Lessons from the Economics Department's work on household balance sheets and related issues

by Phil Briggs

Over the last three years, the Economics Department has undertaken a range of research regarding the financial position of households. This article provides an overview of this research. The work was largely motivated by concerns about: rising household debt, an apparent decline in household saving, and rising house prices. Things that have been learned include the following:

- Data on financial assets and borrowing can be used to derive an alternative estimate of household saving. Like Statistics New Zealand's measure, the alternative measure suggests that the household saving rate is currently negative.

- The high levels of consumption associated with negative saving appear to have been sustained by equity withdrawal from housing and farms, which in recent years has been large. Most of this equity withdrawal has probably occurred as the result of property sales rather than refinancings. The high levels of equity withdrawal reflect the strong rises in property prices that have occurred since the early 2000s.

- Factors that are likely to have affected the demand for housing over recent years include: lower interest rates, financial deregulation, the surge in net migration in 2001-2002, rising household income, the taxation treatment of rental housing, and households' expectations of continuing house price growth.

- In the short term, housing supply has not been able to match demand and the result has been rising house prices. Furthermore, the rise in the house price-to-income ratio over the last two decades or so suggests that there may be some factors that have been constraining the supply of housing over the long term.

The article concludes with a look at likely future trends, and outlines areas for further work.

1 Introduction

Over the last three years, the Economics Department has undertaken a range of research on issues related to the financial position of households. This work has been motivated largely by concerns about:

- rising levels of household debt

- an apparent decline in household saving

- rising house prices.

Each of these issues can have consequences for financial stability and the economic cycle, and hence are of vital interest to the Reserve Bank.

Rising debt

The rise in household debt has long been evident from data that the Reserve Bank collects directly from the financial sector. The debt-to-disposable income ratio showed a sustained rise through the whole of the 1990s, and it began an even sharper climb from around 2002 (figure 1). When would it end, and what would be the consequences of these higher debt levels? Would households be more likely to get into difficulties if economic growth were to falter?[1]

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[1] The Reserve Bank's financial stability division has also been looking at these issues, using household-level data from surveys like the Household Economic Survey (HES). For initial reports on this work see *Financial Stability Report*, Reserve Bank of New Zealand, May 2006, pp13-14. Available from www.rbnz.govt.nz.

Figure 1

Household debt as percent of household disposable income

Figure 2

Household saving as percent of household disposable income
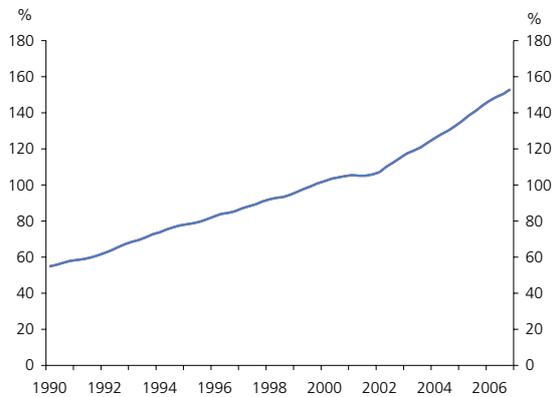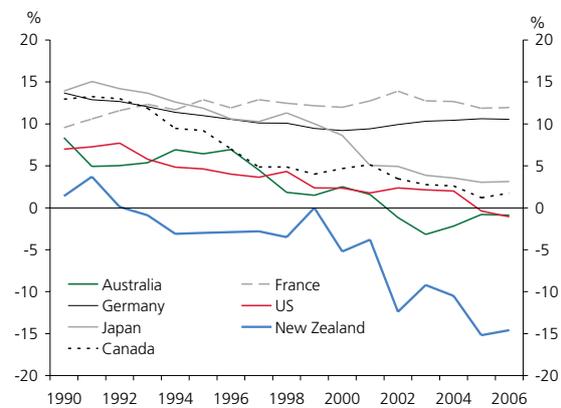
Declining household saving

Another issue of long-standing concern has been an apparent decline in saving by the household sector. Figures from Statistics New Zealand suggest that the household saving rate has been negative for most years since the mid-1990s and has been strongly negative since 2002 (figure 2).[2] With the government sector now having a high level of saving, and the business sector producing positive saving, the household sector appears to be the one that has been holding down the level of national saving. Clearly a low level of household saving can be a major factor in the emergence of macroeconomic imbalances. A low level of national saving, where saving is lower than the level of investment, results in a higher current account deficit and a higher net level of international debt.

Rising house prices

A third issue, and the one that has probably been of the greatest concern in recent years, is the rise in house prices. House prices have risen sharply since the end of 2001, with both house prices and section prices essentially doubling since then. However, rising house prices, especially relative to household income, have not been a new phenomenon. As figure 3 shows, the house price-to-income ratio has generally been on an upward trend since the early 1980s.

Figure 3

Ratio of average house price to average household disposable income
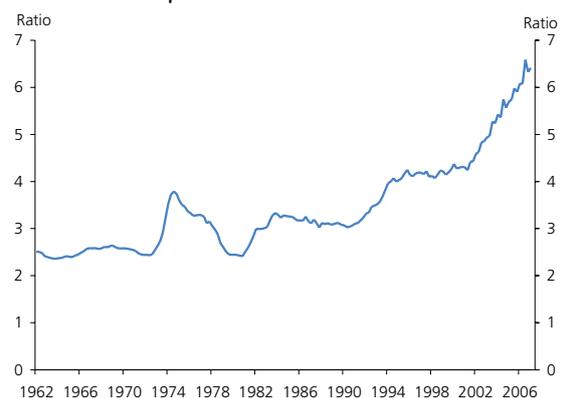
In looking at the household sector's financial position, we have given attention to both the household balance sheet and the household income and outlay account (HIOA).

The balance sheet for the household sector gives us a measure of the sector's wealth or net worth, with this being the difference between assets and liabilities. This is a stock

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[2] Statistics New Zealand's figures are labelled 'experimental', which largely reflects the fact that the methodology for compiling them is likely to change, especially when institutional sector accounts are derived for other sectors beside the household sector. See Statistics New Zealand (2007b).

measure – it measures the stock of wealth at a particular point in time. Currently there is no official household balance sheet; unofficial estimates of assets and liabilities are produced by the Reserve Bank.

The HIOA, which is produced by Statistics New Zealand, includes estimates of household disposable income and household consumption. The difference between these two estimates is household saving. This is a flow measure – it measures the flow of money in a specified time period. In general, saving is the part of income that is left over and which can be invested.

Some analysts use the term 'savings' (note the extra 's') to denote wealth. It can be argued that this reflects common usage of the word, since money in a bank account is often referred to as savings. But given the confusion that this can cause, this article uses the term 'wealth' for the stock measure, and 'saving' for the flow measure.

Note that saving is distinctly different from wealth or changes in wealth, although the concepts are related. Wealth is affected by the amount of saving but it is also affected by asset revaluations.

Revaluations – especially rises in house prices – have been a major factor regarding changes to the household balance sheet. Given that housing is the dominant component on the asset side of the account, the rise in house prices has resulted in a sharp rise in total assets. Similarly, borrowing that is secured on housing is the dominant component of the liabilities side of the account, and increases in this borrowing have driven up total liabilities. The result of the revaluations has been a rise in households' net worth.

