator rate but are adjusted according to banks’ cost of

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10 For pioneering work on the choice between adjustable rate mortgages (ARMs) and fixed rate mortgages (FRMs) see Brueckner and Follain (1988) and Brueckner and Follain (1989). For an Australian analysis on mortgage choice see Dungey et al. (2015).
funds. Investors may also access interest-only or interest-in-advance loans more readily than owner-occupiers. They can also access discounted variable-rate mortgages, but not options to release housing equity as available in some products for homeowners. In our dataset, over half (54%) of RIPL applicants choose variable-rate mortgages, an additional 25 percent choose fixed-rate mortgages, and 19 percent choose discounted variable-rate mortgages. (This compares with 81% of owner-occupiers who choose some form of variable-rate mortgage; 65% variable-rate and 16% discounted variable-rate mortgage.)

Table 1 shows residential property investors’ characteristics relative to owner-occupiers purchasing a residential dwelling. Residential property investors are on average 18 months older than owner-occupier borrowers, with an average age of 43 years old. Over a quarter of investors are women (27%). Although 72 percent of investors are married, 62 percent apply with a co-borrower (joint applicants- spouse or otherwise). Property investors have on average 0.65 dependants; when present, the youngest dependant is on average 7 years old.

RIPL investors are mainly professionals, hold a management position or are small business proprietors. They have spent on average 8 years at their current employment, more than a year longer than owner-occupier applicants. Over a quarter of RIPL investors are self-employed. The vast majority of residential investors (90%) have been existing customers of the bank for 9.5 years on average.

Most loan applicants purchase existing dwellings (93% for investors and 91% for owner occupiers). However, investors are more likely to invest in a dwelling in a different state or a different postcode to their current postcode; that is, they have higher state and postcode mobility than owner-occupiers.

Table 2 presents RIPL investors’ financial position and repayment capacity. Residential property investors have larger monthly expenses than owner-occupiers. Monthly mortgage payments are on average 1.2 times larger for residential property investors relative to owner-occupier borrowers. Residential investors’ monthly mortgage payments are on average AUD $2,510. Residential property investors have larger total monthly expenses; they report on average AUD $6,856 on monthly total expenditure.

However, residential property investors’ monthly income is also higher. Average uncommitted monthly income is AUD $256 higher for RIPL than for owner-occupiers. Supporting the findings in previous studies discussed in Section 2, those individuals taking RIPL already receive on average AUD $1,291 in rent/board income at the time
applying for a mortgage to invest in property, while owner-occupiers only receive on average AUD $249 on income from rent/board. This suggests that investors applying for RIPL to purchase a dwelling already own residential properties for investment purposes. Residential property investors’ average net (gross) household monthly income is 42 percent (43%) higher than owner-occupiers’ income. The average net household monthly income for RIPLs is AUD $8,660 (AUD $103,920 a year), and the average gross household income is AUD $11,340 (AUD $136,080 a year). Removing the top 100 (0.04% of the top tail of the distribution) highest income RIPL earners in our distribution provides an average monthly net income of AUD $6,617 (AUD $79,404 annually).

The income differentials between investors and owner-occupiers throws light on the taxation incentive for real estate investment. For RIPL borrowers, average gross household income is 31 percent higher than average net household income.

The average (median) gross household income of a RIPL borrower in the dataset is the equivalent of an annual income of AUD $153,032 (AUD $125,024) for 2006 in 2006 Q2 prices; comparing with figures of average (median) household gross income taken from the ABS in 2006 of AUD $89,076 (AUD $69,992) annually (ABS catalog 6523.0). Thus the average (median) investment borrower has some 1.7-1.8 times more gross income than the average (median) Australian income earner, consistent with the findings of Wood and Ong (2013) that landlords’ average disposable incomes are 1.5 times larger than the typical Australian, and their average wealth is more than double that of the typical Australian. Parlett and Rossiter (2004) reported for 2002 that 71 percent of investors were in the top two household income quintiles and over half were in the highest net wealth quintile. These findings all support that landlords’ marginal income tax rates are skewed towards the high tax brackets despite the argument in Wood and Watson (2001) that investors from the top tax brackets are a minority of all investors in Australia.

Residential investment property owners are on average wealthier than owner-occupiers, but interestingly not than the average Australian household. RIPL borrowers have assets of on average AUD $1,309,763, 82 percent higher than that for owner-occupiers. And, while the liabilities of RIPL borrowers are also higher on average, their net wealth is AUD$934,091, almost double that of the owner-occupier. Australian mean household net worth for 2015-2016 was AUD $929,400. Therefore although the average Australian may not be as income rich as the average Australian residential property investor, they
are equally asset rich on average.

Finally, Table 2 also reports RIPLs mortgage costs. Although the loan amount taken by residential investors is 55 percent larger than that for owner-occupier loans, they have on average lower associated interest rates and higher bank fees. The average residential property investor takes a loan of AUD $274,205 for a term of 28 years, with associated banks fees of on average AUD $784. In the case of RIPLs, borrowers may be able to afford larger early repayments, they have little incentives to repay their debt sooner as higher interest repayments are deducted from taxable income using the ‘negative gearing’ option. Probably for this reason, RIPLs borrowers hold a larger proportion of fixed-rate mortgages. Although net wealth and the size of the loan is on average larger for RIPLs relative to owner-occupier home loans, the average purchase price and valuation of the property are very similar across both types of mortgage purposes. The average securitized property under a RIPL was purchase for AUD $319,472, but it is valued for AUD $431,013. For RIPL, payment-to-income ratio (PTIR) is on average 27 percent, while the average debt-service ratio (DSR) is 54 percent on average. Loan-to-value ratios (LTVs) are slightly different across mortgage types, with an average of 64 percent for RIPLs.

