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Working Paper

Housing: An Analysis of Ownership and Investment Based on the Household Savings Survey

New Zealand Treasury Working Paper, No. 06/07

Provided in Cooperation with:

The Treasury, New Zealand Government

Suggested Citation: van Zijll de Jong, Mark; Scobie, Grant M. (2006) : Housing: An Analysis of Ownership and Investment Based on the Household Savings Survey, New Zealand Treasury Working Paper, No. 06/07, New Zealand Government, The Treasury, Wellington

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Housing: An Analysis of Ownership and Investment Based on the Household Savings Survey

Mark van Zijll de Jong and
Grant M. Scobie

NEW ZEALAND TREASURY
WORKING PAPER 06/07

JULY 2006



THE TREASURY
Kaitohutohu Kaupapa Rawa

MONTH/YEAR

July 2006

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ACKNOWLEDGEMENTS

The authors are grateful to Phil Briggs of the Reserve Bank of New Zealand who provided very comprehensive comments on an earlier draft, and to Andrew Aitken of Motu who also reviewed the paper. Anthony Rossiter of the Reserve Bank of Australia was helpful in facilitating access to data.

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Abstract

In 2001, Statistics New Zealand conducted a major survey of the assets and liabilities of New Zealanders called the Household Savings Survey (HSS). This paper presents the results of an analysis of ownership and investment in housing based on the results of that survey. International comparisons suggest that the rates of home ownership, investment in property and housing debt levels in New Zealand are broadly comparable with those in Australia and the United States and with a wider set of countries. An exception is that younger age groups in New Zealand hold more investment property than their counterparts in the USA and Australia.

In New Zealand almost one in ten couples owned rental property in 2001, while one in five owned some form of investment property. We examine the factors that govern tenure choice and gearing. Of note is the fact that 44% of couples and 56% of individual home owners have debt free residential properties.

Households' balance sheets reflect the importance of housing for both assets and liabilities. We complement the analysis of the cross-sectional unit record data from the HSS with an analysis of housing taken from the households' aggregate balance sheets from 1978 to 2004 from the Reserve Bank of New Zealand.

We use these data to form a measure of household saving based on the stock of net equity. We then adjust this measure of savings for changes in house prices, and find that this adjustment explains almost two thirds of the difference between the stock and flow measure of household savings, the latter taken from the Household Income and Outlay Accounts. Furthermore we find that from 1980 to 2005 the annual average rate of household saving based on these estimates from household balance sheets was 12.4% of personal disposable income, after removing the effect of changes in house price. Arguably this is a preferable measure of household saving to the widely cited negative rates of household saving based on national income accounts.

We further use the balance sheet data to estimate the extent to which households have apparently withdrawn equity from their housing assets for investment in other forms or consumption. We find that on average a rise of one dollar in housing net equity is associated with 10 cents of apparent equity withdrawal.

JEL CLASSIFICATION R20: Housing

KEYWORDS Housing; New Zealand; Portfolio; Wealth; Ownership; Equity; Gearing; Equity withdrawal; Measures of saving

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Housing: An Analysis of Ownership and Investment Based on the Household Savings Survey

1 Introduction

Housing¹ represents a large share of all household assets in New Zealand and it appears its share has been rising in recent years. As the majority of purchases require debt financing because of the size of the purchase, housing also comprises a large part of household liabilities. However, we have limited information on the share of residential property in the portfolio of households.

The primary purpose of this paper is to examine home ownership and investment in New Zealand and to assess what governs tenure choice, gearing and the portfolio structure of residential property.² The primary sources of data used in this analysis are aggregate household financial data from the Reserve Bank of New Zealand (RBNZ) and micro-household level data from the Household Savings Survey (HSS).

The RBNZ released in 2000 a long time series providing a comprehensive perspective of household financial assets and liabilities.³ The data are drawn from regular monthly and quarterly surveys conducted by the Reserve Bank as well as an annual December survey. We use that data to establish a long-run perspective of housing in the households' balance sheet.

In 2001, Statistics New Zealand conducted the HSS which was the first comprehensive cross-sectional survey of the assets and liabilities of New Zealand households. It provides estimates of the net worth of households.⁴ Although the HSS was developed with a retirement focus, the possible uses of the data are much wider. It contains a large amount of information on residential property. While the one-off nature of this survey is a major limitation, it does however provide a snapshot of detailed information of New Zealand households' balance sheet and the share of residential property in the portfolio of households. The strength of the survey lies in providing unit record data which can

¹ Housing for the purposes of this paper consists of all private sector residential dwellings.

² Home ownership is used in the paper in the broad sense to refer to households who have purchased owner-occupied homes outright or with a mortgage.

³ See Thorp and Ung (2000).

⁴ Refer to Appendix for detailed information on Household Saving Survey 2001.

complement the aggregate data from the Reserve Bank. This paper presents the results of an analysis of ownership and investment in housing based on the results of that survey.

The analysis proceeds as follows. Section 2 examines the changes and trends in the aggregate balance sheet of New Zealand households. It concludes with a comparison of stock and flow measures of household saving. In Section 3, results from HSS on home ownership are presented. Tenure choice is modelled and the factors affecting residential property ownership are discussed. Section 4 documents the ownership structure of investment property. Section 5 outlines households' gearing choice. Section 6 provides an insight on housing equity and provides an estimate of the apparent withdrawal of equity. Discussion and conclusions are in Section 7.

2 Housing in the Aggregate Balance Sheet of Households

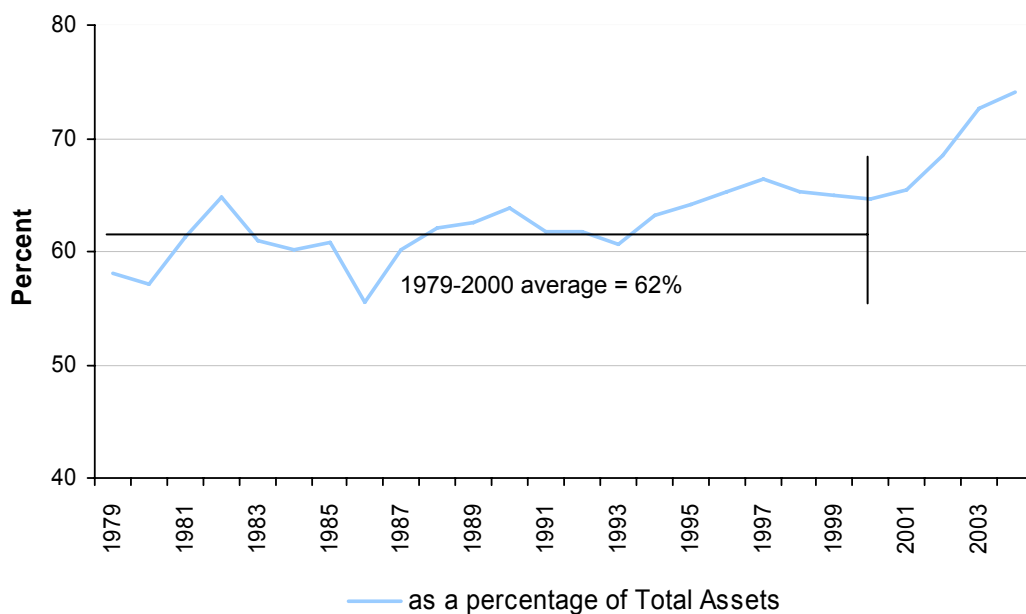
This section examines the aggregate balance sheet of households in New Zealand. Using the long-run annual series of the financial assets and liabilities of households compiled by the Reserve Bank of New Zealand we are able to present changes and trends in a number of important components of the household balance sheet. These data allow us to focus on the value of the housing stock of all private residential dwellings excluding farms and the level of housing debt.

2.1.1 Housing in the Balance Sheet

Housing is an important component of households' balance sheets, both on the asset side and the liability side. As depicted in Figure 1, the gross value of housing accounts for a significant share of the asset side of households' balance sheet. This share has been rising in recent years. In 2004, housing as a share of total assets reached 74%, in contrast to the long run average from 1978 to 2000 of 62%. This is largely owing to recent buoyant housing market which has seen residential property values rise by 57% since 2001.⁵

⁵ Quotable Value Ltd (QV)

Figure 1 – Gross housing value as share of total assets: 1979-2004



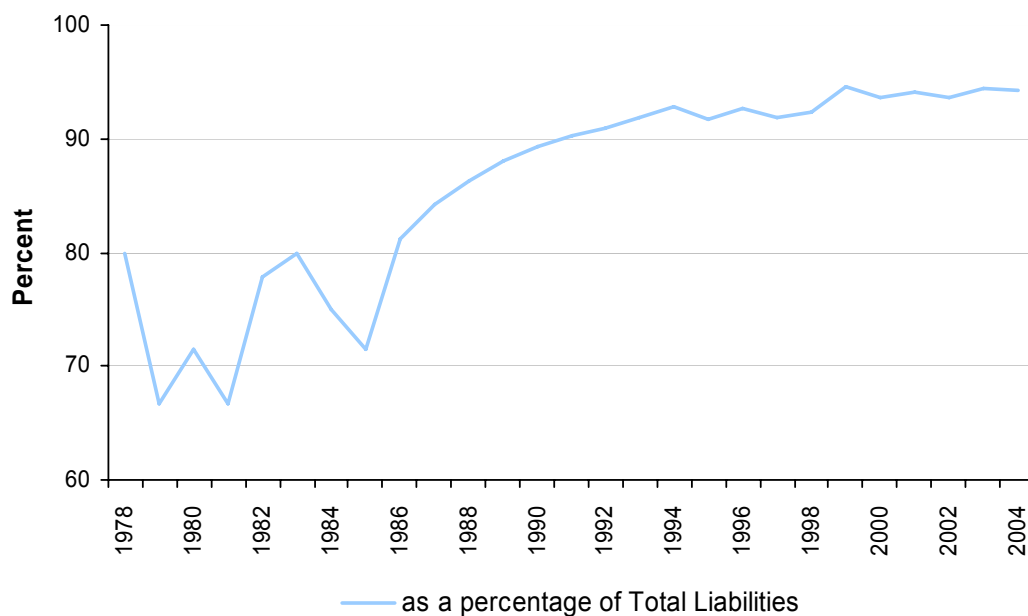
As shown, the rise in total assets has been driven in large part by an increase in the gross value of the housing stock. On average over the period 1980 to 2004 the annual change in the gross value of housing represented almost 70% of the annual change in the value of total assets.

Due to the size of residential property purchases, households often incur large debt, with the consequence that housing mortgages constitute a high proportion of total household liabilities. Figure 2 illustrates the share of liabilities made up of housing mortgages. The period 1978 to 1987 was characterised by a significant level of intervention in credit markets with a consequent series of fluctuations in the share of mortgages depending on the particular regulatory regimes and controls operating at different times. In periods of interest rate controls some borrowing for housing took place through such mechanisms as solicitors' trust funds so that the data does not necessarily capture all housing loans.

In contrast, the period since financial deregulation in the late 1980's has shown greater stability and an increase as households were able to adjust their portfolios to desired levels.⁶ As a consequence there has now been little change even over the last decade.

⁶ Apart from the financial deregulation resulting in households having greater access to credit, there is insufficient information on the key drivers of debt accumulation decisions of households (Hull, 2003). Goh (2005) suggests rise in gross housing values and expectations of capital gains are likely to have driven debt accumulation for many households.