Overall, the rise in house prices has been a central issue with respect to changes in household balance sheets. And as we will see, the rise in house prices has also been a factor behind the changes in saving behaviour.

Section 2 of this article looks at what has been learned about household wealth and saving, while section 3 looks at what has been learned about house prices. In the work that we have done, we have looked at both measurement issues and behavioural issues, in a bid to get a better understanding of what has been going on. An understanding of how things

interact and change over time will influence our views on how best to maintain price and financial stability.

In section 4, possible future trends with respect to household balance sheets are identified, while section 5 draws some broad conclusions and takes a brief look at further work.

2 What have we learned about household wealth and saving?

a. Home ownership rates as derived from censuses prior to 2006 were underestimates, since they did not fully account for homes held in family trusts. However, even when trust homes are accounted for, home ownership rates still show a long-term decline.

Initial results from the 2001 census indicated that home ownership rates had been declining. However, there was some doubt about this given that a lot of homes were held in family trusts and it was unclear as to whether these had been counted as being owned. The census had, for the first time, tried to pick up the number of dwellings held in family trusts, but it was not possible to identify the number of trust homes from census tables. Using reprocessed census data, and data on trusts from the Household Savings Survey (HSS), it was possible to estimate the proportion of dwellings held in trusts (6.9 percent).[3] Some, but not all of these households, had been counted as being owned by the occupier. Including the 'missing' trust dwellings in the 'owned' category increased the home ownership rate from the original 2001 census value of 67.8 percent to 70.5 percent. Using IRD data, the number of dwellings held in trusts were estimated for 1991 and 1996, and the census home ownership rates for these years were adjusted upwards. However, like the official figures, the adjusted figures showed home ownership rates falling since 1991.

The 2006 census contained a revamped question regarding trust ownership. The census showed that 12.3 percent of all occupied private dwellings were held in a family trust by the

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[3]   Briggs (2006).

dwelling's usual residents. Including these trust dwellings in the 'owned' category gave a home ownership rate of 66.9 percent, indicating a further decline.

b. Around a fifth of household assets are now held in family trusts, and this can affect measures of wealth and income at both the aggregate and household levels.

Additional tables were obtained from the HSS, which gave a more detailed picture of the wealth held in trusts than the original report on the HSS.[4] In this report, Statistics New Zealand showed total household assets (excluding assets held via Maori incorporations) as being $435 billion. Of this, 'trust assets' accounted for $29 billion. However, these trust assets cover only the debt that trusts currently owed to households.

When a trust is set up, the trust settlor – the person setting up the trust – usually sells assets to the trust. The purchase of these assets is usually funded by a debt from the trust back to the settlor; this debt is considered an asset to the settlor. The debt is usually repaid by the trust being forgiven a certain amount of the debt each year by the settlor. The 'trust assets' of $29 billion reported in the HSS cover the debt that is still outstanding and is the part of the total amount of trust assets that are still regarded as being owned by households.

However the HSS also gives us the total amount value of assets held in trusts – these being referred to as 'trust holdings' – and these were worth $93 billion. It can be argued that households still have a certain degree of access to this wealth, even though it is held by trusts. Subtracting 'trust assets' of $29 billion – the debt – from household assets of $435 billion, and adding on the $93 billion of 'trust holdings' gives a total of $499 billion. Hence it can be argued that total household assets, in round terms, were $500 billion in 2001 with about 19 percent of these assets being held off balance sheet.[5] Unfortunately, the HSS did not itemise the values of various types of assets (houses, farms, businesses, etc) held in trusts.

Taking only debt to settlors as being trust assets – and a similar approach is used in the Survey of Family Income and Employment (SoFIE) – can provide problems for analysts using household-level surveys. The asset data is not complete, unless total asset holdings are also included. Household income data may also be incomplete, since for some households income may be retained by trusts.

Most trust holdings in households and financial instruments should be covered in the aggregate data on household assets compiled by the Reserve Bank. These figures include the value of all dwellings, so they will include trust dwellings; they also include all those financial assets that are deemed by banks to be held by the household sector. However, trust holdings in businesses (including farms) are not currently included in the Reserve Bank's figures.

Statistics New Zealand recently made some upward adjustments to household income, expanding the coverage of trust income.[6] This lifted the estimate of the household saving rate from what it had been previously. However, as figure 2 showed – and figure 2 uses the revised estimates of household saving – the household saving rate is still strongly negative.

c. Equity withdrawal from both housing and farms has been large in recent years, providing a segment of the population with more cash to spend.

Equity withdrawal by households is the change in borrowing secured on household assets less investment by households in those assets. It generates a net positive cash payment to households, which is available for consumer spending and other uses. A particular form of equity withdrawal is housing equity withdrawal (HEW) and this has been large in recent years. For more details on the concept of HEW, see box 1, overleaf.

HEW is usually calculated using aggregate data (as was done in producing figure 4).[7] However, aggregate measures of HEW mask withdrawals and injections make by individual households. At any point in time some households are

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[4]   Statistics New Zealand (2003) is the original report.
[5]   For more details see Briggs (2006).

[6]   Statistics New Zealand (2007a).
[7]   For more detail on how HEW is calculated see Smith (2006).

withdrawing equity, other households are injecting equity, whereas others will be doing neither. While equity withdrawal affects a household's equity it does not affect its net worth; net worth is affected only when the withdrawn equity is spent. Similarly, aggregate HEW does not change the household sector's total net worth – net worth changes only when HEW is spent.

Figure 4

Annual equity withdrawal as a percentage of annual household disposable income
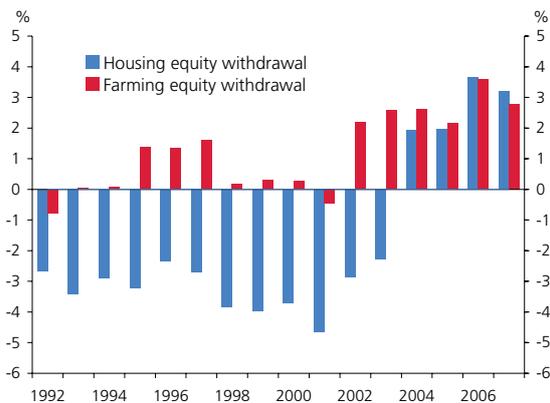
Source: RBNZ.

As Figure 4 shows, the incidence of HEW in New Zealand is a relatively new phenomenon. The historical norm has been a net injection of funds. These net injections largely reflect the effects of households making principal repayments on their mortgages. In recent times, it seems that higher borrowing has more than offset the effects of principal repayments.

Recent high levels of HEW appear to be linked to strong rises in house prices, with most of the HEW occurring as a result of property transactions, rather than refinancings. When a lowly-geared seller sells a property to a highly-geared buyer (such as a first-home buyer), then equity withdrawal occurs. The size of this withdrawal is influenced not only by the relative gearing levels but also by the rise in the price of the property. This form of withdrawal can be referred to as passive HEW. This form of HEW tends to increase when turnover in the housing market increases and earlier capital gains are realised. Active HEW occurs when the owner of the house increases the size of the mortgage on the property.

