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Housing Wealth and Saving Behaviour in the UK

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ESRC Award R000223349

HOUSING WEALTH AND SAVING BEHAVIOUR IN THE UK

Andrew Henley and Richard Disney

End of Award Summary Report

This research is concerned with the question of how the volatile British housing market influences the economic behaviour of households. Housing wealth is a key component of household wealth and macroeconomic analysis of past episodes has suggested that changes in housing wealth are important determinants of saving behaviour. The British housing market crash of the early 1990s saw house prices fall by over 30 percent in real terms. Since 1994 housing has once more begun to appreciate rapidly in real terms, such that by the end of 1999 real house price inflation was on an annual basis around 12 per cent. Commentators suggest that the British housing market may once again be in the advanced stages of a speculative bubble. How have these rapid changes in the real value of personal sector housing wealth influenced the savings behaviour of British households? Rather than, or in addition to, making adjustments to saving, have households preferred to respond to these gains by working less?

The aim of the research was to produce micro-econometric estimates of the impact of real gains and losses in housing wealth during the 1990s on personal sector saving activity. This was in order to gain a better understanding of the linkages between housing market activity and personal sector saving and spending activity. Analysis of the effect of housing equity withdrawal on consumer spending in the UK during the late 1980s housing boom was confined to the level of aggregate data. Since that time longitudinal data has become available through the British Household Panel Survey (BHPS).

Approximately 46% of all households in the BHPS engage in some form of active saving, either through regular saving or payments into a personal pension scheme in any year. 86% of owner-occupier households engaged in active saving in one or more years of the survey between 1993 and 1999. However it is possible also to identify housing equity withdrawal activity among BHPS households. Around 30% of owner-occupiers moved between 1993 and 1999, and from these around 25% appeared to withdraw housing equity as they moved. Numbers were highly among younger age cohorts. The average withdrawal in 1995 prices

was £15,000. Furthermore 12% of owner-occupier households also took out additional mortgages, averaging £14,000. Because 65% of these households report that the purpose of the second mortgage was home improvement it is not possible to reach an assessment of how much of this re-mortgaging activity represents housing equity withdrawal.

Longitudinal savings regressions estimated across owner-occupier households over the period 1993 to 2000 established that an additional £1000 of housing wealth between 1993 and 1999 is associated with increased consumer spending for the median household of £28. In aggregate terms this equates to an estimated growth in UK consumer spending of 0.9% on the 1995 total. The research has also established a significant asymmetry in the way in which households adjust active saving in response to housing wealth gains and losses. Booming housing markets appear to fuel consumer spending. Falling house prices do not stimulate saving to the same, but opposite degree. Consequently there appears to be a connection in micro data between currently rising real house prices and the falling UK personal sector saving ratio.

The research has also addressed the impact of being initially in negative equity on the propensity to consume from housing wealth. A striking result was established that those who were initially in negative equity appear to reduce saving three times as fast as other households. The research also suggested that previously liquidity-constrained households may “spend down” their housing wealth at a faster rate. Endowment policy holders appeared during the period under analysis to have, other things equal, lower rates of saving than repayment mortgage holders and outright owners. However results suggested that endowment policy holders do not spending down housing wealth gains as fast as repayment mortgage holders.

It was also found that younger owner-occupiers appear much more likely to spend down housing wealth. For those under 40 in 1993 an extra £1000 of housing wealth acquired between 1993 and 1999 is associated with increased spending of £105 at the median. For those 55 years and over the same increase in housing wealth may be associated with an increase in spending of only up to £6. The conclusion that the spending down of housing wealth is a phenomenon associated with the young is supported by other research conducted using the 1988-1994 Retirement Survey. This finds that for a sample of households where the head was over 50 any offsetting savings effect from falling house prices is confined to the

small proportion of households who were willing and able to move. This suggests that older households have strong preferences for the consumption of housing service in old age, face high (psychic and non-psychic) moving costs or have very strong bequest motives.