Although these descriptive statistics for residential property investors are for the period under study (January 2003 to May 2009), they do not differ too much from the ones reported in the recent RBA Financial Stability Review for October 2017.

4 Methodology

We consider the following index model. Let $y_i$ denote the contract chosen by household $i$, $i = 1, \ldots, n.$, at time of application. We assume that $y_i = 1$ if $i$ chooses a residential investment property loan (RIPL) and $y_i = 0$ otherwise.

$$
P(y_i = 1 \mid I_i) = \Phi(\beta_0 + \beta_1 W_i' + \beta_2 Y_i' + \beta_3 Z_i' + X_i' \delta) \tag{1}
$$

where $(\beta_0, \beta_1, \beta_2, \beta_3, \delta)'$ is an unknown coefficient vector; $W$ is a set of market variables; $Y$ is a set of borrower’s financial variables; $Z$ is a set of dwelling characteristics variables; $X$ includes household characteristics variables; and $\Phi(\cdot)$ is $(cdf)$ of a standard normal distributed random variable.
The market environment variables included in $W$ are the 3-year term deposit rate of return, the 10-year Australian Government Bond yield, the market standard variable mortgage interest rate, and the percentage change in the dwelling index collected by Westpac-Melbourne Institute to capture consumer sentiment on housing market conditions. We have consciously left out house price inflation to avoid possible endogeneity problems; see for example Carrington and Madsen (2011) and Hanewald and Sherris (2013). Brown et al. (2008) do not include any market environment explanatory variables in their analysis, while Wood and Ong (2013) and Brown et al. (2011) calculate the landlord’s user cost of holding residential property.

The borrower financial status variables included in $Y$ are a dummy that indicates whether the borrower holds shares or not, and the net wealth stock at the time of applying for a mortgage (in logarithmic form). The existing literature highlights the importance of financial drivers in residential property investment. While Wood and Ong (2013) include financial variables such as wealth in the superannuation account, and debt not secured by property, Brown et al. (2008) uses permanent income and transitory income as proxies for wealth. Ioannides and Rosenthal (1994) argue that wealth and income are the main factors determining housing investment demand.

The set of dwelling characteristics variables in $Z$ includes dummy variables indicating whether the dwelling is to-be-built, a newly built dwelling or vacant land, and the location of the dwelling relative to the residential address of the borrower. The ‘inter-state investment’ dummy takes the value of 1 when the residential address of the borrower is in a different state to the address of the property investment financed with the mortgage. The ‘other postcode investment’ dummy takes the value of 1 when the residential address of the borrower is in a different postcode to the address of the property investment.

Finally, the extensive list of household characteristics variables included in $X$ are socio-demographic variables such as age, gender, marital status, number of dependents, as well as income variables such as gross and net income as well as rental income, occupation, and self-employment. Wood and Ong (2013) find that most demographic and attitudes to risk explanatory variables do not affect the decision to hold residential property investments. However they are expected to affect the decision to entry residential property investment.

Note that estimation proceeds as a pooled regression, taking into account the time dimension by matching the time and state of application with market conditions at that
time and state (or state capital cities) – this is not a panel estimation problem with repeated observations on the same individual, but rather has a time element in addition to cross-section dimension to the estimation problem.

Our maintained hypothesis is that choice of mortgage type (investment or owner-occupier) is independent of the decision to apply for a mortgage. This assumption is dictated by our data which refer to mortgage applications only.\textsuperscript{11}

5 Results

5.1 Who are the Investors?

Table 3 shows the marginal effects for the estimation results for equation 1. The first column in the table show all the explanatory variables used in the different models. The following columns show different models: model (1) represents our basic model, model (2) adds more household characteristics variables to the basic model, model (3) adds some income and occupation variables, and model (4) includes some characteristics of the dwelling purchased with the mortgage. The discussion that follows will mainly focus on model (4) results – our preferred model.

Macroeconomic environment results show that when short-term market rates are high, Australian households are less likely to invest in residential property financed with a mortgage. However, when long-term low-risk market rates are high, investors are more likely to take a mortgage to finance the purchase of a residential property investment.

Investment theory predicts that expected capital gain (price increases) should result in an increased likelihood of entering the residential investment market. For models (1) to (3) this is rejected by the data. For model (4) that includes the additional explanators for the residential property location and whether the house is existing or to-be-built (but ignores taxation considerations), this hypothesis is supported. Increased price expectations spur the choice to take a RIPL. Part of these results may be due to the role of anchoring in timing of property purchase, as demonstrated in Arbel et al. (2014). We return to this issue later, as particularly pertinent to the location argument.

\textsuperscript{11}Longitudinal surveys such as the Household, Income and Labour Dynamics in Australia (HILDA) survey offer the potential to examine this issues, but questions on the type of mortgage were first asked in Wave 10 of the survey, conducted in late 2010, which is after the global financial crisis, and outside our sample period.
for the provision of affordable rental housing.

Household characteristics affect the decision to become a residential property investor financed with a mortgage. The typical Australian residential property investor in our study is 43 years old. Model (4) shows that those who are under 40 and over 60 years old are less likely to take a RIPL than the average RIPL borrower, while those in their 50s are more likely to take a RIPL than the average RIPL borrower. We also find that females, married mortgage applicants and those with dependents are less likely to take RIPL after controlling for income, occupation and wealth.

