
Microeconomic analysis of household expenditures and their relationship with house prices

by Mark Smith¹

The use of microeconomic data sources can provide important insights into how household and firm behaviour influence developments in the economy. This article summarises some of the key features of household surveys produced by Statistics New Zealand, including the Household Economic Survey (HES). It then outlines recent work by the Reserve Bank that uses data from the HES to analyse various hypotheses for why a positive correlation exists between house prices and consumer spending. Findings suggest this positive correlation is evident for various age groups of householders, and for households living in rented accommodation as well as for owner-occupiers. There is some evidence of a wealth effect for older householders, with the pick-up in household expenditures for this group since the late 1990s occurring during a period of sizeable house price rises.

1 Introduction

The household sector (residential investment and private consumption) accounts for approximately two-thirds of total economic activity. Hence, developments in this sector have an important bearing for monetary policy via their impacts on activity and inflation. There are also financial stability implications to consider, with house prices and household debt levels having risen strongly in recent years.

In carrying out its monetary policy and financial stability functions, the Reserve Bank of New Zealand looks at a wide variety of data, encompassing microeconomic and macroeconomic sources. In addition to the macroeconomic data reported by Statistics New Zealand, and aggregate household balance sheet and money and credit statistics collected by the Reserve Bank, a wide range of microeconomic data about households is available. Analysis of microeconomic data offers another angle of analysing developments in the household sector that are of interest to researchers and policymakers. The release of the 2006/07 HES in November adds to this information set. This is particularly timely given developments in the household sector since the last HES (2003/04 period).

This article summarises recent work at the Bank using microeconomic data from the HES to analyse developments in the household sector. Following a brief outline of the HES, some of its key differences with other microeconomic data sources are outlined. The article then highlights an area where household-level data can provide insights for policymaker, namely evaluating alternative hypotheses for why a link between house prices and household expenditures exists. A brief conclusion follows.

2 The Household Economic Survey and other household datasets

The HES records expenditure and income data for a sample of all private New Zealand resident households living in permanent dwellings.²

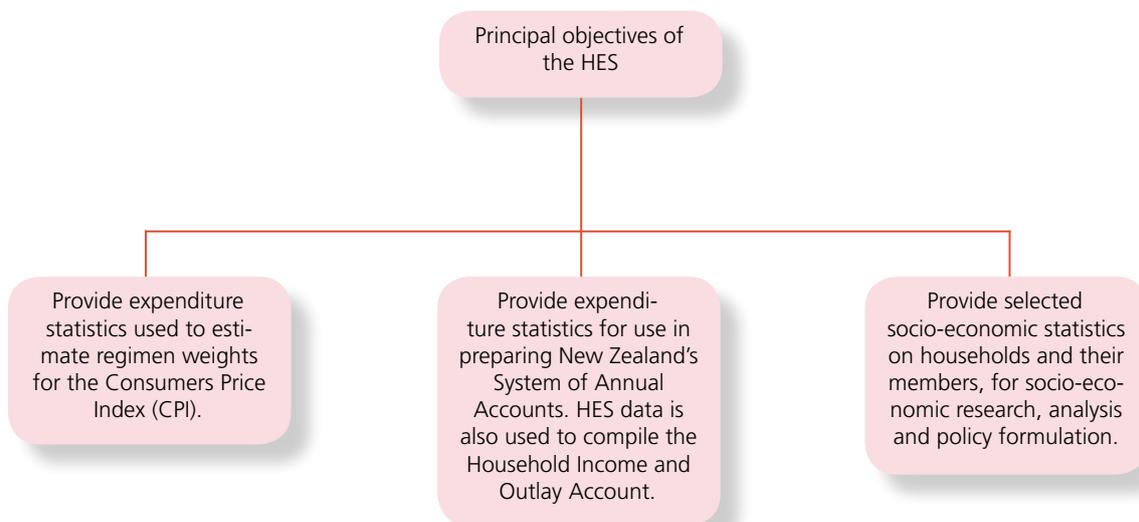
The HES was conducted annually from March 1974 to March 1988. It subsequently shifted to a triennial cycle, with surveys in the June 2001, 2004 and 2007 years.³ Each survey year, around 3,000 households are interviewed. The main purposes of the HES are shown in figure 1.