The project has also established consistent results for the effect of housing gains on labour supply, using the same BHPS data source. These show that between 1992 and 1999 for men a 10% fall in real house prices (£8000 at the sample mean) is associated with on average a 28 minute increase in the length of the working week. However no significant effect is found for real house price gains. So falling house prices appear to generate increased labour supply but no impact on spending, whereas rising house prices lead to increased spending but no impact on labour supply. For female labour supply the results are converse to those for men. A 10% rise in real house prices is associated with a reduction of 59 minutes in the length of the working week; but there is no significant effect if real house prices fall.

Overall this project has confirmed the existence of important linkages between housing market conditions and household saving, consumption and labour market behaviour.

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End of Award Report

1. Background

This research is concerned with the question of how the volatile British housing market influences the economic behaviour of households. Housing wealth is a key component of household wealth and macroeconomic analysis of past episodes has suggested that changes in housing wealth are important determinants of saving behaviour. At the height of the 1980s housing boom data on average house prices combined with estimates of the stock of owner-occupied housing put the gross value of UK owner-occupied housing stock at over £110 billion. The British housing market crash of the early 1990s saw house prices fall by over 30 percent in real terms between the market peak of the third quarter of 1989 and the bottom of the recession in the final quarter of 1994 (a real loss of over £33 billion). Since then housing has once more begun to appreciate rapidly in real terms, such that by the end of 1999 real house price inflation was on annual basis around 12 per cent. This rate of increase has been sustained into the new century. At the time of writing some estimates put current nominal house price inflation at a level above that observed at the height of the late 1980s boom, and there is much discussion in the press of a new unsustainable speculative bubble in housing. How have these rapid changes in the real value of personal sector housing wealth influenced the savings behaviour of British households? Rather than, or in addition to, making adjustments to saving, have households preferred to respond to these gains by working less?

Simple life-cycle models of household behaviour suggest inter-temporally optimising responses to unanticipated “news” about life-cycle resources. These responses may take the form of adjustments to dynamic consumption profiles, and therefore lead to changes in saving behaviour (since saving is simply deferred consumption). They may also take the form of adjustments to labour supply, since an unanticipated positive wealth shock means that the household needs less labour income to finance a given level of current and future consumption. Life-cycle models of household behaviour suggest that households will offset unanticipated real housing gains and losses, such as those experienced in Britain in the 1990s,

through reductions and increases respectively in saving, and/or through reductions and increases respectively in labour supply.

Aggregate data from the second half of the 1990s points to a slowdown in the personal sector savings rate. The ONS household personal savings ratio has declined from an average of 11.0 per cent in 1993 to 4.5 per cent for 2000. This matches similar savings slowdowns that occurred during the previous housing booms of the mid 1970s and the late 1980s. If related to housing wealth gains, this is consistent with the predictions of permanent income consumption models.

The experience of the 1980s housing boom prompted a re-evaluation of the aggregate consumption/savings function econometric specifications, in the light of the notorious forecasting failures of the time. Real housing wealth gains were proposed as a candidate omitted variable (Miles 1992, Carruth and Henley, 1990a, 1990b). A similar debate is to be found in the North American literature concerning the savings slowdowns of the 1970s and 1980s (Peek, 1983; Hendershott and Peek, 1985; Bhatia, 1987).

So in aggregate time-series work the positive relationship between housing wealth gains and spending activity, and thus a depressant effect on saving, is well established. However, the validity of such estimated effects has been questioned. Firstly the aggregation of consumption/savings data across age groups can ignore important demographic and cohort effects. Indeed micro-econometric British research is consistent with the suggestion that younger age cohorts when compared to older ones were much more likely to make upward adjustments to consumption as their assets appreciated in real terms in the late 1980s (Attansio and Weber, 1994). Secondly spurious correlation is possible between aggregate consumption expenditure (or conversely saving if defined as the residual of income not spent) as dependent variable and housing wealth as explanatory variable, if aggregate consumption is defined as including an imputed flow of services from owner-occupied housing (Skinner, 1994). Typically, therefore, results from micro-econometric work for the United States suggest that aggregate estimates of the housing wealth-consumption relationship, while positive, may be overstated.