Figure 2 – Housing mortgages as share of total liabilities: 1978-2004



2.1.2 Housing relative to Household Income

It is evident that there has been growth in housing on both assets and liabilities sides in the balance sheet. It is important to consider this in relation to households' income.⁷ On the asset side, housing values as a share of personal disposable income have risen significantly to over 500% in 2004 as depicted in Figure 3. Again after modest annual increases until 2000, the ratio rose sharply from 330% in 2001.

On the liability side, Figure 4 indicates that housing debt has risen steadily as a share of income since the end of financial deregulation. The steady rise since 1987 reflects that adjustment of debt levels in a climate of deregulated financial markets, the use of housing as collateral for loans for small businesses and changes in household formation.

⁷ Both aggregate measures effectively give more weight to higher income households.

Figure 3 – Gross housing values as share of personal disposable income: 1979-2004

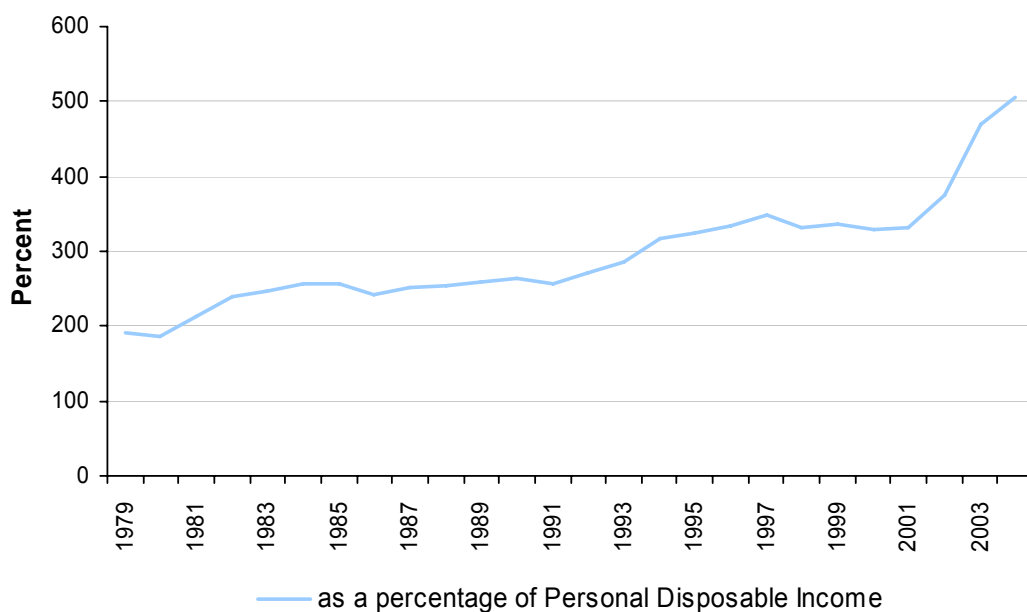


Figure 4 – Housing mortgages as share of personal disposable income: 1978-2004

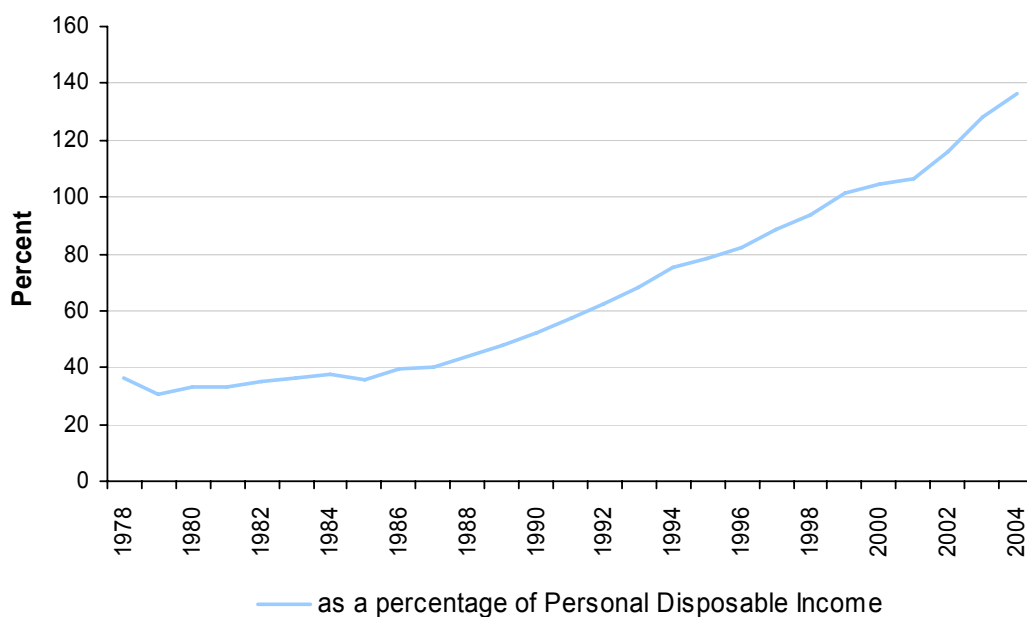


Table 1 provides an overall summary of the aggregate household balance sheet. While concern has been expressed at the rising level of household debt, this has to be placed in the context of the growth of assets. While it is true that liabilities have grown faster than total assets until 2002, total real net wealth has risen. Real net wealth per capita has grown at an annual average rate of 3.5% from 1982 to 2004. The rise in assets and net wealth since 2002 has been due almost solely to the increase in the gross value of housing.

The rise in real net wealth per capita even discounting that due to house price changes, raises doubts about the widely held view that New Zealand savings rates are negative and falling. These latter measures are based on annual estimates of the difference between income and consumption. They imply that net wealth has been declining in contrast with

the increase implied by household balance sheet data. We return to this question in Section 2.1.6.

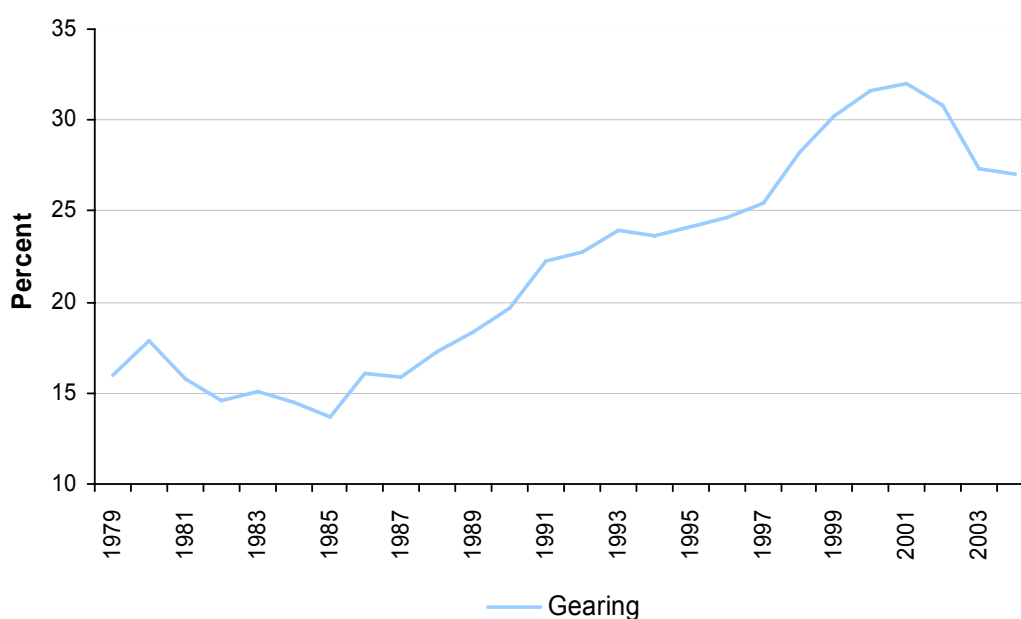
Table 1 – Assets and liabilities of households (as a share of personal disposable income)

	1982	1992	2002	2004
Real assets (housing) (%)	239	272	375	505
Financial assets (%)	133	168	172	177
Total assets (%)	372	440	547	682
Financial liabilities (%)	46	68	123	145
Ratio of total liabilities to total assets (%)	12	15	22	21
Net Wealth (%)	325	372	424	538
Real Net Wealth (2004 \$bn)	168	229	333	457
Real Net Wealth per Capita (\$000)	53	65	85	113

2.1.3 Gearing

Most property purchases are of significant size so households typically need to borrow. The level of debt to the value of the home (the gearing ratio) can be used as a comparative measure of the indebtedness of households. Figure 5 exhibits average gearing levels for New Zealand households. The removal of financial controls in the late 1980s has seen increased average gearing levels. Home mortgages as a share of housing value peaked at 32% in 2001. The recent boom on housing prices has seen the aggregate gearing ratio fall since 2001. It should be noted that this measure of gearing includes all homeowners regardless of their debt level; the gearing ratio would be higher were it possible to exclude debt free households.