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² For survey purposes, a household comprises a group of people who share a private dwelling and normally spend four or more nights a week in the household. They must share consumption of food, or contribute some portion of income towards the provision of essentials for living as a group.

³ From 2007/08 onwards, Statistics New Zealand will run a shortened version of the HES, collecting information on household income, expenditure on housing costs, and living standards in the years between the full HES.

Figure 1
Principal objectives of the HES



Source: Statistics New Zealand (2004)

There are five survey components to the HES: a household questionnaire, an expenditure questionnaire, an income questionnaire for each household member 15 years and over, an expenditure diary for each household member 15 years and over, and (from the 06/07 survey) an economic living standards index short form for one member per household aged 18 years and over. Expenditure data in the HES is collected by a range of different methods, including 12-month recall for large payments, information on the latest payment for regular commitments, and 14-day diary keeping for adult members of each household aged 15 years or over.⁴

There are a number of equivalent household surveys in other countries, including the Household Expenditure Survey in Australia (10,000 households surveyed every six years), the UK Food and Expenditure Survey (7,850 households annually), the Consumer Expenditure Survey in the US (7,500 households annually), and the Canadian Survey of Household Spending (over 20,000 household annually).

Table 1, opposite, summarises the key features of the HES

⁴ Expenditure data from HES 2006/07 is not directly comparable with previous years due to the implementation of a new expenditure classification (more consistent with international conventions). There are now 14 expenditure groups, as opposed to 8 in the 2003/04 HES. See <http://www.stats.govt.nz/datasets/social-themes/household-economic-survey-06-07.htm> for a link to HES questionnaires.

and compares them with some other household datasets provided by Statistics New Zealand.⁵

The HES is a rich dataset providing a considerable range of information. However, there are inevitably going to be gaps:

- Information on household balance sheets is only partial. The HES collects information on the current rateable value of owner-occupier properties and some mortgage debt information. It also collects some information on other properties owned by the household.
- In recent years, family trusts have become an increasingly popular means to protect assets such as property (houses and farms) and financial assets. Up until the 2006/07 survey, the HES did not have a tenure categorisation for family trusts.⁶

Other data sources can be used to fill in some of the gaps in the HES. For example, gaps in household balance sheet information can be supplemented with data from the Survey of Family, Income and Employment (SOFIE) and the Household Savings Survey (HSS).

⁵ See <http://www.stats.govt.nz/datasets/a-z-list.htm> for a list of datasets available from Statistics New Zealand.

⁶ Estimates from the 2006/07 HES showed that approximately 12 percent of private households held their principal dwelling in a family trust, the same portion as recorded in the 2006 census. See also Briggs (2006).

Table 1

Summary of household survey information available from Statistics New Zealand

Survey	Period	Survey type	Major information	Respondents
HES	1974-	Random sample. Annual survey up to 1988, triennial afterwards	Household income & expenditures. Some information on assets	Approximately 3,000 private households resident in NZ (2,800 in 2006/07 HES).
SOFIE	2002-	Longitudinal survey - data collected annually from same respondent over 8 years	Record changes in living arrangements, employment, income and wealth	Data collected from over 22,000 eligible individuals aged 15 years and over in 11,500 households in wave 1
HSS	2001, 2009	Random cross sectional nationwide survey	Net worth and income for individuals & couples	5,374 including 2,392 individuals and 2,982 couples (2001 survey)
NZIS	1988-	Random cross sectional nationwide survey. June years	Wages & salaries and other household income	28,000 personal including 5,000 imputed records (June 2007 survey)
Memo item:				
Census	5 yearly (2006)	Official count of NZ population & dwellings	Accurate counts & statistics on characteristics of NZ population and dwellings	4.028m individuals (1.454m households) residing in 1.479m dwellings (2006 census)

HES refers to the household economic survey, SOFIE is the Survey of Family, Income and Employment, the HSS is the Household Savings Survey, and the NZIS is the New Zealand Income Survey.