Nevertheless the decline in North American saving has been well documented in micro data as well as in macro (Bosworth, Burtless and Sabelhaus, 1991). Some micro-econometric

research has been conducted on the real housing gain-savings offset effect for the United States (Hoynes and McFadden, 1994; Skinner, 1996; Engelhardt, 1996). Engelhardt concludes that for the mean American household an extra dollar of real housing wealth is associated with a drop in active saving of 14 cents, and 3 cents for the median household. A further conclusion is that in the United States a dollar of lost real housing wealth will lead to a much bigger (positive) impact on non-housing wealth accumulation, compared to a dollar gained. This asymmetry of response poses an interesting issue in the British context, given the recent history of real house price movement. The process of financial liberalisation begun in the 1980s has increased the “fungibility” of housing wealth, in that it is more easily used as collateral to provide loans or second mortgages to finance spending activity. But negative equity can lock households into high mortgage repayments that prevent household budgets being adjusted to allow the accumulation of financial savings.

Some further recent research for the Netherlands is also of relevance. Hochgeurtel and van Soest (2001) point to a linkage between house prices and financial wealth. Cross-sectional data for 1988 show that higher house prices are associated with a lower propensity by households to hold financial assets, but for those that do hold financial assets, higher average holdings. A 10% increase in house prices raises the financial assets of those who hold financial assets by 5.3%, and total financial assets by 3.5%.

The literature on the theory and empirical investigation of inter-temporal substitution effects in labour supply is well established (Heckman and MaCurdy, 1980; MaCurdy, 1981; Altonji, 1986). Empirical investigation of the effects of capital gains on labour supply is far less so. MaCurdy (1981) imputes an estimate of initial wealth from annual investment income in order to control for wealth effects in the labour supply equation. Such an approach is highly problematic because it is unable to separate the effects of genuine windfall gains from life-cycle savings behaviour. Holtz-Eakin et al. (1993) find evidence from US tax-return data that inheritances result in withdrawal from the labour force. They also find some evidence that inheritances depress hours of work, given unchanged participation decisions. Joulfaian and Wilhelm (1994) use inheritance information from the US Panel Study of Income Dynamics and find small but significant disincentive effects on hours worked, for both men and married women. Imbens et al. (1999) examine effects of windfall gains from a sample of Massachusetts lottery winners during the mid 1980s, tracking behaviour into the mid 1990s.

Their results suggest that hours reductions do follow from windfall gains. However, previous European research on the impact of windfall gains on hours worked is non-existent.

2. Objectives

The aim of the research was to produce micro-econometric estimates of the impact of real gains and losses in housing wealth during the 1990s on personal sector saving activity. This was in order to gain a better understanding of the linkages between housing market activity and personal sector saving and spending activity.

Within the overall aim the project intended to meet a number of specific objectives:

- a) to investigate the effect of defining savings and housing wealth in different ways;
- b) to investigate possible asymmetries in the impact of housing wealth gains and losses and to address the reasons for such asymmetries;
- c) to investigate the circumstances under which housing equity is withdrawn and whether there are circumstances which mean that housings are unable or unwilling to spend down housing wealth;
- d) to investigate the extent to which the housing wealth/saving relationship varies with age and with housing tenure status.

The project initially did not intend to examine the question of the impact of housing wealth on labour supply. In fact it has also proved possible to conduct an empirical investigation of this issue. The project has also enabled the completion of earlier work (Disney et al. 2000) on the impact of house price shocks on the financial asset holdings of older households using the 1988/1994 Retirement Survey.

The primary focus of the research undertaken has been detailed secondary analysis and econometric modelling using the British Household Panel Survey (BHPS) up to Wave 9 (1999). The BHPS is an annually repeated panel survey of around 5000 households resident in Great Britain to the south of the Caledonian Canal, commencing in 1991. This has been supplemented by the investigation of financial asset data in six annual cross-sectional Family Resource Surveys (FRS) (1993/1994 to 1999/2000). The FRS surveys between 23,000 and 27,000 households each year using a sampling frame very similar to that of the BHPS.

3. Methods

The project has used household level longitudinal data on savings and holdings of financial wealth in order to identify in cross-sectional the conditional effect of change in housing wealth on household saving behaviour over time. The sample is for households during the 1990s obtained from the BHPS. The BHPS provides data on saving and on other demographic controls. Financial wealth is not available in successive years in the BHPS¹, and so is imputed using a model calibrated from repeated household cross-sections in the annual FRS.