Income is one of the strongest determining factors for taking a RIPL. In model (4) a one percent increase in average gross income increases the likelihood of investing in a residential property financed with a mortgage by 12.8 percent. Moreover, a one percent increase in the current rent/board income the borrower received at time of mortgage application increases the likelihood of taking a RIPL by 18.7 percent.

We also observe that those borrowers in semi-professional, technical, and agricultural occupations are more likely to invest in RIPL relative to the average borrower. Self-employed mortgage applicants are 3.5 percent more likely to invest in RIPL than the average mortgage borrower, while those who are small business proprietors are 1.7 percent more likely to invest in RIPL than the average mortgage borrower.

The coefficients for net wealth have contradicting signs across models and, although statistically significant, they have smaller economically significant effects. In our preferred model (4), a one percent increase in the average net wealth of mortgage borrowers increases the likelihood of taking a RIPL by 1.5 percent. We also find that mortgage applicants who hold shares at application time are 3.6 percent more likely to take a RIPL than the average borrower. This suggests that residential property investors in Australia may have a diversified portfolio.

The results above confirm the profile of Australian residential property investors. Residential property investors tend to be males between 40-50s years of age, who have relatively high income, are self-employed or small business proprietors – or in technical or agricultural occupations. They tend to already receive rent income, and they are also more likely to invest in shares than owner-occupiers. Females, married and those with dependents are less like to become residential property investors, as well as retirees.

We have carried out several robustness checks. Our results are consistent for different period sub-samples, and different combinations of exogenous variables.
5.2 Where are the Rental Properties?

The new findings in this study suggest residential property investors in Australia invest inter-state or in a different postcode to their current residential address. We find that those borrowers purchasing a dwelling in a different state are 10.1 percent more likely to be residential property investors, while those purchasing in a different postcode to their current place of residence are 13.9 percent more likely to take RIPLs.

Given this evidence that RIPL borrowers invest inter-state and in different postcodes, we explore our data to find where most RIPL chose to invest in Australia during the period under study. Figure 3 shows the proportion of RIPLs by postcode of the purchased dwelling over all RIPL for the period between January 2003 and May 2009. The figure also presents the top 10 most popular postcodes where RIPL have been used to purchase a residential property investment. Surprisingly, none of these postcodes represent metropolitan cities, but they rather refer to non-metropolitan cities in Australia; half of these regions are in Queensland - the RBA Financial Stability Report for October 2017 also reports that 25 percent of all investment properties are located in Queensland, but less than 20 percent of investors are from Queensland; See also [Rappaport](#) (2007), [Brown et al.](#) (2008) argue that residing in Tasmania, South Australia or Victoria reduces the likelihood of owning rental property, while residing in Queensland, Western Australia or the Territories increases that likelihood.

We find that the most popular choices to purchase a residential property investment financed with a mortgage during the period between January 2003 to May 2009 include: (1) 4870, Cairns, QLD; (2) 6210, Mandurah, WA; (3) 4655, Torquay, QLD; (4) 4740, Mackay, QLD; (5) 7250, Launceston, TAS; (6) 4217, Gold Coast, QLD; (7) 6027, Connolly, WA; (8) 3350, Ballarat, VIC; (9) 4350, Toowoomba, QLD; (10) 4670, Bundaberg, QLD.

To understand further residential property investors decision on dwelling location,

Note that postcodes vary significantly in area size and generally include more than one neighbourhood. For example, Australian postcode 4350 includes the delivery areas for: Centenary Heights, Charleston, Athol, Blue Mountain Heights, Cranley, Darling Heights, Clifford Gardens, Cotswold Hills, East Toowoomba, Finnie, Drayton, Drayton North, Harlaxton, Harristown, Glenvale, Gowrie Mountain, Middle Ridge, Kearneys Spring, Mount Lofty, Mount Kynoch, Newtown, Mount Rascal, Northlands, North Toowoomba, Prince Henry Heights, Northpoint, Redwood, Rangeville, South Toowoomba, Rockville, Toowoomba, Toowoomba DC, Toowoomba East, Toowoomba South, Toowoomba Village Fair, Toowoomba West, Top Camp, Torrington adn Wellcamp. See [http://auspost.com.au/apps/postcode.html?&ecid=p137028068834](http://auspost.com.au/apps/postcode.html?&ecid=p137028068834)
we explore CoreLogic RP house price sales data provided by SIRCA. Figure 4 shows the median sale prices for houses in the top 10 postcodes described above, by price quartile of the price distribution, over time. The most affordable houses (the lowest quartile of the sale price distribution) in the top 10 postcodes were sold with a median around the $200,000, except for the Gold Coast area. Figure 5 shows median sale prices in the top 10 popular postcodes for residential investment for units, by price quartile. The most affordable units also sell for a median under $200,000. Lastly, Figure 6 shows median sale prices for vacant land in the top 10 postcodes by quartile. In some areas no vacant land has been sold since the beginning of 2000, such as for the postcodes around Cairns (4870), Gold Coast (4217), and Connolly (6027). The figures show the house price cycle for those particular non-metropolitan areas, which suggests that some investors would have made a considerable capital gain if they enter – and exit – the market on time; see also Table 4. Further research will explore this line of investigation.