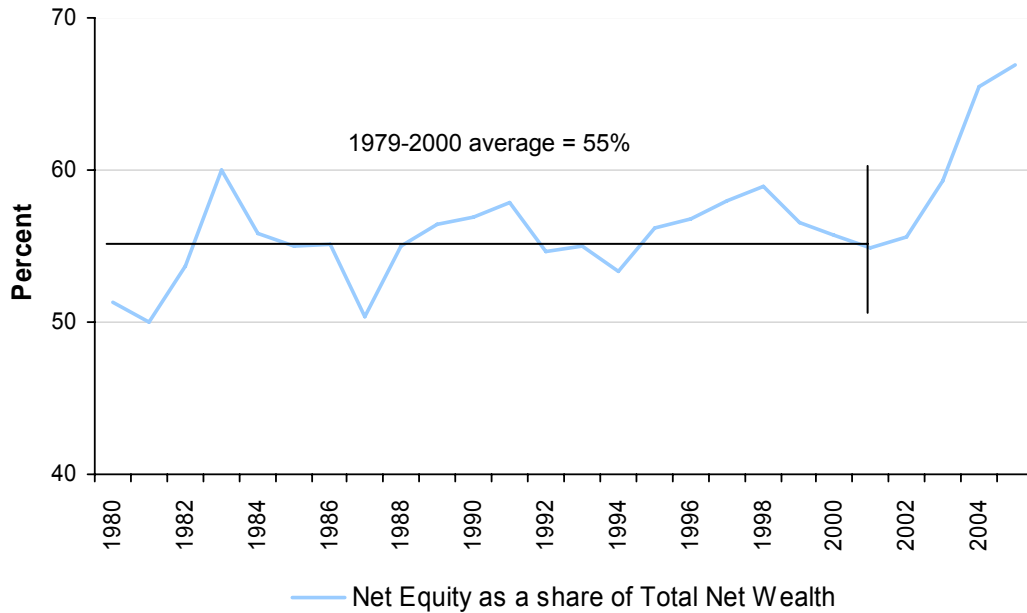
Figure 5 – Gearing ratio: 1979-2004



2.1.4 Housing Equity

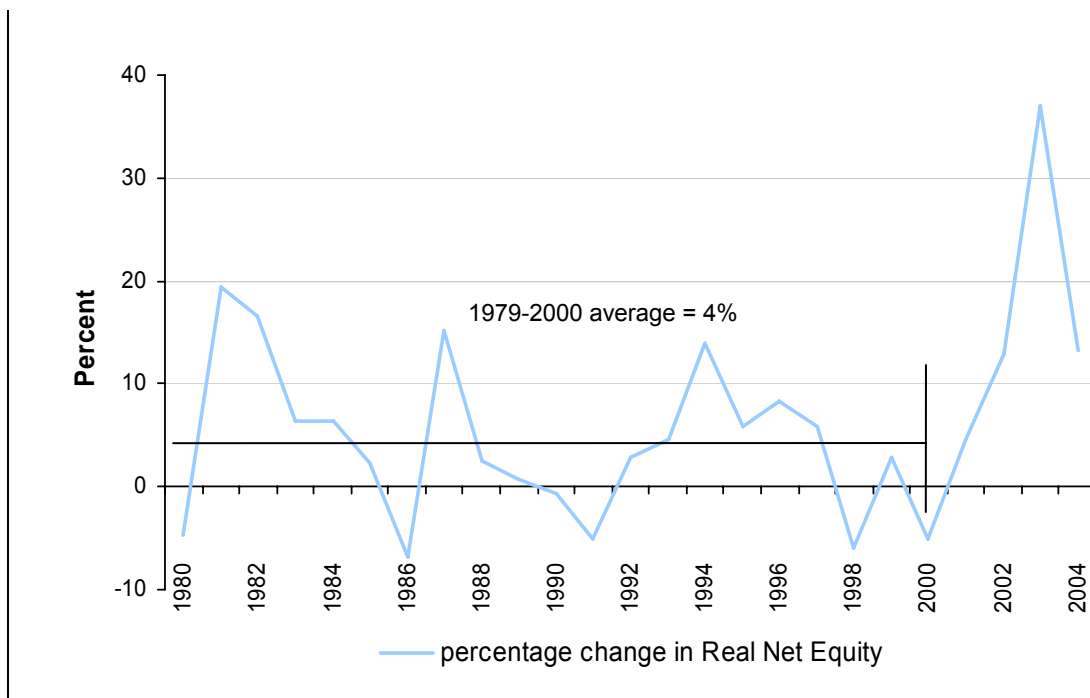
The difference between the gross value of housing and mortgage liabilities is the net equity in housing. From 1979 until 2000, housing equity remained a relatively constant share of total net wealth at around 55% (see Figure 6). With the subsequent boom in house prices, this rose to 68% in 2004.

Figure 6 – Net equity in housing as a share of total net wealth: 1979-2004



Households experienced an average increase in net equity of 4% per year between 1979 and 2000 (see Figure 7). What is striking however, is the volatility in the series. In five out of the 20 years net equity fell in aggregate. The experience since 2000 continues to reflect this volatility with a peak of a 37% increase in net equity in 2003, followed by a more modest 13% rise in 2004.

Figure 7 – Annual percentage change in real net housing equity: 1980-2004



2.1.5 Decomposing changes in Housing Values

Since the late 1970s the gross value of housing has risen substantially. The rise in this nominal value can be decomposed into that due to an increase in the physical housing stock and that arising from increased prices. The following procedure was used;

$$V = P \times Q \tag{1}$$

where

V = the gross value of housing

P = the price of housing

Q = the quantity of housing

then

$$\% \Delta V = \% \Delta P + \% \Delta Q + (\text{interaction term}) \tag{2}$$

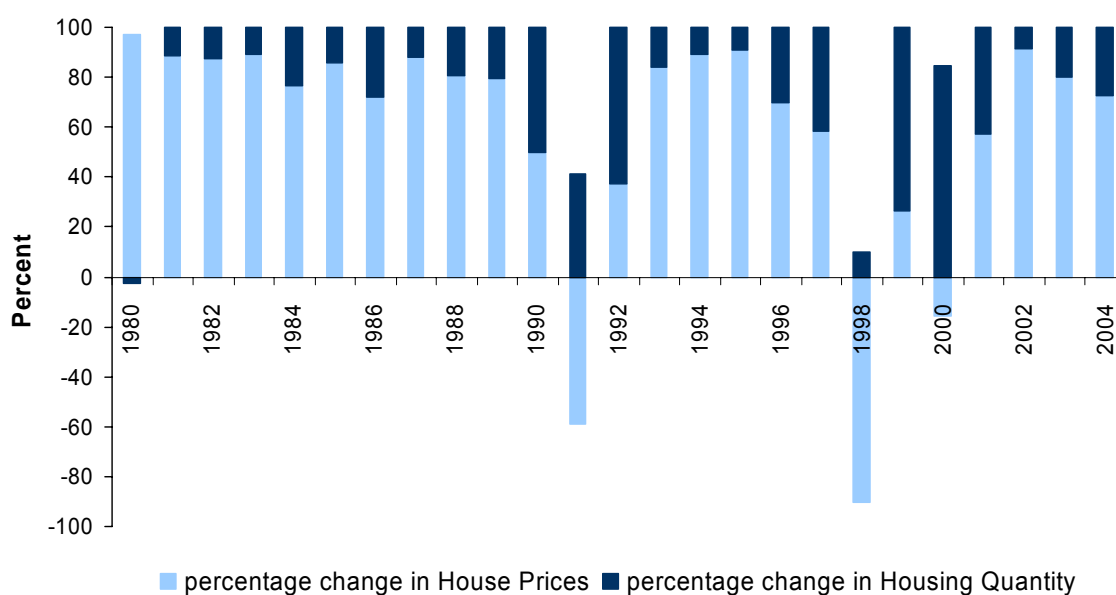
$$\left[\frac{V_t - V_{t-1}}{V_{t-1}} \right] = \left[\frac{P_t - P_{t-1}}{P_{t-1}} \right] + \left[\frac{Q_t - Q_{t-1}}{Q_{t-1}} \right] \tag{3}$$

$$(V_t - V_{t-1}) = \left[\frac{P_t - P_{t-1}}{P_{t-1}} \right] V_{t-1} + \left[\frac{Q_t - Q_{t-1}}{Q_{t-1}} \right] V_{t-1} \tag{4}$$

$$(V_t - V_{t-1}) = (\% \Delta P \times V_{t-1}) + (\% \Delta Q \times V_{t-1}) \tag{5}$$

where the interaction term is incorporated with quantity effect in the following analysis.

Figure 8 – Percentage contributions to changes in gross house values: 1980-2004



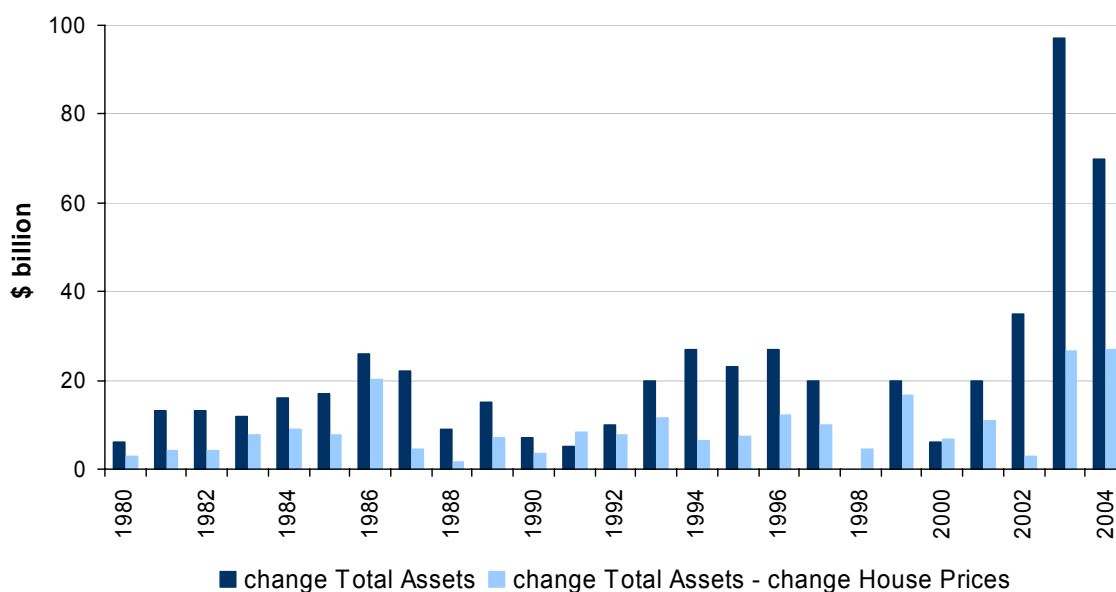
Typically, the growth in the nominal value of housing has come about through rising prices. On average the change in quantities accounts for only 25% of the total annual changes in nominal values, the balance coming from higher prices. No allowance is made for changes in the quality of housing.

The percentage change in house prices ($\% \Delta P$) was based on an index of housing prices provided by RBNZ and QV. The percentage change in quantity of housing (including the interaction term) was found as a residual from Equation 2. The results of this decomposition are presented in Figure 8.⁸

We can use these estimates of the changes in house prices to estimate that part of the growth of total household assets due to revaluation of house prices. Figure 9 shows the annual changes in total household assets, together with this change after removing the effect of changes in house prices. The results underscore the importance of house prices in the growth of total assets particularly in the years 2002 to 2004.

⁸ To the extent that there are real quality improvements, the measured price change may overstate the pure price effect for a constant quality of housing.

Figure 9 – Annual change in total assets: 1980-2004



2.1.6 Implications for the Measurement of Household Savings

Savings can be measured either as a “flow” measure or a “stock” measure.⁹ The flow measure of savings is derived as the difference between income and consumption.

$$S_t^f = Y_t - C_t \quad (6)$$

where

S_t^f = the flow measure of savings

Y_t = income in year t

C_t = consumption in year t

In contrast, the stock measure of saving is found by taking the difference between the net equity of households in adjacent years.

$$S_t^s = NE_t - NE_{t-1} \quad (7)$$

where

S_t^s = the stock measure of savings

NE_t = net equity at the end of year t

⁹ For detailed discussion of the measurement of savings see Claus and Scobie (2001). The flow estimates of household saving are based on the Household Income and Outlay Accounts (Statistics New Zealand: SNCA.S2NB8000E). It should be noted these are categorised as “experimental” and not official statistics.

The two measures S_t^f and S_t^s are not strictly comparable for a number of reasons. Principal amongst these is the fact that the stock measure contains the effect of asset price revaluations. We have seen in Section 2.1.5, that house price changes are a significant element of changes in total household assets, hence in net equity.

Given that

$$NE_t = V_t + A_t - L_t \quad (8)$$

$$NE_{t-1} = V_{t-1} + A_{t-1} - L_{t-1} \quad (9)$$

where $A_t = \text{non housing assets, and}$

$L_t = \text{total liabilities}$

then

$$(NE_t - NE_{t-1}) = (V_t - V_{t-1}) + \Delta A_t - \Delta L_t \quad (10)$$

Substituting from Equation 5, gives

$$(NE_t - NE_{t-1}) = (\% \Delta P \times V_{t-1}) + (\% \Delta Q \times V_{t-1}) + \Delta A_t - \Delta L_t \quad (11)$$

To make the stock measure more comparable to the flow measure of savings we have adjusted it by the change in house prices.