A study of housing equity withdrawal in Australia surveyed individual households and estimated the flows of withdrawals and injections (Schwartz *et al* 2005). The study found that property transactions accounted for around three-quarters of the total value of withdrawals. Assuming that the situation is similar in New Zealand, it would appear that most of the net HEW that has occurred is due to passive rather than active equity withdrawal.

Aggregate housing equity withdrawal in New Zealand does not appear to be highly correlated with changes in private consumption, suggesting that the short-term impact of equity withdrawal could be relatively modest. It seems likely, however, that HEW has a long-term effect on consumption. A significant proportion of HEW is likely to be due to last-time sales, where the previous owner has gone into a rest home or died. The resulting HEW will eventually be recycled via bequests to younger generations. However, it will take time for this to happen, and this may partly account for the fact that HEW does not have a strong immediate impact on consumption.

The withdrawal of equity from farms has also been large in recent years. As with housing, this reflects strong rises in property prices in the sector. Some farmers will access their equity when they sell up the farm and retire. If the farm is sold to a purchaser who is more highly geared than the seller, then the sale contributes to aggregate equity withdrawal. And as with housing, a proportion of farm equity withdrawal will occur after the death of the property owner and be recycled via bequests.

d. Household saving has declined in recent years and does appear to be negative. Despite this, household wealth has climbed sharply, with the rise in house prices being the main factor behind this.

The link between saving and wealth is reasonably straightforward. But the situation is often confused by the terminology used. As noted earlier, the term 'savings' (with the extra 's') is used by some to refer to wealth. This can lead to thinking that saving and savings are virtually the same thing, which they aren't.

Box 1

Housing equity withdrawal

Housing equity withdrawal occurs when equity is extracted from a house, either by increasing the mortgage on the house or by selling the house.

Increasing an existing mortgage on a house provides an owner with additional cash, which can be used to buy other things. Note that the equity withdrawn is equal to the change in borrowing on the property.

Equity withdrawal also occurs when an owner sells a house. After paying off what remains of the mortgage, the owner is left with a sum that can be spent.

The opposite of housing equity withdrawal is housing equity injection. This occurs when a person puts cash into a house, either via an initial payment – a deposit on the property – or through subsequent repayments of mortgage principal.

In the case where an owner extracts equity from a house by selling it, there is usually an injection of equity being made by the buyer, with the rest being borrowed. The net amount of equity being extracted from the property is equal to the change in the borrowing on the property (ie the buyer's borrowing minus the seller's final debt on the property). So, as in the case where the owner simply adjusts the level of the mortgage (either up or down), the net equity withdrawal on a property that is sold is equal to the change in borrowing on the property.

It follows that net housing equity withdrawal by the household sector as a whole is simply the change in total borrowing on housing. However, an adjustment needs to be made to this total to account for investment in additional housing. This additional housing covers new houses (including sections), additions and alterations, and existing houses bought from other sectors, such as businesses and government. Any sales of housing by the household sector to other sectors are treated as negative additions.

In general, aggregate housing equity withdrawal occurs when the change in borrowing exceeds the sector's investment in additional housing:

HEW = Change in mortgage debt - Investment in additional housing

The intuition behind this aggregate measure is reasonably clear. The housing sector as a whole does not begin to withdraw its existing equity until the change in borrowing exceeds the value of net additions to the sector's housing.

Note that aggregate HEW is a net measure; it is equal to households' withdrawals minus households' injections. When aggregate HEW is positive, there has been a net withdrawal of equity; when it is negative, there has been a net injection of equity.

Perhaps another difficulty in understanding the distinction between saving and wealth arises from the fact that the two measures need not move in the same direction, and this will be illustrated below.

Hodgetts *et al* (2006) show the algebraic links between the two measures. In general terms, investment (in either tangible assets like houses or intangible assets like bank deposits or shares) is funded either by saving or increased borrowing. This investment (less depreciation in the case of tangible assets) affects total assets, while any increased borrowing affects total liabilities. However existing assets and liabilities are also affected by revaluations. In the case of

housing assets, these revaluations have been large in recent years, reflecting changes in house prices.

Hodgetts *et al* use Reserve Bank data on changes in household assets and borrowing to back out an alternative estimate of household saving. Unfortunately, the Reserve Bank data on assets and liabilities is not complete, with a major omission being the assets and liabilities of unincorporated businesses that are owned by households. It was thought that most of these missing assets and liabilities probably related to farms. Hodgetts *et al* took estimates of farm equity withdrawal as being proxy measures of farm sector saving and used these to adjust their alternative saving measure.

The final measure seemed to confirm that the household saving rate had declined in recent years and was now strongly negative. However, the alternative saving rate was not as negative as the official measure (which was shown in figure 2); it was estimated as being around -7 percent of household disposable income in the year ended December 2005.

Figure 5 shows the reconciliation of wealth and saving as estimated by Hodgetts *et al*.[8] Note that while wealth has been growing – with this being almost totally due to housing revaluations – saving has generally declined. This shouldn't be surprising, since it reflects the wealth effect. As households become wealthier, they are inclined to spend more, and hence save less (more on this below).

Figure 5

Contributions to changes in household wealth
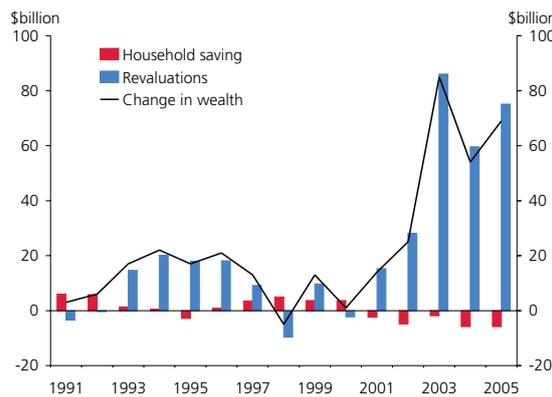
Source: Hodgetts *et al*, 2006.

Statistics New Zealand, in conjunction with The Treasury and the Reserve Bank, is now working on updating the institutional sector accounts, which should result in more accurate estimates of saving by government, business and households. As noted earlier, Statistics New Zealand has already made some upward adjustments to household income, with increased coverage of trust income. It would not be surprising to see household income rising further in subsequent revisions, with coverage of income from overseas also being increased.

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8   Contributions to changes in wealth come from three sources: saving, revaluations, and net capital transfers from overseas (mainly migrants' capital). Net capital transfers are relatively minor and are not shown in figure 5.

e. Negative saving appears to have been sustained by equity withdrawal and other injections.

How can the saving rate be negative? How can households spend more than they earn for a sustained period of time? Equity withdrawal, and its long-term effects on consumption, seems to be the main factor behind this. Figure 6 shows two estimates of household saving – Statistics New Zealand's estimate and the estimate by Hodgetts *et al* (2006). It also shows the sum of net equity injections for housing and net equity injections for farms. Negative values for injections indicate that equity is actually being withdrawn. As can be seen, the rise in net equity withdrawal in recent years correlates well with the sharp move towards negative saving.

Note that saving as estimated by Hodgetts *et al* is more variable than the Statistics New Zealand measure. Changes in this alternative measure seem to correlate reasonably well with cyclical changes in consumption, with the two being negatively related (Hodgetts *et al* 2006).