The primarily non-metropolitan nature of housing for investment purposes has strong implications for social policy. Affordable rental housing is becoming more regionally located at a time when there are fewer employment options in close geographical proximity. This may contribute to increasing disadvantage through transport poverty. Sterzer (2017) outlines the disadvantages of being located outside areas with good transport options, including ‘forced’ car ownership, complex transportation needs for employment, lack of reasonably priced local shopping options and reduction in leisure time. She also documents evidence that most low-income renters do not change tenancy voluntarily, but relocate in response to significant external impetus. Ultimately low-income renters have limited choice for accommodation which meets their locational preferences.

Investment in residential property by private investors makes up the majority of rental investment in Australia, and is concentrated in the purchase of existing homes. New entries into residential property investment are primarily purchasing properties in non-metropolitan Australia, rather than in capital cities. This partly reflects an expectation of price growth on the behalf of investors, but the approximately 60 percent loan to value ratio points out that investors are also constrained in investing in more expensive urban properties. Consequently, although there is substantial investment in residential property in Australia, particularly provided by above-average income earners, it is

\[\text{Carlton (1981)}\] argued that the property and land taxes disproportionately affects values of housing and land close to the central business districts (CBD) relative to values far from the CBD.
not stimulating supply of housing in locationally advantageous areas for those who are constrained to low-income housing. This has direct consequences for transport related poverty, and the ability of these households to save for improved housing situations in the future.

5.3 What are the Rental Properties’ Characteristics?

Moreover, we find that Australian residential property investors are more prone to invest in new houses than owner-occupiers, however they are less likely to purchase a vacant land or build a new house. Although RIPL mainly invest in existing property, we find that those borrowers purchasing a new house are 1.3 percent more likely to be residential property investors than the average borrower, while those purchasing vacant land and a to-be-built property are 7 and 9.8 percent less likely to take RIPLs than the average borrowers respectively.

We explore further the CoreLogic RP house price sales data provided by SIRCA to observe the characteristics of the houses sold in the main postcodes where RIPLs have been purchasing, discussed above in Section 5.2. Table 4 shows measures of the distribution of sale prices for those top-10 postcodes. Properties in these postcodes appear to be much more affordable than properties in metropolitan cities and surroundings, with the exception of the Gold Coast (4217). Table 5 shows that the properties that RIPLs are targeting are mainly houses, but also units, with 3 bedrooms and 1.5 bathrooms on average. They seem to be standard large houses, without luxuries such as pools and waterfront views.

6 Conclusion

House price growth, expectations on the future of the age pension, and arguably the implications of the recent Global Financial Crisis and the European debt crisis, have changed the incentives and behaviour of households who are not only trying to secure housing tenure but also who are attempting to accumulate wealth. Some argue, in Australia this behaviour is encouraged by the current taxation system where residential investors take advantage of capital gain discounts and negative gearing option.

Many young Australians, facing high housing prices, may be trading-off early owner-
occupation for residential investment with the aim of becoming owner-occupiers later; Seelig et al. (2009). Some individuals close to retirement may decide to invest in real estate to guarantee permanent income in the future.

We confirm previous results. Australian residential property investors are middle age men, who already receive rent income, tend to be self-employed or small business proprietors or have relatively high income employment. They invest in existing property, as do most Australians, but are more likely to invest in new houses than owner-occupiers.

Unlike home-owners we find that direct residential property investors are willing to invest interstate or in a different postcode to their current residential address. They invest in non-metropolitan areas, rather than in the big metropolitan cities.

Residential investors’ behaviour directly affects the housing supply, and therefore future house prices. We observe that Australian residential property investors are investing in existing dwellings in non-metropolitan cities where presumably they expect house price appreciation to follow the house price cycle of the big metropolitan cities but with some lag and presumably at a minor scale. They appear to be well-informed or/and willing to take risk by investing in different housing markets to the ones they currently reside in. They predominantly invest in existing stock, and although they are more likely to invest in new housing than owner-occupiers, they are less likely to invest in vacant land and build new housing stock.

With shortage of land (and adequate housing) available in well-located areas of the capital cities, house prices (for renters, owner-occupiers and even small scale investors) in those areas become unaffordable. Small scale residential property investors, who represent the vast majority of real estate investors, can afford to invest in existing dwellings in non-metropolitan areas. This is how they have been extending the housing supply, although continued rises in housing prices suggests that it is not yet enough.

The implications for housing affordability for low-income groups is that renters are faced with locational disadvantage. They are less likely to be able to obtain suitable housing near to transport, work, shopping and recreational facilities, leading to potential further disadvantage through transport poverty and lowered ability to accumulate wealth for future financial well-being. However, from a regional and rural perspective, the market effects of directing residential property investment to non-metropolitan areas can support economic and social development in those regional areas. Policy on the provision of housing resources will need to balance these two outcomes. To contribute
to that debate future work will explore residential property investment location further incorporating SIRCA/CoreLogic RP Data, defining ‘winners’ and ‘losers’ amongst investors, and exploring whether residential property investors are following or anticipating the housing cycle.
References


A Figures
Figure 1: Housing Finance Commitments for residential property investors.

(a) Value of Housing Finance Commitments

- Total Value - All dwellings financed
- Value of Investment Dwellings - Construction
- Value of Investment Dwellings - Purchased by Individuals
- Value of Investment Dwellings - Purchased by Others

Source: ABS 5609.0 - Housing Finance, Australia, August 2017

(b) Value of Housing Finance Commitment

- Share of Investment Dwellings, %
- Share of Investment Dwellings Constructed for rent and resale, %
- Share of Investment Dwellings Purchased by Individuals for rent and resale, %
- Share of Investment Dwellings Purchased by Others for rent and resale, %

Figure 2: Proportion of mortgage products by type.
Figure 3: Proportion of Residential investment property loan by postcode of the purchased dwelling – Jan2003-May2009.