Using the left hand side of Equation 11 which we can define as $\Delta \bar{NE}_t$, the adjusted change in net equity, we can derive a series for adjusted net equity:

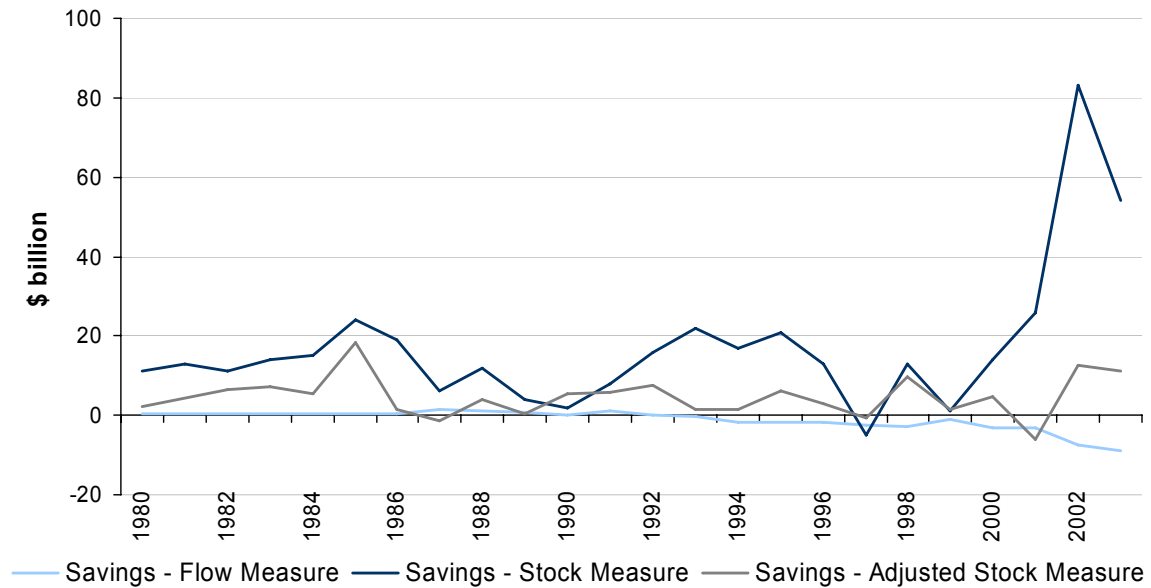
$$\bar{NE}_t = \bar{NE}_{t-1} + \Delta \bar{NE}_t \quad (12)$$

The implied saving rate based on the adjusted net equity is then given by:

$$\tilde{S}_t^s = \bar{NE}_t - \bar{NE}_{t-1} \quad (13)$$

The three measures of savings are shown in Figure 10. As expected the unadjusted stock measure is generally higher than the other measures especially in the last three years when house prices rose markedly. Once we remove the effect of changes in house prices, the adjusted stock measure compares much more closely to the flow measure of savings. However, it remains the case the adjusted stock measure is almost always higher than the flow measure and, with three minor exceptions always positive.

Figure 10 – Stock and flow measures of savings: 1980-2004



We then asked: how much of the total gap between the stock and flow measures of saving is explained by the adjustment for the revaluation of house prices? To answer this we constructed the following measure;

$$\left[\frac{S_t^s - \tilde{S}_t^s}{S_t^s - S_t^f} \right] \times 100 \quad (14)$$

The results are plotted in Figure 11. Over the complete period from 1980 to 2004, on average nearly two thirds of the difference between the stock and flow measures of savings is accounted for by house price revaluations. A complete adjustment for asset price revaluation would include all financial assets. Given the limitations of the data and the fact that housing forms such a significant part of net equity, we have restricted the adjustment to house prices. Were we to include the adjustment of financial assets the deviations between the adjusted stock measure and flow measure would presumably be further reduced, although it is likely that some of the difference would remain unexplained.

An alternative way to compare the stock and flow savings rates is shown in Figure 12. Total net equity (including housing) is seen to rise steadily from 1986 to 2001, followed by a sharp increase in 2002 and 2004. As seen in Figure 11, a large share of this increase was due to the rise in house prices. As a result, once these are removed, the adjusted net equity shows modest growth. Finally, Figure 12 shows the implied measure of savings based on the flow estimate of savings from the Household Income and Outlay Account. The implied net equity was constructed as:

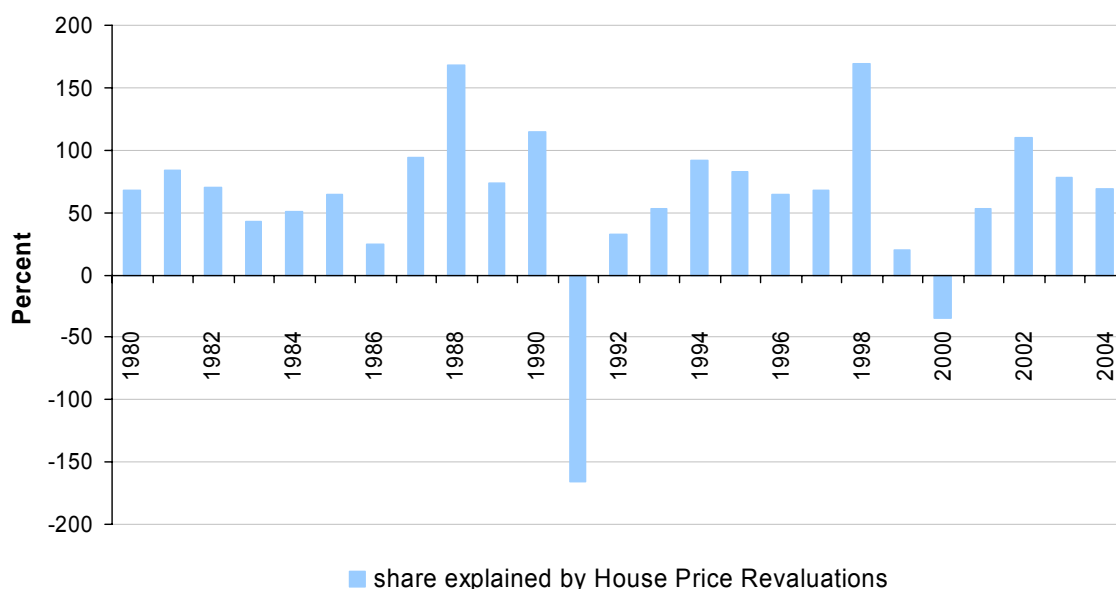
$$NE_t^i = NE_{t-1}^i + S_t^f \quad (15)$$

where

NE_t^i = implied net equity at the end of year t

S_t^f = the flow measure of savings

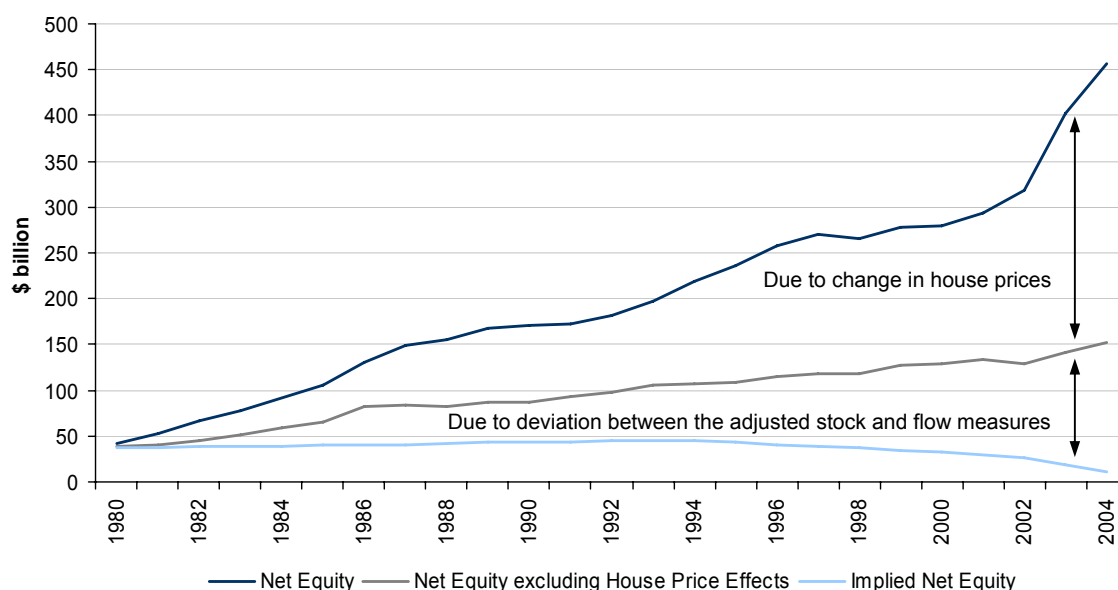
Figure 11 – The share of the difference between the stock and flow measures of saving explained by revaluation of house prices: 1980-2004



All three series shown in Figure 12 were computed from a common starting value in 1980. The implied net equity based on the flow measure declines throughout the period since 1994. While further adjustment for the revaluation of financial asset prices would lower the adjusted net equity, it is improbable that the resulting net equity would decline in absolute terms. This analysis suggests that some caution is still needed in the use of the flow measure of savings. The flow measure implies a level of total net equity close to zero. It is probable that with two more years of negative savings based on the flow measure, implied household net equity will become negative. Clearly this is implausible; it stands in contradiction to the aggregate rise in household net wealth and underlines the need for caution in the use of the flow measure of household savings.

The results of this analysis can be used to construct measures of household saving rates based on changes in net equity. We do this for the two measures of saving. The first, given by equation (7) is based on the overall change in net equity. To estimate the saving rate we expressed this as a percentage of personal disposable income. The average household saving rate from 1980 to 2005 implied by this measure is 37.9%. This measure includes changes in the value of housing. As an alternative we use the adjusted measure (equation (13)) where the effect of housing values is removed from net equity to give an adjusted measure of savings. Over the same period this measure averaged 12.4%. In other words, household saving rates when measured from household balance sheets are positive and provide a different perspective on household saving from that typically painted using the flow measures of saving.

Figure 12 – Total net equity: 1980-2004



3 Home Ownership

Home ownership remains the dominant form of tenure choice for New Zealanders. In the following subsections, we analyse home ownership by age, income and various demographic characteristics, based on information from the HSS. We model tenure choice and value of owner-occupied houses and also discuss the key factors influencing tenure choice.

3.1 Patterns of Home Ownership

Using the cross-sectional data from the HSS, we examined home ownership for both couples and non-partnered individuals. Table 2 provides a summary of the results of home ownership by age. Clearly home ownership increases with age but does not fall off markedly for either couples or individuals. Overall, 64% of all couples and 33% of all non-partnered individuals own a home. The median age of home owning couples is 48 years and 55 years for individuals who are homeowners.