Figure 6

Household saving and net equity injections
$Billion
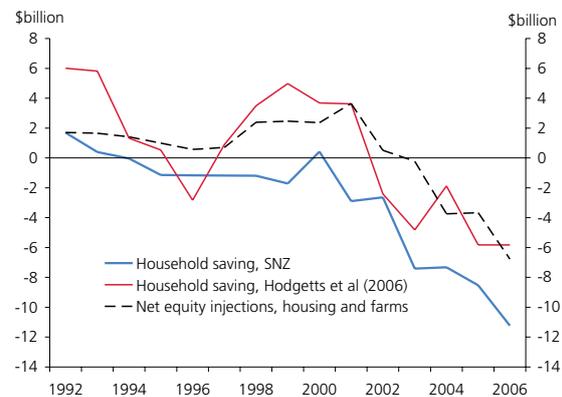
Sources: Statistics New Zealand, Hodgetts *et al*, 2006, RBNZ calculations.

Hodgetts *et al* note that equity withdrawal is not a phenomenon that is related only to houses and farms. Equity can be withdrawn from investments in the share market, businesses and assets overseas.

There have also been other injections of cash into the household sector, which are not treated as income in the household income and outlay account. Migrants' transfers

of cash and other financial assets are a direct boost to the spending power of the household sector. While net transfers are not normally large, they averaged about $1.4 billion per annum in the 2001-02 period, when immigration was high. There have also been a range of transfers to households from businesses. The largest was the demutualisation of AMP in 1999 but there have been other examples, such as the sale of publicly-owned electricity distribution companies. These transfers did not, strictly speaking, produce a change in household wealth. But they did provide households with the opportunity to sell their newly-issued shares, thereby giving them the ability to turn part of their wealth into cash.

f. Factors other than equity withdrawal that may have contributed to the decline in the household saving rate include: the wealth effect, increased interest payments, the rise in government saving, the life-cycle stage of baby boomers, and the level of income growth.

The wealth effect

De Veirman and Dunstan (2007) use a number of econometric techniques to look at the linkage between housing wealth and consumption. They found that a 1 percent increase in house prices today is associated with an increase in consumption in the next quarter of 0.07 to 0.10 percent. This is broadly consistent with the rule of thumb used to approximate the effect of house price changes in the Forecasting Policy System (FPS), the Reserve Bank's macroeconomic model. They also found that a 1 percent increase in house prices is associated with a total long-run increase in consumption of about 0.2 to 0.3 percent. This is similar to the estimate of Hull (2003). Another way of interpreting this result is that when housing values rise by 1 dollar and remain at their new level, then annual consumption will be 6.5 cents higher in the long run. Hull's estimate was 6.8 cents.

It is not easy to reconcile these estimates of the wealth effect with the possible impact of HEW on consumption. The reason is that HEW and the wealth effect measure different things. In recent years it seems that, on an annual basis, HEW has exceeded the change in consumption that has occurred due to increased wealth. However, HEW is a one-off change of equity to cash – most of which probably goes to people in older age groups – and this cash may or may not be spent. The wealth effect is the net impact of a rise in wealth on consumption. As house prices rise and lift wealth, some people, especially those in older age groups, will consume more. However, younger people who have taken on a large mortgage may actually be consuming less. Hence, HEW and the wealth effect measure different things, and the estimates of each are not necessarily inconsistent with each other.

Increased interest payments

Hodgetts *et al* (2006) note that buying houses that are financed primarily by borrowing could affect the saving rate to the extent that interest servicing costs increase over time as more borrowing is undertaken. This appears to have been the case, with households' interest servicing costs relative to disposable income increasing from around 7 percent in 1987 to around 11 percent in 2005. This rise reflects the volume of additional housing debt taken on over this period, and occurred despite a fall in interest rates. However, this explanation does raise the question of why households have not curtailed their consumption on non-housing items as their interest-servicing burden has increased.

Coleman (2006) offers a different take on interest payments. He notes that a portion of the interest earnings on capital is not true earnings but merely a compensation for inflation. If adjustments are not made for inflation, then the real earnings of the lender and the real payments made by the borrower are overstated. In effect, the inflation component paid by the borrower can be regarded as saving, because the real value of the debt falls by the same amount. However, the inflation component received by the lender is dissaving. Coleman notes that the SNA guidelines recommend including such adjustments as memorandum items.

Coleman adjusts both the interest earnings and interest payments shown in the HIOA. In recent years interest payments are far larger than interest earnings. The net adjustment is positive, which means that the published

saving number is being understated. In the year ended March 2005, for example, Coleman estimates that saving is being understated by $1.5 billion. However, other countries, like New Zealand, do not generally make this adjustment to their published estimates of household saving; our published household saving rate is still very low relative to comparable figures for other countries.

The rise in government saving

Government saving has grown strongly in recent years. Crown saving increased from around 0 percent of national disposable income in 2001 to around 7 percent in 2005.[9] Coleman looks at how this might have affected household saving. Using data from the HIOA, he takes total tax payments and subtracts government transfer payments (such as national superannuation) and government consumption expenditure (such as health). The difference is the net contribution to government that is not spent on consumption. This contribution increased strongly from 2000, rising by $3.7 billion in the period to 2005. Hence the recorded decline in household saving does not just reflect higher consumption expenditure but also increased tax transfers to government. In some senses, these transfers can be regarded as saving by households. However, as Coleman notes, the increased tax take need not have reduced measured household saving; if households had reduced their consumption by $3.7 billion, measured household saving would not have declined.

Coleman notes that the inflation adjustment to interest income, together with the increase in net taxes, account for some $5 billion of the $10 billion decline in household saving between 2000 and 2005.

Life-cycle effects

Coleman (2006) describes the life-cycle model of saving. The basic idea behind this is that individuals try to smooth their consumption over a lifetime. A typical household will accumulate assets during the members' working years, and run these assets down during retirement. If the economy is demographically stable, and there is no income growth,

the life-cycle model predicts that the aggregate saving rate will be zero. Saving by working people will exactly offset the dissaving of retired people. The aggregate saving rate will be positive when income growth is positive since young people will have earned more than the older people at the same stage of life.

While the saving rate of working people will have little effect on the aggregate saving rate, it will affect the accumulation of assets. Individuals who save 20 percent of their income while working will have peak asset levels that are twice as high as those who save only 10 percent. Hence the saving rate of those working will be much more informative about the adequacy of retirement income than the aggregate saving rate.

In modern societies, the existence of social security systems tends to mask the dissaving of the old, and also the saving of the young. Coleman takes saving rates for different age groups – as derived from the Household Economic Survey (HES) – and adjusts these for the effects of superannuation and health spending. In effect, he assumes that superannuation and health are funded under save-as-you-go schemes rather than pay-as-you-go schemes. He also adjusts for the effects of inflation (see above). The result is that groups of the working age population have positive saving rates while the retired have strongly negative rates.

Coleman suggests that the recent decline in aggregate saving may reflect the spending habits of the retired. It is also possible that private consumption amongst the retired has increased rapidly since 2000, given the large increase in the value of New Zealand assets, particularly land, that has occurred since then.

Although this is not mentioned by Coleman, it is also possible that soon-to-be-retired baby boomers have also begun to cash up and significantly increased their spending as a result of the recent run-up in house prices.