Proportion of residential investments by postcode, Jan2003-May2009

Source: authors.
Figure 4: Median sale prices for houses in the TOP 10 postcodes, by price quartile.
Median sale price - houses - Top 10

(c) third quartile

- Cairns (4870)
- Mandurah (6210)
- Torquay (4655)
- Mackay (4740)
- Launceston (7250)
- Gold Coast (4217)
- Connolly (6027)
- Ballarat (3350)
- Darling Heights (4350)
- Bundaberg (4670)

Median sale price - houses - Top 10

(d) highest quartile

- Cairns (4870)
- Mandurah (6210)
- Torquay (4655)
- Mackay (4740)
- Launceston (7250)
- Gold Coast (4217)
- Connolly (6027)
- Ballarat (3350)
- Darling Heights (4350)
- Bundaberg (4670)
Figure 5: Median sale prices for units in the TOP 10 postcodes, by price quartile.
Median sale price - units - Top 10

third quartile

Cairns (4870)
Mandurah (6210)
Torquay (4655)
Mackay (4740)
Launceston (7250)
Gold Coast (4217)
Connolly (6027)
Ballarat (3350)
Darling Heights (4350)
Bundaberg (4670)

(c)

Median sale price - units - Top 10

highest quartile

Cairns (4870)
Mandurah (6210)
Torquay (4655)
Mackay (4740)
Launceston (7250)
Gold Coast (4217)
Connolly (6027)
Ballarat (3350)
Darling Heights (4350)
Bundaberg (4670)

(d)
Figure 6: Median sale prices for land in the TOP 10 postcodes, by price quartile.
## B Tables

Table 1: Individual characteristics for borrowers purchasing a residence financed with a mortgage, by type

<table>
<thead>
<tr>
<th>Variables</th>
<th>R IPL</th>
<th>O/O</th>
<th>Difference</th>
<th>t-statistic</th>
<th>All Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>43.24 yrs</td>
<td>41.60 yrs</td>
<td>-1.63</td>
<td>-65.61***</td>
<td>41.94 yrs</td>
</tr>
<tr>
<td></td>
<td>(10.69)</td>
<td>(10.92)</td>
<td>(0.02)</td>
<td>(10.90)</td>
<td></td>
</tr>
<tr>
<td>Number of dependents</td>
<td>0.65</td>
<td>0.81</td>
<td>0.16</td>
<td>63.52***</td>
<td>0.77</td>
</tr>
<tr>
<td>Age youngest dependent</td>
<td>7.31 yrs</td>
<td>6.74 yrs</td>
<td>-0.57</td>
<td>-28.67***</td>
<td>6.84 yrs</td>
</tr>
<tr>
<td>Time at current employment</td>
<td>8.08 yrs</td>
<td>6.85 yrs</td>
<td>-1.22</td>
<td>-71.70***</td>
<td>7.11 yrs</td>
</tr>
</tbody>
</table>

Proportions

- $<30$ yrs: 0.10, 0.13, 0.13
- $30$-$39$ yrs: 0.29, 0.33, 0.32
- $40$-$49$ yrs: 0.31, 0.30, 0.30
- $50$-$59$ yrs: 0.23, 0.17, 0.19
- $\geq60$ yrs: 0.07, 0.06, 0.06
- Married: 0.72, 0.70, 0.71
- Coborrower: 0.62, 0.70, 0.68
- Females: 0.27, 0.31, 0.30
- Small Business Proprietor: 0.13, 0.09, 0.10
- Self-employed: 0.27, 0.19, 0.20
- Rent Income: 0.02, 0.00, 0.01
- Salary Income: 0.96, 0.95, 0.95
- Shares: 0.06, 0.04, 0.05
- To-be-built House: 0.03, 0.05, 0.04
- Existing House: 0.93, 0.91, 0.91
- New House: 0.01, 0.01, 0.01
- Vacant Land: 0.03, 0.04, 0.04
- State mobility: 0.11, 0.03, 0.04
- Postcode mobility: 0.49, 0.23, 0.28

Total obs. 239,314 918,225 1,157,539

Averages and (standard deviations). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.  