Table 2 – Home ownership for couples and individuals: by age

Age	Couples		Individuals	
	Home Ownership %	Share in Home Owning Population %	Home Ownership %	Share in Home Owning Population %
18-24	23.2	1.5	2.2	2.0
25-34	54.0	16.3	14.8	8.6
35-44	63.1	25.1	53.1	20.5
45-54	68.3	23.2	51.0	18.6
55-64	72.1	16.7	64.5	16.1
65-74	74.9	11.5	66.4	13.8
75+	74.0	5.7	65.9	20.3
<i>Total</i>	63.9	100	32.8	100

The pattern of home ownership amongst couples in New Zealand is contrasted in Figure 13 with the Australian results from Household, Income and Labour Dynamics (HILDA)¹⁰ in Australia 2002 Release 2.0 and United States¹¹ results from Survey of Consumer Finances 2001. The pattern and levels for New Zealand are strikingly similar to that in Australia and the United States (see Figure 13). The New Zealand rates appear to be typically lower for most age categories. However, it should be recalled that the New Zealand data is for couples only while the Australian and United States results apply to all households. As home ownership rates in New Zealand are lower for individuals than couples at all ages, their inclusion would tend to lower the level of New Zealand rates of ownership, increasing the apparent gaps with Australia and United States. This result suggests that homeownership rates in New Zealand, often thought to be very high, may in fact be no higher than in Australia and United States.¹²

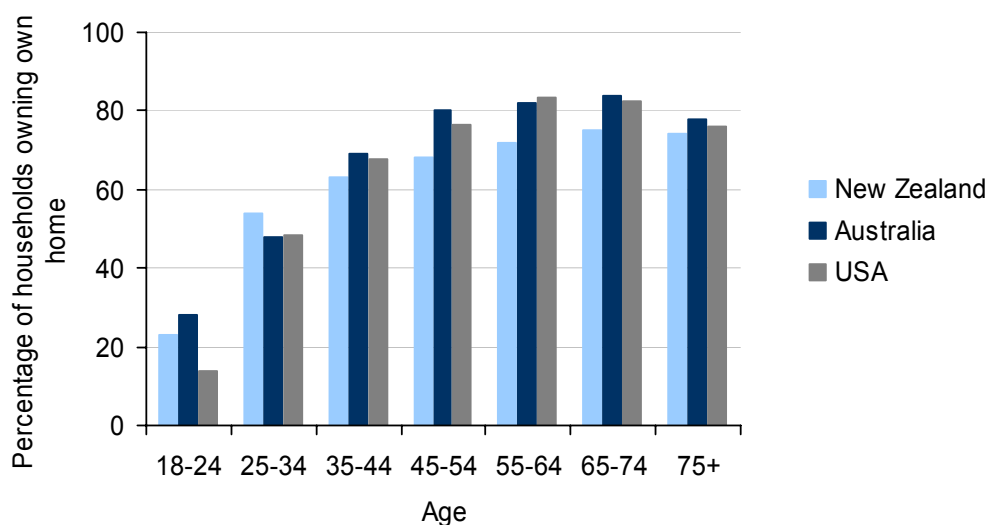
However a caveat is warranted, as some individuals (typically in the younger age brackets) who may have been included in the sample, could live in households that were home-owners. As this is a modest share of all individuals in the sample we believe this would modify but not negate the conclusion on home ownership in New Zealand relative to other countries.

¹⁰ See <http://melbourneinstitute.com/hilda/>.

¹¹ See <http://www.federalreserve.gov/Pubs/oss/oss2/scfindex.html>.

¹² A further feature which might influence the international comparison is the extent to which a house is occupied by the settlor of a trust which owns the house. Were this practice more prevalent in some countries than others then the data on homeownership might need to be adjusted accordingly.

Figure 13 – Residential property ownership by age: a comparison of New Zealand, Australia and United States



A further set of international comparison of home ownership rates can be derived from some recently released data from the Luxembourg Wealth Study. These data refer to the years 200 to 2002 and the New Zealand data is for couples from the 2001 HSS. As shown in Figure 14 these data confirm that New Zealand does not appear as an outlier in the pattern of homeownership rates.¹³

Table 3 provides a summary of the results of home ownership in New Zealand by income quintile. As expected a greater number of home owning couples are in highest quintile. Beyond the lowest income quintile for couples, the rates of home ownership do not vary greatly. In contrast, they rise markedly with income amongst non-partnered individuals. However, the majority of the home owning population of individuals is concentrated in the income quintiles (especially 2 and 3). In part, this reflects high rates of home ownership by older single people.

The results of home ownership by ethnic group highlight that Maori and Pacific are less likely to own their home, in part as a results of lower incomes. Europeans have the highest home ownership rates of 68% for couples and 39% for individuals.

The results of home ownership by region do not vary markedly. In the main urban areas Auckland has 63% of all couples owning and 32% of all individuals, while Wellington has 65% of couples and 30% of individuals, and Canterbury has 66% of couples and 35% of individuals owning their own home.

¹³ See <http://www.lisproject.org/lws.htm#First%20Results>

Figure 14 - Home ownership rates by age category: an international comparison

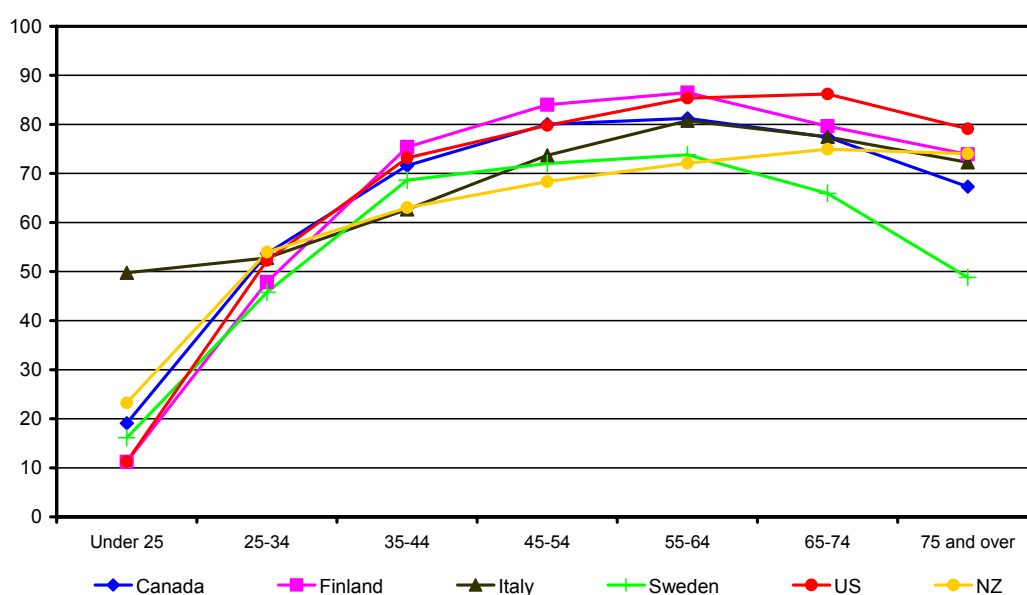


Table 3 – Home ownership for couples and individuals: by income quintile

Income Quintile	Couples*		Individuals*	
	Home Ownership %	Share in Home Owning Population %	Home Ownership %	Share in Home Owning Population %
1	41.0	2.8	17.0	17.1
2	61.4	9.3	36.2	31.0
3	57.8	15.9	37.6	23.9
4	67.4	29.3	50.3	17.4
5	68.0	37.8	59.1	7.8
<i>Total</i>	60.8	95.1	31.9	97.2

* Excludes couples and individuals with no specified incomes.

As expected, those classified as employed (either part- or full-time) are more likely to own their own home than those unemployed. Approximately 63% of all part- or full-time employed couples own a home with 22% of all part-time and 33% of all full-time employed individuals owning a home. High homeownership is also found for those not in the labour force with 68% for couples and 39% for individuals. Again this is in part explained by home ownership amongst retired couples and individuals.

3.2 Modelling Housing Tenure Choice

There is significant literature on housing tenure choice and preferences.¹⁴ Here we follow the tenure choice modelling framework developed by Kohler and Rossiter (2005). In this approach an econometric model for property ownership and the value of property holdings is applied. We use unit record data for couples and non-partnered individuals from the HSS. The results are presented for couples.¹⁵

3.2.1 Modelling Framework

Residential property ownership decisions of households involve these two aspects: the choice whether to purchase the property and if so, how much to invest. This can be separately modelled. The first model analyses the tenure choice of households and the second the value of owner-occupied houses.

Firstly, we consider the binary decision in which a couple decide whether to buy a home or not. We utilise a probit model where the probability of being a home owner, the dependent variable, is seen as a function of the age, income and wealth of the household and a range of demographic variables such as the number of children, marital status or the employment status of the reference person.

$$\Pr(\text{own}_{\mu}) = f(\text{age}, \text{income}, \text{wealth}, \text{demographic variables}) \quad (16)$$

Secondly by estimating an OLS regression, we model the value of owner-occupied houses as a function of the age, income and wealth of the household and a similar number of other demographic variables.

$$\text{Value}_{\mu} = \tilde{f}(\text{age}, \text{income}, \text{wealth}, \text{demographic variables}) \quad (17)$$

The coefficients in a probit model do not have an immediate intuitive economic interpretation, the marginal effects on the implied probabilities of a change of the independent variables (at the sample mean) are more meaningful. For example, by how much does the probability of home ownership rise with an increase in income of \$10,000? The OLS regression coefficients have the simple interpretation as the marginal effect of the independent variable on the dependent variable.

3.2.2 Factors Influencing Home Ownership and Home Values

The results of estimating housing tenure choice and the value of the owner-occupied housing for couples are shown in Table 4. The coefficient estimates of the explanatory variables, sample means and the marginal effects for the probit model are shown in columns 2 to 4. The coefficient estimates of the OLS regression are presented in column 6. All variables whether significant or insignificant are shown.

The results show that, in this case, the coefficients of age and income are highly significant and have the expected positive signs, consequently increasing the probability for couples to own a home and value of owner-occupied housing. It should be noted that net wealth has a negative sign and is statistically significant. This result implies that an

¹⁴ See for example Goodman, 1988; Ioannides and Rosenthal, 1994; Bourassa, 1995, 2000; Kan, 2000; Painter, 2000.

¹⁵ Similar results for individuals are available.

increase in net wealth would tend to lower the probability of a couple owning a house. The apparent anomaly arises as net wealth is defined as non-housing net wealth in the probit regression model. Couples are likely to have less non housing net worth when owning their own home.