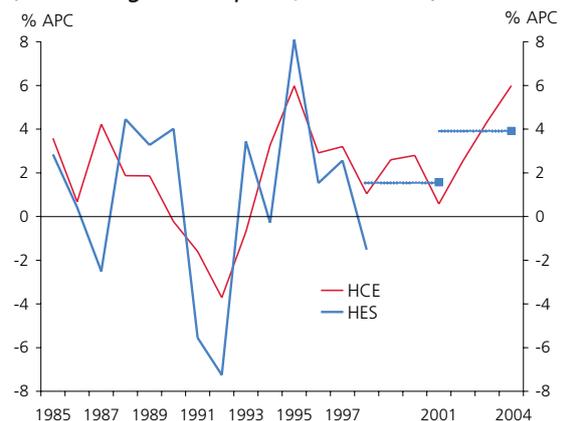
3 How does the HES data compare with macroeconomic data?

Microeconomic data can be useful in providing a greater degree of richness to our understanding of the relationships apparent in the macro data. So that the insights from household surveys can be brought into an economy-wide context, it is useful to ascertain how closely aggregate survey data from the HES corresponds to macroeconomic aggregates.

As household survey datasets are compiled using different data sources and methodological approaches we would not necessarily expect to see an exact correspondence between scaled-up estimates from the HES and macroeconomic data estimates from the national accounts. Bascand *et al* (2006) find the HES is likely to considerably under-report household consumption expenditure relative to the national accounts. By contrast, scaled-up HES estimates of household incomes are similar to those in the national accounts.⁷ The large discrepancy between the macro and micro estimates

of household income and expenditures highlights that care should be used when using the HES to make inferences about macroeconomic behaviour.

Figure 2
Growth to real consumption per household
(*ex-housing consumption, HCE vs HES*)



Source: Statistics New Zealand. Author's calculation.

around 5 percent. The HES does not include information on imputed rental payments, is likely to underestimate expenditures for certain goods and services (eg, alcohol, tobacco and gambling, contributions deducted at source), with expenditures of non-private households not in the HES.

⁸ Figure 2 assumes a constant annual average growth rate for the 1998-2001 and 2001-2004 periods.

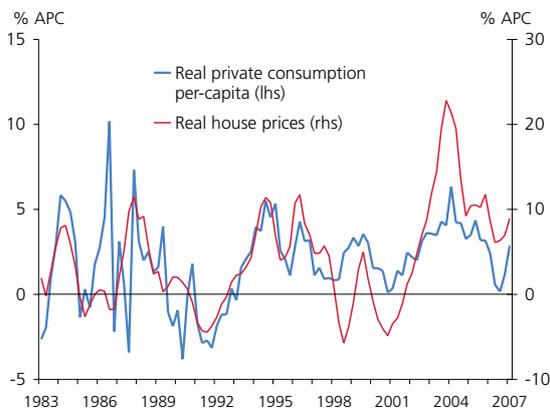
⁷ Over the 1996 to 2004 comparison period, the authors find that expenditures from the HES are only between 80-84 percent of equivalent national account (HCE) outlays, whereas for income the discrepancy is only

The next section discusses work at the Bank that uses HES expenditure data as a proxy for household consumption from the national accounts. Comparing growth rates in annual real per-household expenditures (see figure 2) shows a rough positive correlation between respective cycles in consumer spending.⁸

4 An application of the HES – the house price and consumption relation

An example of how microeconomic data can enrich understanding of macroeconomic behaviour is in looking at the positive relationship between house prices and private consumption. This relationship is evident in a number of countries, including New Zealand.⁹

Figure 3
Real per-capita consumption and real house prices in New Zealand



Sources: Statistics New Zealand, Quotable Value Limited.

There are a number of competing explanations for the close correlation observed between house price movements and consumption growth at the macro level. These include the following:

- Wealth effects. Increasing house prices lift household net worth, with owner-occupiers converting their stronger balance-sheet positions into additional consumer

spending. However, higher house prices also raise future housing costs, particularly for prospective first-home buyers and households who intend to trade up to more expensive houses.