36
Table 2: Financial characteristics for borrowers purchasing a residence financed with a mortgage, by type

<table>
<thead>
<tr>
<th>Variables</th>
<th>RIPL</th>
<th>O/O</th>
<th>Difference</th>
<th>t-statistic</th>
<th>All Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan Amount</td>
<td>$274,205</td>
<td>$176,462</td>
<td>$97,743</td>
<td>-230∗∗∗</td>
<td>$196,670</td>
</tr>
<tr>
<td></td>
<td>(208,477)</td>
<td>(177,738)</td>
<td>(423)</td>
<td>(423)</td>
<td>(188,712)</td>
</tr>
<tr>
<td>Monthly Repayment</td>
<td>$2,510</td>
<td>$1,143</td>
<td>$1,367</td>
<td>-230∗∗∗</td>
<td>$1,426</td>
</tr>
<tr>
<td></td>
<td>(4,979)</td>
<td>(1,351)</td>
<td>(5,91)</td>
<td>(2,626)</td>
<td></td>
</tr>
<tr>
<td>Monthly Total Expenses</td>
<td>$6,856</td>
<td>$4,537</td>
<td>$2,319</td>
<td>-220∗∗∗</td>
<td>$5,016</td>
</tr>
<tr>
<td></td>
<td>(6,013)</td>
<td>(4,135)</td>
<td>(10,53)</td>
<td>(4,684)</td>
<td></td>
</tr>
<tr>
<td>Uncommitted Monthly Income</td>
<td>$1,817</td>
<td>$1,562</td>
<td>$256</td>
<td>-26.57∗∗∗</td>
<td>$1,614</td>
</tr>
<tr>
<td></td>
<td>(5,289)</td>
<td>(3,853)</td>
<td>(9,62)</td>
<td>(4,192)</td>
<td></td>
</tr>
<tr>
<td>Rent/Board Income</td>
<td>$1,291</td>
<td>$249</td>
<td>$1,042</td>
<td>-380∗∗∗</td>
<td>$465</td>
</tr>
<tr>
<td></td>
<td>(1,985)</td>
<td>(872)</td>
<td>(2,73)</td>
<td>(1,263)</td>
<td></td>
</tr>
<tr>
<td>Net Monthly Income</td>
<td>$8,660</td>
<td>$6,097</td>
<td>$2,563</td>
<td>-250∗∗∗</td>
<td>$6,627</td>
</tr>
<tr>
<td></td>
<td>(6,141)</td>
<td>(3,922)</td>
<td>(10,26)</td>
<td>(4,591)</td>
<td></td>
</tr>
<tr>
<td>Gross Monthly Income</td>
<td>$11,340</td>
<td>$7,925</td>
<td>$3,415</td>
<td>-220∗∗∗</td>
<td>$8,631</td>
</tr>
<tr>
<td></td>
<td>(9,120)</td>
<td>(6,083)</td>
<td>(15,66)</td>
<td>(6,961)</td>
<td></td>
</tr>
<tr>
<td>Total Assets</td>
<td>$1,309,763</td>
<td>$717,688</td>
<td>$592,075</td>
<td>-130∗∗∗</td>
<td>$840,096</td>
</tr>
<tr>
<td></td>
<td>(3,382,869)</td>
<td>(1,310,451)</td>
<td>(4,432)</td>
<td>(1,942,564)</td>
<td></td>
</tr>
<tr>
<td>Liquid Assets</td>
<td>$154,774</td>
<td>$75,019</td>
<td>$79,755</td>
<td>-120∗∗∗</td>
<td>$91,508</td>
</tr>
<tr>
<td></td>
<td>(421,893)</td>
<td>(245,750)</td>
<td>(668)</td>
<td>(292,830)</td>
<td></td>
</tr>
<tr>
<td>Total Value of Shares</td>
<td>$4,884</td>
<td>$2,090</td>
<td>$2,794</td>
<td>-24∗∗∗</td>
<td>$2,668</td>
</tr>
<tr>
<td></td>
<td>(70,939)</td>
<td>(43,929)</td>
<td>(116)</td>
<td>(50,720)</td>
<td></td>
</tr>
<tr>
<td>Total Liabilities</td>
<td>$369,429</td>
<td>$194,719</td>
<td>$174,710</td>
<td>-120∗∗∗</td>
<td>$230,839</td>
</tr>
<tr>
<td></td>
<td>(857,193)</td>
<td>(557,611)</td>
<td>(1,449)</td>
<td>(635,267)</td>
<td></td>
</tr>
<tr>
<td>Short Term Liabilities</td>
<td>$16,542</td>
<td>$9,606</td>
<td>$6,936</td>
<td>-55.21∗∗∗</td>
<td>$11,040</td>
</tr>
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<td></td>
<td>(77,202)</td>
<td>(47,158)</td>
<td>(126)</td>
<td>(54,811)</td>
<td></td>
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<tr>
<td>Net Wealth</td>
<td>$934,091</td>
<td>$519,779</td>
<td>$414,313</td>
<td>-93.28∗∗∗</td>
<td>$605,435</td>
</tr>
<tr>
<td></td>
<td>(3,355,035)</td>
<td>(1,337,118)</td>
<td>(4,442)</td>
<td>(1,942,564)</td>
<td></td>
</tr>
<tr>
<td>Payment to income ratio</td>
<td>27%</td>
<td>19%</td>
<td>8%</td>
<td>-190∗∗∗</td>
<td>21%</td>
</tr>
</tbody>
</table>

Averages and (standard deviations). * p < 0.05, ** p < 0.01, *** p < 0.001. All monetary values are in Q1-2017 constant prices.
Table 2 – continued from previous page

<table>
<thead>
<tr>
<th>Variables</th>
<th>RIPL</th>
<th>O/O Difference</th>
<th>t-statistic</th>
<th>All Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(20.35)</td>
<td>(18.15)</td>
<td>(0.4)</td>
<td>(18.91)</td>
</tr>
<tr>
<td>Debt service ratio</td>
<td>54%</td>
<td>43%</td>
<td>11%</td>
<td>-270***</td>
</tr>
<tr>
<td></td>
<td>(19.41)</td>
<td>(17.85)</td>
<td>(0.4)</td>
<td>(18.76)</td>
</tr>
<tr>
<td>Loan to value ratio</td>
<td>64%</td>
<td>60%</td>
<td>4%</td>
<td>-78.81***</td>
</tr>
<tr>
<td></td>
<td>(18.39)</td>
<td>(22.12)</td>
<td>(0.5)</td>
<td>(21.46)</td>
</tr>
<tr>
<td>Total obs.</td>
<td>239,314</td>
<td>918,225</td>
<td></td>
<td>1,157,539</td>
</tr>
</tbody>
</table>

Averages and (standard deviations). * p < 0.05, ** p < 0.01, *** p < 0.001. All monetary values are in Q1-2017 constant prices.