Table 4 – Home ownership and value of owner-occupied housing: for couples

Ownership				Value (\$)	
Variable	Coefficient	Sample Mean	Marginal Effect	Variable	Coefficient
Age	0.045***	46.9 years	0.079	Age	4,311.89***
Age ² /100	-0.031*			Age ² /100	-1,414.54
Income	6.78e-06***	\$65,267	0.023	Income	0.815***
Income ² /1000	-9.40e-09***			Income ² /1000	-0.007**
Net wealth	-1.20e-06***	\$225,141	-0.016	Net wealth	0.128***
Net wealth ² /10000	1.69e-09***			Net wealth ² /10000	-0.0002***
Own business	0.231***	19.0%	0.827	Own business	1,748.71
Number of children	-0.020	0.9	-0.01	Number of children	7,657.81***
Marital status				Marital status	
Married	0.272***	80.8%	0.104	Married	22,675.13***
Divorced or Separated	0.121	4.7%	0.044	Divorced or Separated	-14,789.39
Widowed	0.706*	0.5%	0.213	Widowed	-5,607.83
Labour force status				Labour force status	
Part-time employee	0.112	15.7%	0.041	Part-time employee	16,646.02**
Unemployed	-0.523**	1.5%	-0.205	Unemployed	-16,340.95
Not in the labour force	0.152	27.6%	0.056	Not in the labour force	13,476.54
Time employed	0.029***	24.0 years	0.052	Time employed	-1,073.88
Time employed ² /100	-0.046**			Time employed ² /100	-1,087.67
Ever unemployed	0.071	52.1%	0.026	Ever unemployed	-13,728.32***
Time unemployed	0.001	5.1 years	0.001	Time unemployed	-2,169.88***
Post-secondary educated	0.202***	48.2%	0.075	Post-secondary educated	21,514.31***
				Regional (10 Dummies)	*
Number of observations = 2841				Number of observations = 1832	
Pseudo-R ² = 0.09				R ² = 0.47	
				F-test = 26	

Notes: ***, ** and * denote significance of the coefficient at the 1, 5 and 10 percent levels respectively, using robust standard errors. The marginal effects are calculated at these selected increments: 5 years for Age, \$10,000 for Income and \$40,000 for Net wealth, 1 to 2 for Number of Children, 5 years for Time employed, 1 year for Time unemployed, and 0 to 1 for all dummy variables

This finding is in contrast to a significant positive effect for Australia presented by Kohler and Rossiter (2005). However we argue that the negative relationship is consistent with the fact that net wealth is defined in this analysis to exclude housing; that is net wealth corresponds to non-housing net wealth. It is to be expected that those couples who have

purchased a house, will typically have lower non housing net wealth at the same age as compared to non home owning couples. However, net wealth is statistically significant but positively affects the value of owner-occupied housing for couples. This suggests that greater levels of non housing net wealth are associated with the purchase of higher valued residential properties.

The results also suggest that couples who own any form of business are significantly more likely to own a home. Married couples are more likely to own their own home than others, and the value of the home is greater relative to those never married.

The propensity for couples to own their home rises with the length of employment of the couple's reference person, while couples where the reference person is currently unemployed are less likely to own their home and if so, a lower valued owner-occupied house.

Those couples where the reference person has completed post secondary education are also more likely to own their primary residence and higher valued owner-occupied housing, which maybe a reflection of their past and future capacity to generate income and build wealth (Kohler and Rossiter, 2005).

4 Ownership of Investment Property

The purchase of secondary residential properties is often driven by investment demand as distinct from the consumption of housing services. Empirical evidence suggests that consumption and investment demand for residential property differ. Ioannides and Rosenthal (1994) find that investment demand is more sensitive to wealth and income than consumption demand, which is more sensitive to demographic characteristics such as age, education and family size. In this section, we outline the structure and patterns of investment property ownership from the HSS results. For the purposes of this analysis, we define investment property as those households that reported owning a residential property that is not their primary residence. This includes rental properties, holiday homes, other residential properties, overseas properties and time shares.

4.1 Structure of Portfolios

Table 5 summarises structure of investment properties that couples and individuals own. Overall, 19% of couples own some form of investment property, while in contrast only 8% of individuals own a secondary residential property. The overall median value of investment properties owned by couples is \$115,000; for individuals it is \$87,000. Almost one in ten couples own rental property.

Table 5 – Ownership of investment property for couples and individuals: by type

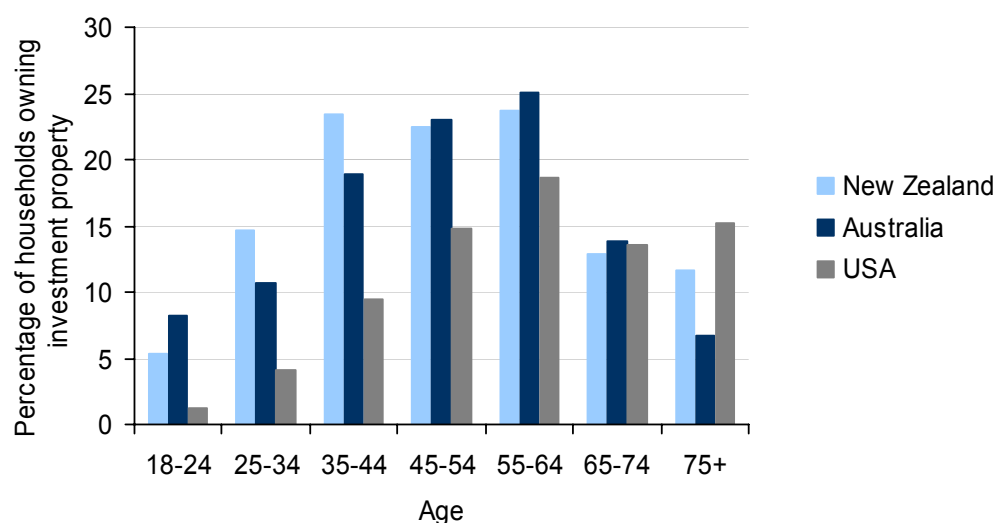
Investment Type	Couples		Individuals	
	Ownership %	Median Value	Ownership %	Median Value
Rental properties	9.3	155,000	3.5	110,000
Holiday homes	4.0	87,000	0.8	52,375
Other properties*	4.7	95,000	3.1	112,000
Overseas properties	9.3	42,500	3.5	39,258
Timeshares	1.3	8,000	0.2	10,000
<i>Total</i>	19.2	115,000	7.8	87,000

* Other property consists of partially built residential property and any other secondary residential property.

4.2 Patterns of Investment Property Ownership

The pattern of investment property ownership amongst couples in New Zealand is compared in Figure 14 with Australia (HILDA 2002 Release 2.0) and United States (SCF 2001). The pattern and levels for New Zealand is remarkably similar to that in Australia. The New Zealand rates are somewhat higher for the 25-34 and 35-44 age groups and for retirees in 75+ age category. In both countries almost one quarter of all couples (or households in the case of Australia) between 45 and 64 years of age own some form of investment property. The United States has much lower rates of investment property ownership in the lower and middle aged categories. However, it should be reemphasised that the New Zealand data refer to couples only, while the Australian and United States results apply to all households. This would typically lower the investment property ownership rates in New Zealand as individuals have significantly lower ownership rates than couples at all ages (see Table 5).¹⁶

Figure 15 – Investment property ownership by age: a comparison of New Zealand, Australia and United States



¹⁶ To the extent that some residential investment property is owned by a trust these numbers may represent a lower bound on the true rate of ownership of investment property.

5 Gearing

This section addresses the concept of gearing, defined as the ratio of the outstanding mortgage to the total gross value of housing. Firstly, we focus on patterns of gearing from the HSS. We subsequently model the probability of a household owing debt on their home, and the level of the gearing ratio.

5.1 Basic Patterns of Gearing

It is expected that higher income households are more likely to own residential property, and hence it is expected that they would be more likely to hold debt on their properties, since they are in a better position to service any debt. In contrast, lower income households often do not own residential property or in the case of retiree households are debt free. This is shown in Figure 15 with a higher share of property owners in the higher income quintiles owing debt on their property. Again we contrast the New Zealand position with that of Australia (HILDA 2002 Release 2.0) and the United States (SCF 2001). The percentage of home owners holding debt is similar, albeit somewhat lower for New Zealand in the lower income quintiles.

Figure 16 – Residential property debt by income quintile: a comparison of New Zealand, Australia and United States

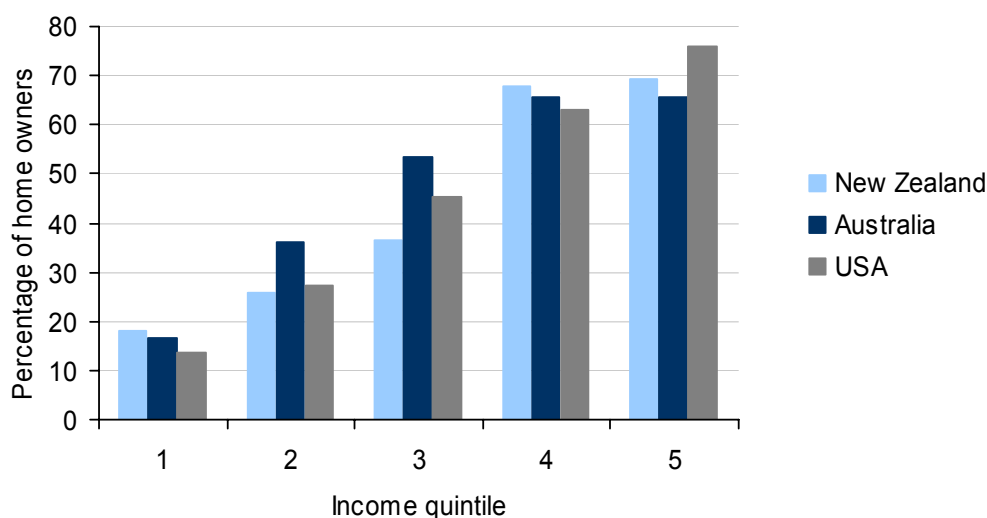


Table 6 shows the level of gearing for home owning couples and individuals.¹⁷ Of note is the fact that 44% of couples and 56% of individual home owners have debt free residential properties. Less than one third of all couples have a gearing ratio above 0.5.

We would expect the home owners to have higher levels of debt relative to the value of their assets, when they enter the housing market and for this gearing ratio to be reduced over time as the mortgage is paid off and house prices increase. Overall, the mean gearing ratios are 31% for couples and 24% for non partnered individuals.

¹⁷ It is recognised that some of the debt against a home may be used for other investments including small enterprises or property investment.

Table 6 – Housing gearing: by level

Level of Gearing	Couples		Individuals	
		%		%
0		43.5		55.6
>0 & <.25		10.8		8.1
≥.25 & <.50		14.4		11.7
≥.50 & <.75		16.7		13.4
≥.75 & <1		11.3		9.9
≥1		3.4		1.4
<i>Total</i>		100		100

The marked decline in gearing with age is highlighted by the results in Table 7. Given this general pattern of loan to value ratios declining over the life of the mortgage, a number of home owners have had the opportunity to take advantage of increases in house prices to increase their borrowing. This issue of equity release is discussed further in Section 6.

Table 7 – Housing gearing: by age

Age	Couples		Individuals	
	Mean	Median	Mean	Median
18-24	0.75	0.81	0.56	0.56
25-34	0.62	0.69	0.68	0.76
35-44	0.41	0.39	0.46	0.50
45-54	0.30	0.24	0.29	0.15
55-64	0.11	0	0.12	0
65-74	0.03	0	0.01	0
75+	0	0	0.01	0
<i>Total</i>	0.31	0.17	0.24	0

5.2 Modelling Gearing

In this section, again we follow the modelling framework developed by Kohler and Rossiter (2005). An econometric model for home debt and the gearing ratio is applied to unit record data for couples and non-partnered individuals from the HSS. The results are presented for couples.

5.2.1 Modelling Framework

As noted earlier, the significant size of residential property purchases generally requires households to acquire debt. Therefore the gearing decision is an important aspect of home ownership. Households firstly must choose whether to hold debt, and then decide the level of gearing, as measured by the ratio of the outstanding mortgage to the total gross value of housing. The first model estimates the probability of a home owner owing debt on their home as a function of the age, income and wealth of the household and a number of other demographic variables such as number of children, whether a household is based on a married couple, or the employment status of the reference person.

$$\Pr(\text{debt}_H) = g(\text{age, income, wealth, demographic variables}) \quad (18)$$

The gearing ratio for home owners with debt as a function of the age, income and wealth of the household and a similar number of other demographic variables.

$$\text{Gearing}_H = \tilde{g}(\text{age, income, wealth, demographic variables}) \quad (19)$$

The model for home gearing is estimated for couples, conditional on them owning a home. Similarly, all variables whether significant or insignificant are shown.