- Easing of collateral constraints. Housing is an asset that can be used as collateral for borrowing. An increase in house prices may raise consumption not because of a wealth effect, but because it allows homeowners to borrow more to fund higher desired levels of consumption.
- Common influences. House prices may respond to factors to which current consumption also responds positively, such as future income prospects. Similarly, financial liberalisation may drive up house prices and stimulate consumption by relaxing borrowing constraints on all consumers.

While macroeconomic data can shed light on the magnitude of overall responsiveness of consumption spending to house prices, these data are generally unable to distinguish the importance of each particular channel. Household-level data can be used to identify the strength of the different channels for various household groups, and test hypotheses to explain these differences.

As these hypotheses suggest different behaviour according to the age of the adult members within the household and their dwelling tenure, an initial approach is to compare differences in the house price and consumption relationship for these particular groups:

- If there is a wealth effect from rising house prices, we might expect to see a stronger response of consumption spending from older homeowners, who are more likely to have owned their home for longer and have more housing equity, and are not as affected by higher implied future housing costs.
- If collateral constraints are relieved by rising house prices, we would expect to see a greater spending response of collaterally constrained households, who might be expected to be concentrated among young homeowners with low housing equity, or older homeowners with high housing equity and low incomes.

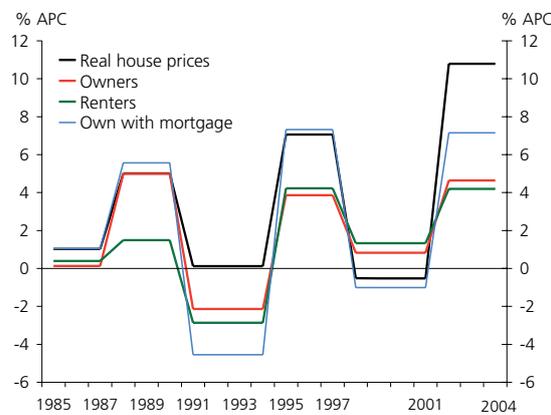
⁹ Case et al. (2003) find a strong correlation between aggregate house prices and aggregate consumption in a panel of developed countries from the late 1970s through the late 1990s. Hull (2003) and Dunstan and De Veirman (forthcoming) provide New Zealand evidence.

- If expectations of higher future income growth were affecting both house prices and consumption, we would expect to see a greater spending response by younger households, including those living in rented accommodation.

Figures 4 and 5 compare phases of high growth in real consumption expenditures (excluding housing) with the corresponding average growth in real house prices over the 1984 to 2004 period for different housing tenure and age sub-groups.¹⁰

Figure 4

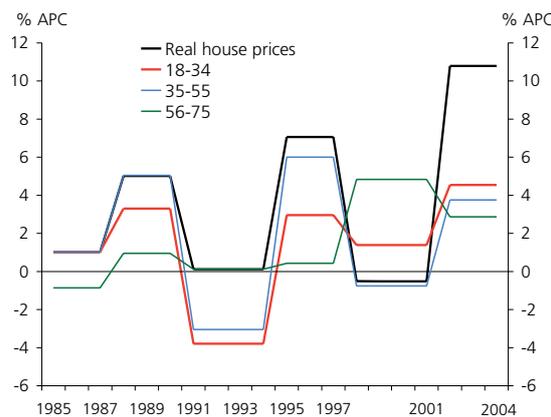
Tenure of household



Sources: HES, Quotable Value Limited, author's calculation.

Figure 5

Age of main respondent



Sources: HES, Quotable Value Limited, author's calculation.

¹⁰ Electronic records of the HES are available since the 1984 survey. This analysis uses an ex-housing measure of household expenditures, as housing expenditures from the HES do not relate to measured consumption from the national accounts. High growth phases occur where annual real household expenditure growth averages above 1.5 percent.

Changes in real non-housing expenditures of renters and home-owners are both positively related to changes in house prices. Over the full sample period, the correlation appears to be slightly stronger for homeowners. Movements in real non-housing expenditures of households who own their own home with an outstanding mortgage appear most closely correlated with house price movements than expenditures of other groups.