Table 3: Residential Property Investors

<table>
<thead>
<tr>
<th>P(\hat{RIPL} = 1)</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term Deposit Rate 3yrs.</td>
<td>-0.001</td>
<td>-0.003</td>
<td>-0.018***</td>
<td>-0.067***</td>
</tr>
<tr>
<td></td>
<td>[0.002]</td>
<td>[0.002]</td>
<td>[0.002]</td>
<td>[0.005]</td>
</tr>
<tr>
<td>Aus Gov Bonds 10yrs.</td>
<td>0.022***</td>
<td>0.022***</td>
<td>0.019***</td>
<td>0.007***</td>
</tr>
<tr>
<td></td>
<td>[0.001]</td>
<td>[0.001]</td>
<td>[0.001]</td>
<td>[0.002]</td>
</tr>
<tr>
<td>Dwelling Index Change</td>
<td>-0.022***</td>
<td>-0.021***</td>
<td>-0.023***</td>
<td>0.014**</td>
</tr>
<tr>
<td></td>
<td>[0.003]</td>
<td>[0.003]</td>
<td>[0.003]</td>
<td>[0.005]</td>
</tr>
<tr>
<td>Age&lt;30 yrs</td>
<td>-0.014***</td>
<td>-0.036***</td>
<td>-0.035***</td>
<td>-0.027***</td>
</tr>
<tr>
<td></td>
<td>[0.001]</td>
<td>[0.001]</td>
<td>[0.001]</td>
<td>[0.002]</td>
</tr>
<tr>
<td>Age 30-39 yrs</td>
<td>-0.012***</td>
<td>-0.015***</td>
<td>-0.022***</td>
<td>-0.019***</td>
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<tr>
<td>Age 50-59 yrs</td>
<td>0.026***</td>
<td>0.004***</td>
<td>0.016***</td>
<td>0.012***</td>
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<tr>
<td>Age≥60 yrs</td>
<td>-0.012***</td>
<td>-0.043***</td>
<td>0.007***</td>
<td>-0.010***</td>
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</table>

[standard errors]. * p < 0.05, ** p < 0.01, *** p < 0.001.
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<td>0.064***</td>
<td>0.071***</td>
<td>0.036***</td>
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<td>[0.002]</td>
<td>[0.002]</td>
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<tr>
<td>Net Wealth</td>
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<td>0.041***</td>
<td>-0.001**</td>
<td>0.015***</td>
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<td>[0.000]</td>
<td>[0.001]</td>
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<tr>
<td>Female</td>
<td>-0.030***</td>
<td>-0.003**</td>
<td>-0.005***</td>
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<tr>
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<td>[0.001]</td>
<td>[0.001]</td>
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<tr>
<td>Married</td>
<td>-0.002**</td>
<td>-0.026***</td>
<td>-0.009***</td>
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</tr>
<tr>
<td></td>
<td>[0.001]</td>
<td>[0.001]</td>
<td>[0.001]</td>
<td></td>
</tr>
<tr>
<td>Number of Dependents</td>
<td>-0.028***</td>
<td>-0.025***</td>
<td>-0.017***</td>
<td></td>
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<tr>
<td></td>
<td>[0.000]</td>
<td>[0.000]</td>
<td>[0.001]</td>
<td></td>
</tr>
<tr>
<td>Gross Monthly Income</td>
<td>0.161***</td>
<td>0.128***</td>
<td></td>
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</tr>
<tr>
<td></td>
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<td>[0.001]</td>
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<td>Self-Employment</td>
<td>0.033***</td>
<td>0.035***</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>[0.001]</td>
<td>[0.002]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professionals</td>
<td>0.005**</td>
<td>0.001</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>[0.002]</td>
<td>[0.002]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-Professionals</td>
<td>0.006**</td>
<td>0.016***</td>
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<td></td>
<td>[0.002]</td>
<td>[0.003]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>0.001</td>
<td>0.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.002]</td>
<td>[0.002]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>0.013***</td>
<td>0.014***</td>
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</tr>
<tr>
<td></td>
<td>[0.002]</td>
<td>[0.003]</td>
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<td></td>
</tr>
</tbody>
</table>

[standard errors]. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. 

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Table 3 – continued from previous page

<table>
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<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
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<td>Agriculture</td>
<td>0.058***</td>
<td>0.040***</td>
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<td></td>
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<tr>
<td></td>
<td>[0.004]</td>
<td>[0.005]</td>
<td></td>
<td></td>
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<tr>
<td>Retired</td>
<td>0.003</td>
<td>0.010</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.006]</td>
<td>[0.008]</td>
<td></td>
<td></td>
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<tr>
<td>Small Business Proprietor</td>
<td>0.013***</td>
<td>0.017***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.002]</td>
<td>[0.003]</td>
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<tr>
<td>Income Rent</td>
<td>0.234***</td>
<td>0.187***</td>
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</tr>
<tr>
<td></td>
<td>[0.005]</td>
<td>[0.006]</td>
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<td>To-be-built</td>
<td>-0.098***</td>
<td></td>
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<tr>
<td></td>
<td>[0.003]</td>
<td></td>
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<tr>
<td>New House</td>
<td>0.013*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.005]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacant Land</td>
<td>-0.070***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.003]</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Inter-state investment</td>
<td>0.101***</td>
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<td></td>
<td>[0.002]</td>
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<tr>
<td>Other postcode investment</td>
<td>0.139***</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>[0.001]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shea Partial $R^2$  | 0.0194    | 0.0251    | 0.0757    | 0.1245    |

$N$                  | 1,144,813  | 1,144,798 | 1,137,112 | 536,152   |

[standard errors]. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. 