The level of income growth

Coleman (2006) examines income dynamics over the last 35 years by exploring the changing patterns of earnings of different age cohorts through time. The data shows a

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[9] Hodgetts *et al* (2006), p6.

levelling off in real male earnings since the early 1980s, while female earnings have risen, reflecting higher participation rates. While no firm conclusions can be drawn from the data, low income growth, Coleman suggests, could be a reason for New Zealand's poor saving performance compared to many rapidly growing countries. Again, though, there is the question as to why households have not constrained their consumption; lower incomes do not by themselves 'explain' falling saving rates.

g. Saving rates are difficult to observe via household surveys, and other methods of analysing saving behaviour may be more informative.

The HES is a survey of around 3000 households that is undertaken every three years. It collects data on the income and expenditure undertaken by households. In principle, this data can be used to obtain another measure of saving. Estimates of the saving residual (income minus expenditure) from the HES have been typically positive. This has been in contrast to estimates from the HIOA, which, as we have seen, are now strongly negative.

However, Bascand *et al* (2006) advise caution when attempting to derive a saving residual from the HES. Their paper has a comparison of the income from the HIOA and income from the HES. Both measures were adjusted so that items covered were basically the same. The results showed that HES income was around 96 percent of HIOA income, which was very close.

However, a comparison of expenditure measures showed that HES expenditure was only 84 percent of HIOA expenditure. It seems clear that the HES is undercounting expenditure and hence gives a significantly higher estimate of saving than the HIOA. This undercounting of expenditure is consistent with the general tendency of household surveys to under-report spending on things like smoking, drinking and gambling.

If even the HES – with its comprehensive approach to collecting spending data – cannot collect accurate data on household expenditure, it is unlikely that any household survey will be able to do this. It seems that using a household survey to measure saving directly, as the difference between income and expenditure, is unlikely be successful.

This raises a problem, especially if, as Coleman suggests, it is important to focus on the saving rate of the working age population. There seem to be no adequate sources of data for doing this.

Perhaps the best way of looking at the saving behaviour of the working age population will be to examine administrative data, like flows into Kiwisaver, and where possible look at the socio-demographic characteristics of those contributing to the scheme. Similarly, the best use of surveys like the HES may be to examine variables that relate to saving flows; eg, payments into superannuation schemes and principal repayments on mortgages.

Burns and Dwyer (2007) note that households tend to do better at saving where there is a contractual element – like contributing to a superannuation scheme or paying off a mortgage. An initial aim might be to analyse the flows from such contractual arrangements, and determine how these have changed, or might change, over time.

3   What have we learned about house prices?

a. Factors that are likely to have affected the demand for housing include lower interest rates, financial deregulation, high net migration, rising household income, taxation treatment of rental housing, and households' expectations of continuing house price growth. However, the impacts of these factors on house prices are not easy to quantify.

Reserve Bank (2007) – the Bank's submission to the inquiry of the Commerce Select Committee on housing affordability – listed a range of factors that influenced the demand for housing. These included:

• The move in the early 1990s to a low inflation/low interest rate environment, which meant that households could borrow more, since they could now service a higher level of debt.

- Deregulation of the financial sector and increased competition in the mortgage market, which has increased the access to credit for many, if not all, households.

- Population changes, which in the mid-1990s and early 2000s were driven to a large extent by gains from net migration.

- A steady rise in real household income since the early 1990s, and a general fall in the unemployment rate.

- Taxation policy, where the treatment of capital gains on rental properties appears to be relatively favourable when compared to other countries.

- Expectations of continuing house price growth, which has resulted not only in a rise in the number of people buying rental properties, but a rise in the number of owner-occupiers 'trading up'.

Some of these factors have been included in analyses of what drives house prices (more on this below). However, it is difficult to test the impact of some factors. An example would be financial deregulation, which can be seen as being more of an 'enabling factor' rather than a direct driver of housing demand.

In its submission to the Commerce Select Committee, the Reserve Bank expressed the view that housing policies that increased demand should continue to be carefully targeted. The aim should be to minimise the impact of such schemes on house prices, and avoid such schemes being self-defeating.

The Bank noted that there were two areas on the demand side where government might want to consider policy changes:

- Managing migration flows with a view to lessening their impact on house prices.

- Reviewing tax policy, which appears to be more favourably disposed towards rental property than it is in other countries.

Work on both of these issues is reported on below.

b. On the limited evidence that is available, it appears that the proportion of properties purchased by people overseas is small.

The Reserve Bank has investigated several data sources on overseas buyers, including:

- IRD data on non-resident individuals claiming rental income or losses on New Zealand property; and

- Quotable Value Limited data on the addresses of property owners, as recorded in the certificate of title.

While these data sources are likely to significantly undercount the level of overseas ownership, the level is still likely to be quite low (less than 5 percent of all New Zealand residential property). Also, some of these owners are likely to be New Zealanders who are currently living overseas. It is difficult to tell from the data whether overseas demand has moved with or against the New Zealand residential property cycle. However, the available data implies fewer overseas purchases recently, possibly reflecting the high level of domestic property prices, rising domestic and overseas interest rates, and the high New Zealand dollar. Rates of overseas ownership tend to be higher in traditional tourist destinations, like Queenstown, and in areas offering higher prospective rental yields for investors, like the South Waikato.[10]

c. The persistent rise in the house price-to-income ratio over the last two decades or so suggests that there may be some factors that have been constraining the supply of housing over the long term.

As figure 3 showed earlier, the house price-to-income ratio has generally been on an upward trend since the early 1980s. Periods of strong economic growth and high migration inflows – such as those that occurred in the mid-1980s, the mid-1990s, and the early 2000s – have tended to result in significant rises in the house price-to-income ratio. The puzzle is why the ratio hasn't adjusted down after each period of strong inward migration has ended. This points to there being some long-term supply constraints on housing.

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[10]   See Reserve Bank of New Zealand (2007c), p14.

The Reserve Bank suggested to the Commerce Select Committee that government policies should generally focus on increasing the responsiveness of housing supply. The Bank's submission showed that construction prices have not risen as much as prices of sections. Hence, looking at supply-side issues may require a review of planning practices, especially those relating to new development and urban redevelopment. It was noted that supply-side issues were not likely to be solved easily and quickly.

Reserve Bank work on supply issues has been limited – other government agencies clearly have more knowledge and expertise in these areas.[11]

d. As in other countries, low interest rates have played a major role in the rise in house prices.

Consumers Price Index (CPI) inflation fell suddenly in the early 1990s and has remained at relatively low levels since. As Figure 7 shows this fall in inflation led to lower nominal interest rates. Both nominal and real interest rates have fallen further since then, which reflects, to some extent, low interest rates overseas.

Ellis (2006) suggests that this general fall in nominal interest rates, coupled with the effects of financial deregulation, resulted in higher demand for mortgage finance and a widespread desire on the part of households to live in a better house. This resulted in owner-occupiers improving the quality of their own homes, either via renovations and building, or by 'trading up' to another property. Lower interest rates also enabled many households to buy second houses or rental properties. Given that housing supply is 'sticky', this increase in demand was basically unsatisfiable, at least in the short term. The result has been higher house prices.