Real non-housing expenditure growth for households with the main respondent aged 35-55 (referred to as 'midage households') appear to be more closely correlated with average changes to real house prices. A positive correlation is also evident for young households (main respondent aged 18-34). Expenditure growth for older households (main respondent aged 56-75) appears the least correlated with house price movements compared to the other age groups. However, the rise in expenditures of older households since the late 1990s is particularly noticeable.

The analysis reported here suggests that the increase in expenditures of older households since the late 1990s could be linked to the sizeable gains in house prices experienced by older homeowners (see figure 6). These findings suggest that wealth effects have been an influential driver of expenditures of older households. As older households have relatively low levels of mortgage debt (figure 7), and higher levels of home ownership, and are more likely to trade down into cheaper housing when they sell their current dwelling, they are more likely to convert increases in housing equity into additional spending. Although housing equity of young and midage homeowners has also increased substantially in recent years, the dollar-for-dollar impact on consumer spending is likely to be smaller, as their future housing costs have also risen.

Wealth effects do not explain the positive correlation of the expenditures of renters with house price movements. We would expect a negative correlation for this group if wealth effects were the sole driver of their spending. Closer examination of the data shows that the positive correlation for renters is primarily driven by the spending of young households. It is possible that spending of young households living in rented accommodation may be responding to influences positively related to house prices (such as better

availability of credit or upward revisions to future income expectations). There could also be a discouraged home buyer effect, whereby spending by young renters on non-housing items increases as the chances of owning a house become more remote. Reserve Bank work on evaluating the influence of each of these particular channels is near completion, with results soon to be published.

Figure 6
Gain since purchase by age

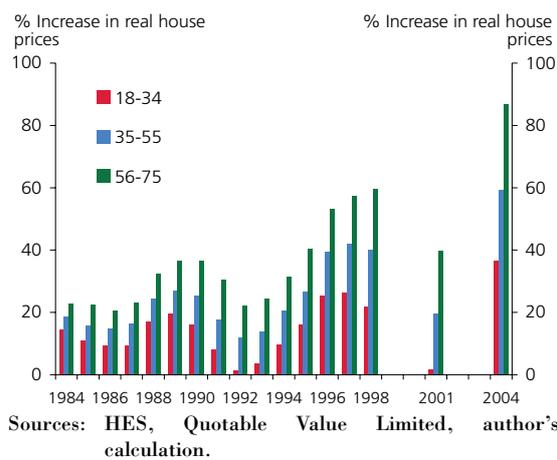
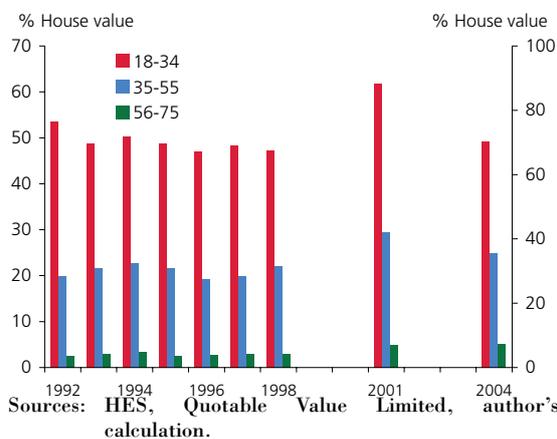


Figure 7
Mortgage loans to housing value by age



5 Conclusion

There is a wide range of microeconomic information on the household sector. The HES provides a rich dataset of income, expenditure and partial balance sheet information as well as some social and demographic information at the household level.

Microeconomic data sources provide an opportunity to analyse and compare trends in different household groups,

which are sometimes hidden in macroeconomic aggregates. One application of the HES is to analyse the relationship between house prices and household expenditure. A positive correlation is evident across different age groups of household and across both owners and renters. Other analysis suggests that wealth effects have contributed to the pick-up in expenditures in older householders in recent years. For young households, the key drivers of the relation are less obvious.

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