“Active” saving

The British Household Panel Survey (BHPS) provides longitudinal data on “active” saving; that is non-negative transfers from current income into financial wealth. The precise form of the question on saving asked of each individual in the household is “*do you save any amount of your income for example by putting something away now and then in a bank, building society, or Post Office account other than to meet regular bills?*” This form of the question purges holdings of financial assets of any amounts that arise simply because of the discreteness of the payment period. The BHPS records the average amount saved in this way each month over the last year. From Wave 2 onwards a similar supplementary question is asked about monthly contributions to private pension schemes. For modelling purposes “active” saving is defined as the sum of these two aggregated across all adult household members. However a shortcoming in the BHPS is that this measure fails to capture dissaving – that is transfers from accumulated wealth to finance current consumption.

Housing wealth gains

There are in principle two available alternative methods for calculating the real appreciation in the value of the household’s home over the period of analysis. The first is to make use of data in the BHPS on each household’s annual estimate of the current market value of their home. However this measure of housing capital gain is contaminated by expenditure on improvements and additions and by moving behaviour, both of which are likely to correlate

¹ Information on financial wealth holding was gathered in wave 5, but this exercise has only been repeated in wave 10 (unavailable at the time the research was conducted).

with measures of financial saving.² This cannot be dealt with satisfactorily because the BHPS provides only incomplete information on home improvement activity.³ An alternative approach, and the one that was adopted in this research, is to use as a proxy changes in average market value in the locality in which the household was resident at the start of the period. More precisely housing wealth gains are defined as the change in the real average market price of a semi-detached residence in the county of residence. These data are reported on a quarterly basis by HBOS Ltd (formerly the Halifax Building Society), the largest British mortgage lender for 65 counties across Great Britain. Nominal values are deflated using the UK retail price excluding mortgage repayments index (RPIX).

The average real housing gain over the period 1993 to 1999 is £21,207. There is widespread variation in the scale of the house price “shock” across households. 15.6% of the sample of owner-occupiers experienced a real fall in house prices over this period. The period 1993 to 1995 was a period of slowing falling house prices after the “bust” at the beginning of the 1990s. Real losses were widespread, with 87.7% of households experiencing a real fall in house prices. The average negative shock up to 1995 was over £2000. The period from 1995 to 1999 was one of recovery, culminating in quite sharp rises in 1999. 97.6% of the sample experienced real housing appreciation, and the average gain was over £23,000.

Financial wealth and “passive” saving

In order to estimate the true relationship between a real house price shock and active saving, it is necessary to account for any correlation between the housing shock and other financial components of the household balance sheet. This is because “passive” saving occurs through the real appreciation or depreciation of financial wealth (Engelhardt 1996). Depreciation of financial wealth may also reflect dissaving behaviour. Typically studies of the relationship between saving and housing wealth do not do this. Unfortunately, the BHPS does not

² Home improvements (raising housing equity) may be negatively correlated with financial saving measures, if partially or wholly funded out of financial wealth. Moving will involve transactions costs, which may again be borne out of financial wealth, but may also be utilised to release housing equity, especially among older households.

³ Information is available where improvements and additions were financed through an additional mortgage or loan advance. There is some evidence of overestimation of house values particularly during the early 1990s when the housing market was in recession, and this further complicates the use of self-reported gains. Nevertheless, as Engelhardt (1996) notes, self-reported or perceived gains may be a more informative driver of savings decisions than actual gains.

question respondents on an annual basis about levels of financial wealth. Consequently the FRS was used to provide a method for imputing information on financial wealth. A reduced form model was estimated to explain financial asset holdings in terms of the demographic characteristics and economic activity status of the head of household and spouse (if present), household composition and housing tenure status. This in effect provided an instrumental variable for (unobserved) changes in financial wealth for BHPS households. The FRS is designed to inform government policy on the social security system, and the questionnaire is designed to illicit detailed information on individual level wealth within a critical wealth band of £1,500 to £20,000, with censoring outside this band. The imputation method used takes account of this censoring in the survey design.