5.2.2 Factors influencing debt choice and gearing

The results of the estimation of Equations 3 and 4 are shown in Table 8. Columns 2 to 4 contain the coefficient estimates, sample means and the marginal effects (the change in probability of holding debt as a result of a change in an explanatory variable) of the explanatory variables. Column 6 has the coefficient estimates of the gearing ratio.

The decision for couples to hold debt against their own home is significantly influenced by income and wealth. Income has a positive and significant relationship, indicating that couples with higher income are more likely to hold debt, given that they are more likely to be able to service debt. However, non housing net wealth negatively influences the propensity for couples to hold debt on the home they own and is also statistically significant. In other words, a couple with a greater level of non-housing net wealth is less likely to hold debt on their primary residence. Similarly, gearing ratios among couples with debt tends to rise with income and fall with higher net wealth. These findings are consistent with Kohler and Rossiter (2005) for Australia.

The likelihood of owner occupied households holding debt and the gearing ratio of those with debt fall as age increases. It is interesting to note that the results suggest age has no statistically significant impact on the probability holding debt for couple homeowners.

Table 8 – Debt choice and gearing ratio of owner-occupied households: for couples

Variable	Hold Debt			Gearing Ratio (%)	
	Coefficient	Sample Mean	Marginal Effect	Variable	Coefficient
Age	-0.036	49.1 years	-0.068	Age	-0.024***
Age ² /100	-0.020			Age ² /100	0.015***
Income	9.11e-06***	\$67,428	0.034	Income	6.58e-08*
Income ² /1000	-2.65e-08***			Income ² /1000	9.91e-10
Net wealth	-2.17e-06***	\$190,936	-0.016	Net wealth	-1.39e-07*
Net wealth ² /10000	5.86e-09***			Net wealth ² /10000	2.85e-10
Own business	0.230*	20.3%	0.089	Own business	0.044*
Number of children	0.008	0.8	0.004	Number of children	-0.004
Marital status				Marital status	
Married	0.130	85.1%	0.051	Married	-0.055*
Divorced or Separated	0.453*	4.6%	0.166	Divorced or Separated	0.033
Widowed	0.473	0.7%	0.171	Widowed	0.329*
Labour force status				Labour force status	
Part-time employee	-0.158	15.6%	-0.062	Part-time employee	-0.072**
Unemployed	-0.047	0.7%	-0.018	Unemployed	0.138**
Not in the labour force	-0.357**	29.4%	-0.141	Not in the labour force	-0.014
Time employed	0.025	25.8 years	0.009		
Time employed ² /100	-0.029				
Post-secondary educated	0.168*	50.7%	0.066		
Number of observations = 1832				Number of observations = 1034	
Pseudo-R ² = 0.35				R ² = 0.20	
Wald test = 391.64					

Notes: ***, ** and * denote significance of the coefficient at the 1, 5 and 10 percent levels respectively, using robust standard errors. The marginal effects are calculated at these selected increments: 5 years for Age, \$10,000 for Income and \$40,000 for Net wealth, 1 to 2 for Number of Children, 5 years for Time employed, and 0 to 1 for all dummy variables

6 Equity

The HHS provides detailed information on the equity in housing that New Zealand couples and individuals hold. This section outlines the equity held in housing and examines the question of equity release.

The results from HSS show that housing equity represents 62% of net wealth of couple homeowners and 42% of the net wealth of all couples. It is worth noting that by this measure New Zealanders do not hold an exceptionally huge share of their net wealth in housing. Furthermore, under current legislation the basic state pension (NZ Superannuation) provides an important source of retirement income and in effect represents much of the “wealth” of the lower income group. As a result, this reduces the

share of net wealth in housing even further (Scobie, Gibson and Le, 2004; 2005). Amongst individuals, housing equity represents 72% of net wealth of individual homeowners and 29% of net wealth of all individuals.

For home owning couples, the mean home equity value is approximately \$146,000 with a median equity value of \$120,000. For home owning individuals, the mean home equity value is \$120,000 and the median equity value of \$100,000. Table 9 shows home equity by income quintile. Noticeably, the lowest income quintile has the highest mean and median home equity for both couples and individuals. This again reflects the prevalence of home-owning retirees and widows in the lowest income category. The values in Table 9 (particularly for the upper income quintiles) could be understated as we have included only those occupiers who declared they owned the house, and not settlors of a trust which might have been the legal owners.

Table 9 – Housing equity: by income quintile

Income Quintile	Couples*		Individuals*	
	Mean (\$)	Median (\$)	Mean (\$)	Median (\$)
1	182,865	148,000	132,234	102,000
2	130,684	135,000	129,842	112,600
3	138,292	120,000	95,905	67,000
4	120,207	96,000	113,474	83,000
5	164,402	130,000	129,857	105,000
<i>Total</i>	146,199	120,000	120,081	100,000

* Excludes couples and individuals with no specified incomes.

6.1 Equity Release

As the value of a property rises relative to other assets and to income, the possibility arises for a property owner to withdraw some equity. The equity extracted from homes can be used for balance-sheet purposes, either to substitute for other more costly forms of borrowing, to purchase other assets or for consumption. The question is sometimes raised as to whether New Zealand households' have been borrowing and withdrawing equity from their homes at a faster rate now than previously.

Although the HSS does not provide information on this, we are able to use Reserve Bank data to attain an approximate measure of aggregate housing equity withdrawal. This is defined as the difference between the change in mortgages and new investment in housing.¹⁸ Housing equity withdrawal occurs when the change in borrowing exceeds residential investment.¹⁹ On the other hand, injection occurs when net mortgage borrowing is less than spending on housing.

From 1988 to 2002, gross real residential investment typically exceeded the growth in housing mortgages (see Figure 16). Only in 1993, 1994 and 1999 did the increase in mortgages exceed the investment in housing. In contrast, the period from 2002 to 2004 shows a sharp rise in housing mortgages relative to new residential investment,

¹⁸ The data analysis closely follows that of Goh (2005).

¹⁹ This definition corresponds to that used by Davey (2001) in an analysis of equity withdrawal for the United Kingdom.

suggesting apparent equity withdrawal. The shift towards net equity withdrawal has only been a recent phenomenon coinciding with the increase in gross house values and real net equity in 2002 and 2004. This result may reflect innovation in the mortgage sector which offers home owners the opportunity to access home equity on a more frequent basis (Hull, 2003).

Figure 17 – The annual change in mortgages and residential investment.

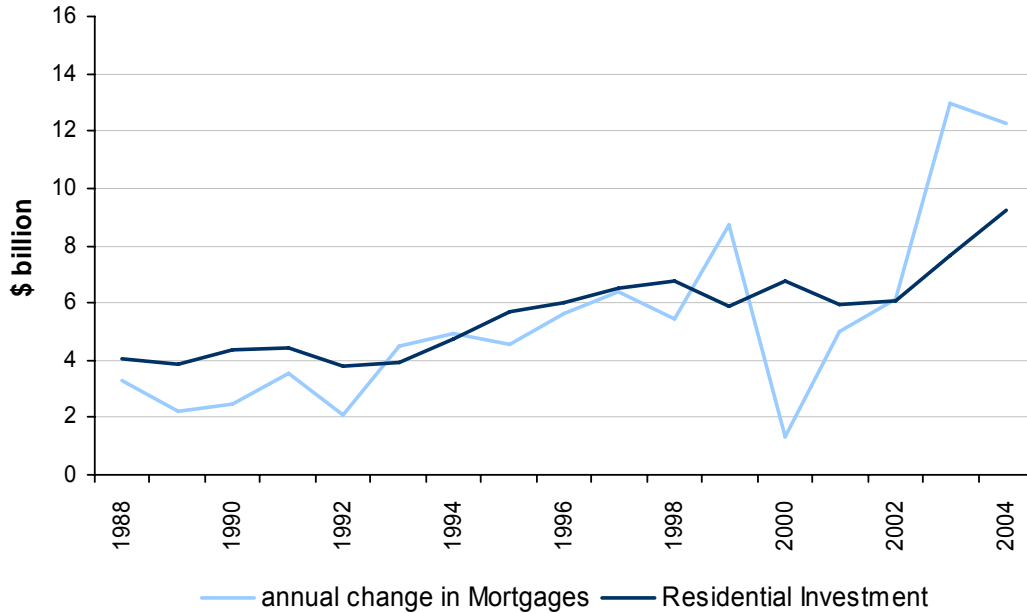


Figure 17 shows the difference between the change in mortgages and new investment in housing. In five of the years between 1988 and 2004 there were withdrawals while in each of the remaining years there was an apparent injection. An estimated record \$5.3 billion of equity was withdrawn in 2003 which reduced to \$3 billion in 2004. However since 1988, apparent “injection” has exceeded apparent “withdrawal” by some \$4 billion.

Figure 18 plots the apparent real equity withdrawal and the annual changes in real net equity. The left hand scale refers to the apparent real equity withdrawal defined as the change in outstanding mortgages less real residential investment. The right hand scale shows the annual percent change in real net equity. It is evident that there is a reasonably close relationship between the apparent equity withdrawal and changes in real net equity. Out the total of eight turning points in the change in real net equity, the apparent equity withdrawal follows correctly in six cases.