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Table 4: Property sale prices by postcode

<table>
<thead>
<tr>
<th>Postcode</th>
<th>Median</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4870</td>
<td>$285,182</td>
<td>$311,817</td>
<td>$216,486</td>
<td>$724,295</td>
<td>1,595</td>
</tr>
<tr>
<td>6210</td>
<td>$385,917</td>
<td>$455,574</td>
<td>$302,725</td>
<td>$983,371</td>
<td>2,062</td>
</tr>
<tr>
<td>4655</td>
<td>$254,428</td>
<td>$271,942</td>
<td>$202,908</td>
<td>$651,339</td>
<td>1,581</td>
</tr>
<tr>
<td>4740</td>
<td>$310,110</td>
<td>$326,918</td>
<td>$202,391</td>
<td>$528,797</td>
<td>1,497</td>
</tr>
<tr>
<td>7250</td>
<td>$225,920</td>
<td>$236,351</td>
<td>$178,938</td>
<td>$356,563</td>
<td>1,363</td>
</tr>
<tr>
<td>4217</td>
<td>$1,082,899</td>
<td>$1,119,822</td>
<td>$656,385</td>
<td>$2,405,615</td>
<td>1,565</td>
</tr>
<tr>
<td>6027</td>
<td>$417,229</td>
<td>$436,951</td>
<td>$346,389</td>
<td>$655,275</td>
<td>974</td>
</tr>
<tr>
<td>3350</td>
<td>$203,043</td>
<td>$216,165</td>
<td>$165,297</td>
<td>$361,809</td>
<td>1,617</td>
</tr>
<tr>
<td>4350</td>
<td>$240,493</td>
<td>$270,001</td>
<td>$191,569</td>
<td>$520,414</td>
<td>1,789</td>
</tr>
<tr>
<td>4670</td>
<td>$240,468</td>
<td>$255,632</td>
<td>$183,344</td>
<td>$413,256</td>
<td>1,575</td>
</tr>
</tbody>
</table>

Note: This table presents: in column (2) the average sale price across quartile averages of property sold by postcode during the period 2000-2016; in column (3) the average sale price across quartile minimums of property sold by postcode during the period 2000-2016; in column (4) the average sale price across quartile median of property sold by postcode during the period 2000-2016; in column (5) the average sale price across quartile maximums of property sold by postcode during the period 2000-2016; in column (6) the number of properties sold by postcode during the period 2000-2016. All prices are real values for Q4-2016.
Table 5: Sold Properties’ Characteristics by postcode

<table>
<thead>
<tr>
<th>Postcode</th>
<th>Houses</th>
<th>Units</th>
<th>Land</th>
<th>Bedrooms</th>
<th>Bathrooms</th>
<th>Waterfront</th>
<th>Pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>4870</td>
<td>50%</td>
<td>50%</td>
<td>0%</td>
<td>2.8</td>
<td>1.5</td>
<td>0.2</td>
<td>5</td>
</tr>
<tr>
<td>6210</td>
<td>38.6%</td>
<td>36.8%</td>
<td>24.6%</td>
<td>3</td>
<td>1.6</td>
<td>0.3</td>
<td>1.8</td>
</tr>
<tr>
<td>4655</td>
<td>50.6%</td>
<td>36.8%</td>
<td>12.6%</td>
<td>3.1</td>
<td>1.6</td>
<td>0.1</td>
<td>1.8</td>
</tr>
<tr>
<td>4740</td>
<td>53.2%</td>
<td>42.2%</td>
<td>4.6%</td>
<td>2.9</td>
<td>1.4</td>
<td>0.05</td>
<td>2.2</td>
</tr>
<tr>
<td>7250</td>
<td>58.7%</td>
<td>38%</td>
<td>3.3%</td>
<td>2.9</td>
<td>1.4</td>
<td>0</td>
<td>0.2</td>
</tr>
<tr>
<td>4217</td>
<td>49%</td>
<td>51%</td>
<td>0%</td>
<td>2.9</td>
<td>2.1</td>
<td>1.3</td>
<td>5.5</td>
</tr>
<tr>
<td>6027</td>
<td>81.3%</td>
<td>18.7%</td>
<td>0%</td>
<td>3.4</td>
<td>1.7</td>
<td>0</td>
<td>4.7</td>
</tr>
<tr>
<td>3350</td>
<td>49.5%</td>
<td>32.4%</td>
<td>18.1%</td>
<td>2.7</td>
<td>1.4</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>4350</td>
<td>44.7%</td>
<td>44%</td>
<td>11.3%</td>
<td>3</td>
<td>1.4</td>
<td>0.1</td>
<td>0.8</td>
</tr>
<tr>
<td>4670</td>
<td>50.8%</td>
<td>34.4%</td>
<td>14.8%</td>
<td>3</td>
<td>1.5</td>
<td>0.1</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Note: This table presents: in column (2) the proportion of houses sold by postcode during the period 2000-2016; in column (3) the proportion of units sold by postcode during the period 2000-2016; in column (4) the proportion of vacant land blocks sold by postcode during the period 2000-2016; in column (5) the average number of bedrooms in the properties sold by postcode during the period 2000-2016; in column (6) the average number of bathrooms in the properties sold by postcode during the period 2000-2016; in column (7) the average number of waterfront properties sold by postcode during the period 2000-2016; and in column (8) the average number of properties with pools sold by postcode during the period 2000-2016.