Figure 8 illustrates how the impact of lower interest rates has fed through to house prices. The red line is the size of a loan that a household with average disposable income could afford to take on. This amount is calculated assuming that 35 percent of average disposable income is available
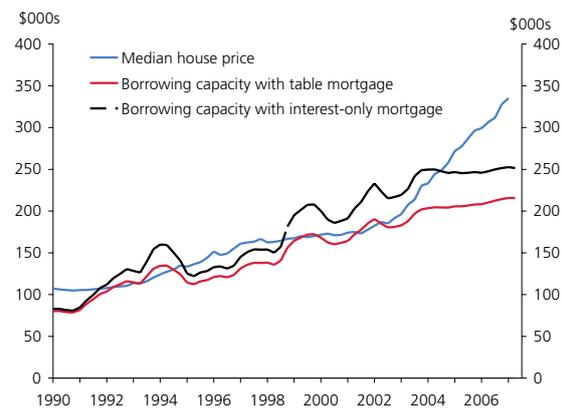
Figure 7

Effective mortgage interest rate
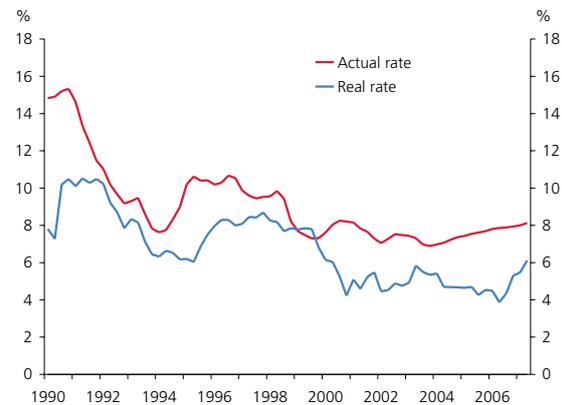
Source: RBNZ.

Figure 8

Borrowing capacity of household with average disposable income, and median house price


Sources: REINZ, RBNZ.

for making payments on a table mortgage with a 25-year term.[12] As can be seen, borrowing capacity rises over time, reflecting a steady rise in disposable income, and a general downward trend in nominal interest rates. The upward trend in borrowing capacity is very similar to that for the average house price. The chart appears to lend some support to the Ellis thesis: that a general fall in interest rates has boosted demand, which, coupled with sticky supply, has resulted in a general rise in dwelling prices.

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[11] Some discussion of land prices is included in the Reserve Bank's submission to the Commerce Select Committee. Also, Coleman and Landon-Lane (2007) includes a brief look at the history of housing supply in an appendix.

[12] Household disposable income as used here excludes imputed rent but has had depreciation and interest payments added back into it. Hence, it is basically a cash measure of income, before any interest payments are made. Banks would tend to look at a household's cash income when assessing the size of the loan that could be serviced. They would also tend to want the servicing costs to be no more than 35 percent of the household's income.

Figure 9 is another illustration of the impact of mortgage interest rates on borrowing capacity. In the last year or two, the standard term for a table mortgage appears to have moved from 25 years to 30 years. This has obviously increased the borrowing capacity of households. Using interest-only loans increases borrowing capacity even more. A recent informal survey by Reserve Bank staff of the major banks found that around 15 percent of all residential housing mortgages are interest-only loans, and that these loans account for around 25 percent of the total value of mortgages. Clearly, interest-only mortgages tend to be for greater amounts than other mortgages. A significant proportion of these mortgages will be held by people who have invested in rental property; there is little incentive for investors to hold loans that repay principal since only interest payments can be deducted from rental income for tax purposes. However, discussions with banks have indicated that interest-only loans are also used by some owner-occupiers. The move to longer term loans, and the use of interest-only loans, means that borrowing capacity as shown by the red line in Figure 8 may be underestimated, especially for recent years.

Figure 9

Borrowing capacity where total mortgage payments are $20,400 per annum[13]
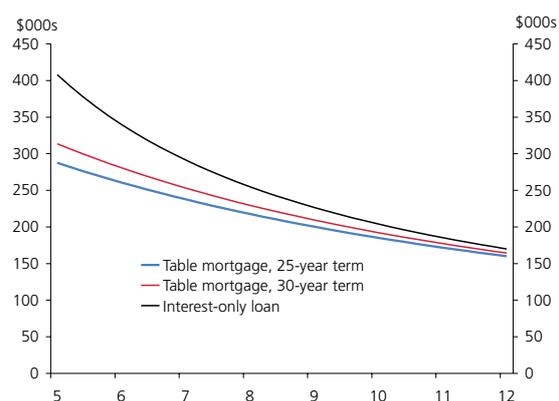
Source: RBNZ.

Coleman (2007) adds another facet to the interest rate argument. His paper develops an overlapping-generations model to look at conditions faced by credit-constrained home buyers. The model assumes that potential rental property owners are not credit constrained. These people bid up house prices to the point where the real return from a property (including rent and capital gain) is equal to the real interest rate. Given this, home buyers tend to get priced out of the market, opting to rent rather than make high mortgage repayments and reduce real non-housing expenditure. While Ellis seemed to suggest that much of the upward pressure on house prices came from home-owners, Coleman's model suggests that a significant part of the rise in prices has been due to the decline in real interest rates and the subsequent impact of rental property purchases.

The impact of interest rates on house prices presents something of a conundrum for monetary policy. The Reserve Bank does not target house prices, it targets CPI inflation. But CPI inflation is influenced both directly and indirectly by house prices. The CPI is affected directly since it includes a series covering the purchase and construction of new dwellings. Movements in this series tend to reflect changes in existing dwelling prices and hence they generate some variability in non-tradables inflation. Therefore, to the extent that monetary policy responds to this variability, it is implicitly responding to developments in house prices.[14]

The indirect effects of house prices are probably more problematic. As we have seen, a rise in housing equity can lift consumption, which in turn may add to inflation. The problem is deciding when to react to rising house prices. Analysis suggests households' expectations of house price inflation are slow to adjust (see below), which means that episodes of house price rises can be difficult to end, even with sharp and sustained rises in interest rates. This would suggest that an early response to house price rises is probably preferable to a late response. However, it is difficult to accurately assess whether house price increases are showing 'bubble type' behaviour, especially in the early part of a house price cycle.

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[13] The figure of $20,400 is about 35 percent of average household disposable income as at March 2007.

[14] Hargreaves *et al* (2006) look at housing-related inflation – which includes construction costs of new housing – and non-housing inflation, and analyse the cycles in both components.

e. Surges in net migration are strongly correlated with rises in house prices.

Coleman and Landon-Lane (2007) use a structural vector autoregression model to analyse the relationship between migration flows, housing construction and house prices. It suggests that a net migration inflow equal to 1 percent of the population is associated with a short-term increase in house prices of about 10 percent. The size of this change is much larger than would be expected from the average change in the population and house prices in the long term.

One explanation is that migration flows occur at times when the local people are revising their expectations about future income growth, and that these revised expectations result in changed demand for housing. Another explanation is that migrant flows change expectations about the fundamental value of houses.

The Reserve Bank's submission on housing affordability to the Commerce Select Committee noted that immigration policy may have a role to play in ensuring that migration flows do not exacerbate the housing cycle. However, given that government can control only the inflow of non-residents, there are limits to how much net migration flows can be fine-tuned. Nevertheless, government did make a slight downward adjustment to its immigration target recently, noting the need not to add to inflationary pressures.

f. Current taxation policy means that the value of a house to a highly-geared landlord will generally be higher than the value to a highly-geared owner-occupier.