Figure 18 – Real housing equity injections and withdrawals

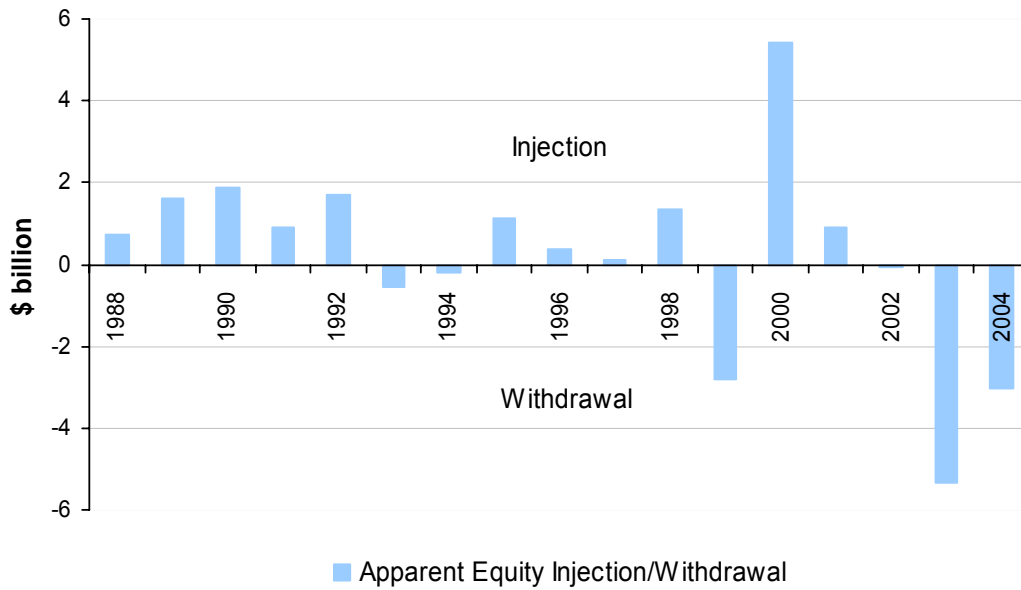
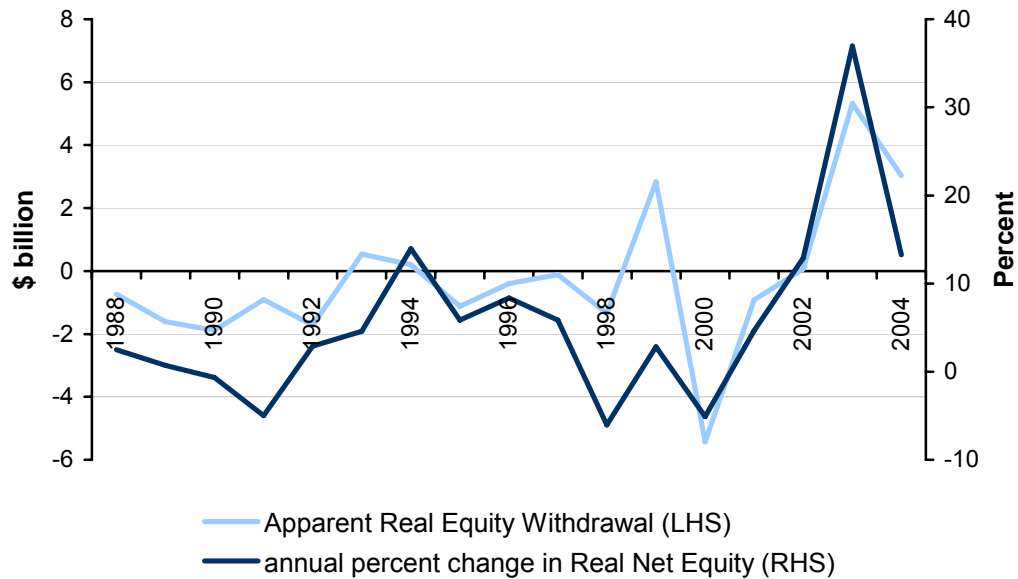


Figure 19 – Apparent real equity withdrawal and annual percent change in real net equity



We tested this relationship:

$$(\Delta Mortgage - Investment^H)_t = f(NetEquity_t - NetEquity_{t-1}) \quad (20)$$

with the following regression

$$AEW_t = \alpha + \beta \Delta RNE_t + u_t \quad (21)$$

where

AEW_t = the apparent real equity withdrawal defined as the difference between the change in outstanding mortgages and real residential investment

ΔRNE_t = annual change in real net equity

u_t = random error term

The fitted equation is:

$$AEW_t = -1.3 + 0.1 \Delta RNE_t \quad Adj R^2 = 0.62$$

(t-value=5.3)

The interpretation of this result is that for every \$1 increase in real net equity, home owners withdraw on average 10 cents.

Figure 17 suggests that this result could be driven largely by the rise in net equity during the period 2002 to 2004. To test this, we re-estimated Equation 21 by restricting the sample period to 1988 to 2001. This results in the following equation:

$$AEW_t = -1.3 + 0.1 \Delta RNE_t \quad Adj R^2 = 0.22$$

(t-value=2.2)

The ability of this simple model to explain changes in the apparent equity withdrawal (AEW_t) is reduced appreciably with the adjusted R^2 falling from 0.62 to 0.22. However, the response coefficient ($\hat{\beta}$) is both significant and unchanged at 0.1, implying that throughout the period for 1988 to 2004, approximately 10% of the increases in net equity have been associated with apparent equity withdrawal.

In a study of injections and withdrawals of housing equity in Australia, the Reserve Bank of Australia (2005) finds that there was significant withdrawal in the period 2001 to 2004, coinciding with rapid growth in house prices. In other words a similar relation appears to hold between the growth of equity and withdrawals. They also report that about two-thirds of the withdrawals in 2004 were used for investment in other assets or paying down other loans. Only a minor part was used for consumption, suggesting that the withdrawals may have had a much lower effect on consumption than the total withdrawals might suggest. At the same time as 12 percent of Australian households made a net withdrawal in 2004, around 30 percent made a net injection of equity. It is likely the net withdrawal figures for New Zealand also conceal the fact that even in 2003 and 2004, many households made net injections.

7 Discussion and Conclusions

The unit record data from the Household Savings Survey (HSS) 2001 has provided an opportunity to examine in greater depth residential property ownership and investment. This paper has addressed this and the factors that govern tenure choice and debt decisions of households. A dominant theme that emerges from this study, albeit not an unexpected one, is that housing continues to play a critical role on both sides of the balance sheet of New Zealand households.

Residential property ownership remains an important element in household portfolios with 64% of all couples and 33% of all non-partnered individuals owning a primary residence. The rates of home ownership by income quintile do not vary greatly for couples above the first income quintile. In contrast, there is a marked rise in home ownership rates among non-partnered individuals as incomes rise. Amongst individuals, over two thirds of total home owners are concentrated in the lower three income quintiles, reflecting the prevalence of retirees, divorced or separated individuals, and younger individuals buying first homes.

There is only modest variation of home ownership rates throughout the main regions in New Zealand. All regions in New Zealand have home ownership rates over 50% for couples and over 20% for non partnered individuals.

There has been concern expressed at the accumulation of debt by households. The HSS has highlighted that 44% of all couple and 56% of all individual home owners have debt free residential properties. The majority of residential property owners who do owe debt are in the higher income quintiles, reflecting their ability to service debt on their home. The value of the outstanding mortgage to gross housing values is an indicator of household indebtedness. About one third of home owning couples have a gearing ratio of over 50%; that is where the mortgage is greater than 50% of the value of the property. Only 15% have a gearing ratio of more than 75%.

The paper has compared home ownership rates for couples in New Zealand with those for households in Australia and families in the United States. Despite a widely held belief that New Zealanders have very high levels of home ownership the evidence does not suggest this. In fact when allowance is made for the difference in definition, the New Zealand rates of home ownership are likely below those in Australia and the United States. This result is borne out in results from the Luxembourg Wealth Study.

The HSS also provided data concerning investment in other residential property (rental properties, holiday homes, other residential properties, overseas properties and time shares). Overall 19% of couples reported owning some form of investment property in 2001; the corresponding figure for non partnered individuals was 8%. The rates of ownership of investment property are comparative to those in Australia. In both countries almost one in four couples (or households for Australia) who are aged between 45 and 64 years own some form of investment property.

Our analysis of the unit record data from the HSS is limited in that it is a cross-sectional survey taken in 2001. We have been able to complement the survey data with information on the balance sheet of households available from the Reserve Bank of New Zealand. This aggregate household financial data has provided insight into a number of significant changes and trends in housing on both sides of the balance sheet of New Zealand households. The share of housing in both total assets and total liabilities has continued to

grow especially in the past few years. This has coincided with the financial reforms since the 1980s, and more significantly, with the recent buoyant housing market which has seen residential property values rise at substantial rates.

The level of debt to the value of the home (the gearing ratio) has slightly increased since the removal of financial controls in the late 1980s. It peaked in 2001 and has since declined almost solely due to the increase in house prices.

Not surprisingly, equity in owner-occupied homes remains the primary store of wealth for most New Zealand households, comprising over 50% of total net household wealth. Real housing equity remains highly volatile. In the last 25 years real net equity has fallen on five occasions.

We have presented estimates of the apparent equity withdrawal. These were constructed by comparing the change in the outstanding stock of mortgages with the amount of real investment in housing stock in any one year. Where the growth of mortgages exceeded the new investment in housing we defined the difference as the apparent equity withdrawal. The withdrawals could be used for other forms of investment such as unincorporated businesses, for reducing more expensive debt, for home improvements or for consumption. We do not have information about the purpose of the withdrawals.

We find that only in the period 2002 to 2004 was there a significant level of equity release. In fact over the period 1988 to 2004 “injection” exceeded “withdrawal” by some \$4 billion, while there were net injections in 12 of the 17 years.

We found that there is a reasonably close relationship between the apparent equity withdrawal, changes in real net equity and consequently house price inflation. Throughout the period 1988 to 2004, approximately 10% of the increased net equity has apparently been withdrawn. Over the period 2000 to 2004, withdrawals amounted to some 2.3 percent of household disposable income, compared with about 5 percent in Australia (Reserve Bank of Australia, 2005).

We have made use of the household balance sheet data from RBNZ to construct a measure of savings. It has long been recognised that an apparent discrepancy exists between the flow measure of savings (derived as the difference between household income and consumption) taken from the Household Income and Outlay Accounts, and a stock measure of household saving derived from balance sheet data. An obvious difference is that the flow measure does not reflect any revaluation of asset prices.

In this study we have constructed an implied measure of saving from the changes in net equity of households. We then adjusted this measure by removing the effect of house price revaluations, a major part of any asset price effect. We find that the adjusted stock measure then matches more closely the flow measure of savings from the Household Income and Outlay Accounts. Over the period since 1980, the adjustment for house price revaluations accounted for almost two thirds of the difference between the stock and flow measures of saving. Additional adjustments for the revaluation of other assets would close the gap further. However some of the difference would still remain unexplained.

We computed the implied level of net equity based on the flow measure of savings. By 2004, the implied net equity of households had fallen to almost zero. This outcome is clearly implausible, and underlines the need for continued caution in the use of the “headline” measure of saving rates taken from the Household Income and Outlay Accounts. Our alternative measure of the household saving rate based on the changes in

net equity (after removing the effect of house prices) is a long run average annual household saving rate of 12.4% of personal disposable income.

Although a majority of this paper has described the situation at a point in time from the HSS results, the aggregate data from Reserve Bank of New Zealand has been used in an attempt to understand changes and trends in households' balance. However, a longitudinal data set would allow for accurate measurement of households' responses to changing circumstances over time. The Survey of Family Income and Employment (SoFIE) is a new longitudinal survey of individuals and households living in private dwellings about assets and liabilities, which is collected during every second year.²⁰ The sampling for SoFIE will cover all individuals in the household, hence it will not be strictly comparable to those from the HSS which sampled individuals within a selected household. However, it will provide estimates of home ownership and investment in housing from Wave 2 of SoFIE. Using subsequent Waves 4, 6, 8 it should become possible to form more accurate estimates of the changes in home ownership rates and trends in households' balance sheet based on unit record data.

²⁰ It covers income levels, sources and changes, also major influences on income, including employment and education experiences, household and family status and changes, demographic factors and health status.

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Appendix

Household Savings Survey 2001

The survey consisted of those over 18 years old living in permanent private dwellings and usually resident in New Zealand. The size of the survey population covered about 98% of the resident adult population. A core sample total of 6,600 households were approached. One person from those qualifying in the household was chosen at random, and information was collected from and about that individual. In the case they had a partner, information was collected for the couple. In total the response rate was 74% and the final number in the sample was 5,374 households. There were 2,392 individual interviews and 2,982 for couples. It is important to emphasize that the term household refers to the unit of selection. The results are for individuals (living as non partnered individuals or partnered) and not for households.

The HSS provides benchmark information about the distribution of net worth, the type and value of assets, level and type of debt, and relationship between assets and debt. The value of total assets held by New Zealanders, as measured by the HSS, was estimated at \$435.097 billion (excluding Māori assets). The value of total debt held by New Zealanders as estimated by the HSS was \$71.988 billion.