For tax purposes, rental property owners can deduct any losses on the property from total income. This total income includes earnings from sources other than the rental property. This appears to favour rental property owners over owner-occupiers who, cannot deduct any of their housing expenses from their income. On the other hand, owner-occupiers do not pay tax on imputed rent. Imputed rent is equal to the rent that could be obtained on the property; the owner-occupier does not pay tax on this income, whereas a rental property owner does pay tax on rent.

Hargreaves (2007) shows that for a fully-geared rental property owner – one with a 100 percent mortgage – the value of a property is higher than for a fully-geared owner-occupier. The ability of the rental property owner to deduct losses more than offsets the fact that the owner-occupier pays no tax on imputed rent.

In deriving the values for each type of property owner, Hargreaves uses a formula that equates the returns from property (rent and capital gain) to the cost of holding the property (interest and other costs, including tax). He then backs out the value of the property from the formula.

Hargreaves also looks at ungeared property. He shows that the value of a property to a rental property owner with no debt is similar to the value to a fully-geared rental property owner. However, the value to an owner-occupier with no debt is significantly higher than the value to either a fully-geared or ungeared landlord. This is largely due to the fact that no tax is paid on imputed income.

Hargreaves looks at various tax regimes and how they would affect the values for each of the four types of property owner. He shows that ring-fencing losses on rental properties would even up the value of a property to a fully-geared landlord and a fully-geared owner-occupier.[15] He notes that a shift to taxing only the real component of interest would narrow the gap between the value to a geared landlord and the value to an owner-occupier, since the landlord would be able to deduct only the real component of interest payments for tax purposes. Also, this approach be would go some way towards removing the advantage rental property has over bank deposits. Hargreaves notes that moving to a 'dual taxation' approach, with a lower tax rate on capital income than other income, would also reduce distortions regarding the decision to purchase property.

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[15] **Ring-fencing means that losses from a rental property can be deducted from only the property's income, and not from an investor's total income as at present. Ring-fencing was initially discussed in** *Supplementary Stabilisation Instruments*, **a 2006 report by the Reserve Bank and The Treasury. More commentary on ring-fencing can be found in the Reserve Bank of New Zealand (2007b).**

g. Estimating how overvalued house prices are, and forecasting house prices, are difficult tasks.

There is a range of published estimates about how much New Zealand houses are currently overvalued. The estimates range from an overvaluation of around 30 percent to no overvaluation at all.[16] The estimated level of overvaluation depends on the model being used.

Hodgetts (2004) used an asset price model to basically compare house prices with rents. He found that the long-term trends in house prices and rental yields – strong price rises and falling yields – were not inconsistent with each other. In fact, the different trends were largely accounted for by the secular fall in real interest rates. An interpretation of the results was that the sharp rise in real house prices was not of itself an indication of overvaluation.

Analysis undertaken a year later produced similar results to Hodgetts' earlier work – if the secular decline in interest rates was taken into account, the housing market did not appear to be significantly overvalued. From a cashflow perspective, the burden of servicing a mortgage (for both an owner-occupier and an investor) did not look extremely high relative to previous housing cycles.

However, since then, affordability for an owner-occupier has declined markedly. Figure 10 shows payments on a median-priced house as a proportion of average household disposable income.[17] This ratio is now much higher than at any time since the low-inflation period began in the early 1990s.

A number of attempts at forecasting house prices in New Zealand have been based on the approach of Pain and Westaway (1996).[18] This approach is based on an inverted demand equation where real house prices are a function of two variables: the ratio of real housing consumption to real total consumption, and the user cost of capital.

Figure 10

Mortgage payments as percentage of average household disposable income (90% loan)
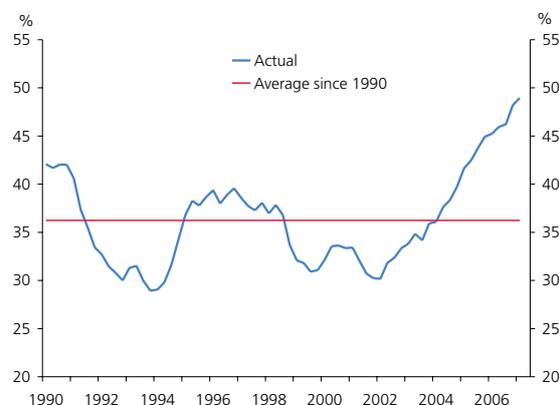
Source: REINZ, RBNZ.

Minot (2004) adopted this approach, and the resulting model, which was a co-integration model, was used for some time as an adjunct to FPS. In the long-run equation, real consumption of housing services was proxied by a real measure of the housing stock. The user cost of capital was taken to be the real 90-day interest rate less the expected real return on capital. The proxy for expected real return was the past three years' real capital gain on housing; this formulation was the one that gave the best fit for the long-run equation. All other New Zealand studies have used a similar proxy for the expected real return; it seems that New Zealand households' expectations about house price movements are very slow to adjust. Variables that entered the short-term equation included changes in the housing stock/consumption ratio, and changes in the working age population.

The estimated coefficients suggested that over the long run a 1 percent increase in the housing stock leads to a 1.6 percent fall in real house prices. A 1 percentage point increase in the user cost of capital, on average, led to around a 3.5 percent fall in real house prices over the long run. From a monetary policy perspective, this could be interpreted as a one percentage point increase in the real interest rate, all else equal, leading on average to a 3.5 percent fall in house prices.

Including the user cost of capital in the long run equation meant that in-sample forecasts of house prices tended to reflect short-term variations in interest rates. It was felt

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[16] For a brief summary of this research, see *Financial Stability Report*, May 2007, Reserve Bank of New Zealand, pp11-12.

[17] As in figure 7, which showed borrowing capacity, the mortgage was taken to be a table mortgage with a 25 year term. The mortgage covers 90 percent of the value of the median house price; ie, the deposit is 10 percent.

[18] Examples are O'Donovan and Rae (1997), Grimes *et al* (2003) and Rosborough (2005).

that the equation was not providing a good view of what the long-term equilibrium price level looked like. Another problem was the equation's forecasting performance - the forecast produced back in 2004 was that nominal house prices would be showing zero growth by 2006. Perhaps households' expectations regarding future house prices have been even slower to adjust than was assumed in the equation.[19]

A paper by Abelson *et al* (2005), which looks at explaining house prices in Australia over a period of more than 30 years, may provide some guidance on a better way of determining the long-run equilibrium price level for housing.

4.   In view of what's been learned, what can we expect going forward?

a. House prices appear to be overvalued, relative to household income, but how they will adjust is difficult to predict.

As figure 8 showed, growth in average house prices has outstripped growth in borrowing capacity. And as figure 10 showed, payments on a new mortgage on a median-priced house are at a very high level relative to average household disposable income. Houses have simply become less affordable, and this is affecting demand. As demand eases, so will house price growth, and house prices can be expected to adjust relative to household income.

It is difficult, though, to say exactly how this adjustment will occur. If house prices were to level off and stay flat, the gap between current house prices and their long-run equilibrium level could take many years to close.[20] On the other hand, the adjustment could occur more quickly, with outright falls in nominal house prices occurring. In such a scenario, house

prices might move below their long run equilibrium level for a time, reflecting the slow adjustment in households' expectations.

Overall, though, it seems that house prices will adjust towards their equilibrium level, where this level is related to the current borrowing capacity of households. Unfortunately, this equilibrium level is likely to be too high for a significant proportion of households, and the home ownership rate is likely to continue falling, at least in the short term. Long-term measures aimed at restraining further house price growth – such as measures to increase the supply of medium-priced houses – may be helpful. Over time, these could result in a decline in the house price-to-income ratio, thereby improving affordability.

b. If nominal house prices were to level off, housing equity withdrawal would stay high for some time, lending some support to consumption. As a result, the household saving rate would be slow to adjust, probably remaining negative for a period. Also, the debt-to-income ratio would continue to rise for some time yet.

Passive equity withdrawal occurs when a highly-geared house buyer purchases a house from a lowly-geared seller. Given that only around 7 to 8 percent of the housing stock gets sold each year, there is still a large stock of houses that have been held for some time. Some of these will be held by older people who, over the coming years, will begin to 'trade down', or to cash up their holdings in residential property. As this happens, existing equity will be unlocked. Provided that nominal house prices level off rather than fall sharply, the level of withdrawn equity will remain high, providing some support to the level of household consumption. As a result, household saving will be slow to adjust, and will probably remain negative for a period. Furthermore, the level of mortgage debt will continue to rise, as highly-geared buyers replace lowly-geared sellers.

A fall in house prices would probably result in a faster adjustment process, with the household saving rate making a quicker return towards positive territory.

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[19] Another possibility is that in the last few years house prices have reflected a 'collateral effect'. As house prices rise, owners' equity increases, and this generally allows owners to borrow more. If owners then buy a bigger home, or additional residential properties, this may result in house prices moving even higher.

[20] The value of this equilibrium level is unclear. Estimates of 'borrowing capacity', as shown in figure 8 are, at best, rough guides as to where the equilibrium level might be.

5   Conclusions

Our work to date seems to suggest a number of broad conclusions:

- The rise in the household debt-to-income ratio since 1991 is due largely to the rise in house prices relative to income. Financial deregulation has been an enabling factor in this regard, with households generally being able to obtain the mortgage finance that they have needed in order to purchase residential properties.

- The fall in household saving is related to the rise in house prices. Since the early 1990s, households have generally accumulated wealth not by saving but by borrowing money to purchase residential property, which then produces capital gains. In recent years, equity withdrawal has been large, and this has underpinned consumption growth.

- The major factor behind the rise in house prices since 1991 has been the fall in interest rates. This fall, coupled with financial deregulation, has enabled households to service larger loans. The initial fall in interest rates, in the early 1990s, was the result of the move to a low-inflation environment. As inflation fell, so did interest rates. This occurred across many countries. A second wave of worldwide downward movements in interest rates occurred in the early 2000s. This was largely in response to the fall in the 'tech wreck' – the severe fall in technology stocks – and the events of 11 September 2001.

- The resulting rise in housing demand outstripped supply, at least in the short term, and house prices rose sharply. In New Zealand, housing demand was boosted even further by a largely unforeseen consequence of September 11 – a sudden climb in net inward migration. This reflected New Zealanders returning home, or staying at home, and the arrival of a greater number of ESL students, who probably saw New Zealand as being a safe learning environment.

- On top of this, the local economy continued to grow strongly through the 2000s, producing what has now become the longest economic expansion since 1960. Agricultural earnings – especially dairy earnings – have also been high as growth in China has continued to underpin international demand for commodities. This has kept demand for both housing and rural land high.

- Rises in the price of housing and rural land resulted in a significant amount of equity being withdrawn from both housing and farms, and this kept consumption high. The household saving rate seemed to be negative, partly as a result of this equity withdrawal. Most of this equity withdrawal probably occurred as a result of property sales, rather than a conscious 'gearing up' on the part of owners. Property sales unlocked the equity that had built up as a result of rising property prices.

- Persistently rising house prices meant that residential property was seen as an attractive investment option. Perceived tax advantages for housing relative to other forms of investment reinforced this. Increased interest in housing from investors reinforced the rise in house prices.

- There are also tax advantages to home ownership, relative to some other forms of investment. For example, income from an owner-occupied house – imputed rent – is not taxed, while income from a bank deposit is. This may partly account for the fact that newly constructed homes have got progressively larger over the last decade or so.

- Construction prices have not risen markedly, suggesting that the rise in house prices has been largely related to rises in land prices. To some extent, this may reflect planning practices; the general approach has been to limit urban sprawl and encourage in-fill housing. Or the rise in land prices may reflect household preferences regarding location, with many households not willing to start their home-owning career with a home at the urban fringe.

Where to from here?

The global transition to a low inflation and low interest rate environment may be close to being complete. However, it seems that houses in New Zealand are now overvalued relative to the level that can reasonably be supported by household income.

While house price inflation is currently slowing, it seems likely that the level of house prices, relative to income, will remain high compared to the levels of a decade or so ago. As a result, housing affordability is likely to remain an issue for parts of the household sector. Hence, from a public policy perspective there is likely to be an emphasis on finding long term ways of constraining house price growth. If this approach proves successful, the house price-to-income ratio could gradually decline, improving affordability and making home ownership attainable for a larger proportion of the population.

A gradual decline in the house price-to-income ratio would eventually make the ratio of household debt to income lower, thus making the household sector less vulnerable to economic shocks. In short, a gradual decline would be beneficial to financial stability. Long-term measures – such as measures to improve the supply-side response to changes in housing demand – could also help to reduce inflationary pressures coming from the housing market.

One aspect of the Reserve Bank's approach to household sector will be to focus on long term issues. This will be done by:

- Working with government agencies on issues that can have long-term effects on house prices: taxation, housing supply issues, land use planning, migration, etc. We are already doing this via our involvement with the Centre for Housing Research Aotearoa New Zealand (CHRANZ), the Department of Labour, The Treasury, and other agencies.

- Encouraging a shift in focus to investing in financial assets rather than housing. Recent changes to government policies – like the introduction of Kiwisaver, and the reduction in the tax rate on financial savings through the establishment of Portfolio Investment Entities (PIEs) – may help to increase awareness and knowledge about financial assets.

Meanwhile, work that increases our understanding of household-sector issues, and their consequences for both financial stability and price stability, will continue. This work will also inform attempts to better incorporate financial phenomena in formal macroeconomic analysis and models. Intended further in-house work at the Reserve Bank includes:

- Looking again at the long-term movement in house prices relative to other asset prices and various economic aggregates.

- Working with Statistics New Zealand to improve the institutional sector accounts, including the HIOA (already under way).

- Looking at the feasibility of including estimates of the assets and liabilities of unincorporated business in the household balance sheet. These unincorporated businesses would include those that are owned via trusts.

- Further work on the wealth effect (international comparisons, household-level analysis).

- Looking for data on bequests with a view to determining how much of the current housing equity withdrawal is being recycled to younger generations.

- Looking at data sources from which we might be able to identify regular saving flows – including deposits in saving schemes and mortgage principal repayments - for various age and income groups.

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