Model specification

The starting point is the identity relationship between the change in financial assets, A , and active and passive saving, s_a and s_p , for household i over a given time period:

$$(1) \quad A_i - A_{0i} \equiv \Delta A_i \equiv s_{ai} + s_{pi}$$

The zero subscript refers to an initial value. An estimating equation is the specified with cumulative active saving as the dependent variable and right-hand side variables in “long” differences to control for both the stock adjustment impact of the initial level of financial assets and the scale of passive saving, and to model the impact of real housing shocks:

$$(2) \quad s_{ai} = \alpha_0 + \alpha_1 \hat{A}_{0i} + \alpha_2 s_{pi} + \alpha_3 \Delta h_i + Z'_i \gamma + \varepsilon_i$$

where Δh_i is the real house price shock, Z'_i are other control variables, α_j and γ are coefficients and ε_i is an error term. $\hat{\cdot}$ denotes that the asset variable is imputed. Because s_{pi} cannot be directly observed or imputed, it is replaced with the imputed change in financial assets, $\Delta \hat{A}_i$:

$$(3) \quad s_{ai} = \beta_0 + \beta_1 \hat{A}_{0i} + \beta_2 \Delta \hat{A}_i + \beta_3 \Delta h_i + Z'_i \gamma' + \varepsilon'_i$$

Using identity (1) the underlying marginal propensity to consume (mpc) from housing wealth (given by $-\alpha_3$ in equation 2) is equal to $-\beta_3 / (1 - \beta_2)$. Because of considerable skewness in

the distribution of active saving across households, and because of the problem of the left-censoring of active saving at zero, equation (3) was estimated by median regression.

In order to investigate subsidiary hypotheses concerning the impact of real housing gains on saving, equation (3) was separately estimated for different broad age cohorts, for owner-occupiers and for renters. The equation was also separately estimated for the periods 1993 to 1995 and 1995 to 1999 to investigate possible differences in behaviour between the earlier episode of generally falling real house prices and the later episode of generally rising real house prices. The impact of bias arising from the potential endogeneity of saving behaviour and moving activity was also investigated. Finally interaction effects were also incorporated into the specification to investigate whether households initially in negative equity, or with possible liquidity constraints, or with different mortgage status (none, repayment or endowment) respond differently to real housing gains.

The impact of real housing gains on labour supply

In order to investigate the impact of real housing gains on labour supply, an hours of work equation was specified, derived from an inter-temporal model of labour supply (MaCurdy, 1981). This equation incorporates a term capturing the effect on labour supply of the marginal utility of wealth. If for some reason the marginal utility of wealth of an individual increases, future consumption becomes more valuable and optimal labour supply will increase in order to gain increased labour income to finance this consumption. For a capital gain that is anticipated, the individual's revealed choice of hours should incorporate the effect of information about that capital gain. So econometric studies of labour supply typically assume that the marginal utility of wealth remains fixed for a particular individual. In order to investigate the impact of (unanticipated) capital gains from house price movements, it was assumed that the marginal utility of wealth is log-linearly related to real house prices. (The effect of other windfall gains on the marginal utility of wealth and hence labour supply were also investigated.) The research also investigated various methods for separating the effect of anticipated from unanticipated capital gains. BHPS data from 1992 to 1999 was used for model estimation purposes.

4. Results

The project aim was addressed through the estimation of longitudinal savings regressions, as described above, across households over the period 1993 to 2000. These establish that an additional £1000 of housing wealth between 1993 and 1999 is associated with increased consumer spending for the median household of £28 (an mpc of 0.028) (see Table 3, column (1) and nominated output 1, Table 4). In aggregate this estimate equates to an estimated growth in UK consumer spending of 0.9% on the 1995 total.

On objective a): the research has investigated the distinction between active and passive saving, and has shown that there is a significant positive association between the two. The research has found that in practice that household treat monthly contributions to personal pension plans as active saving, and so for modelling purposes the two are combined. Table 1 in nominated output (1) reports the extent of active saving excluding and including personal pension contributions. Over the period 1992 to 1999 an average of 46 per cent of households in any year engage in some form of active saving, and the average monthly total amount is £180, in 1995 prices. Across all households average active saving is £83 per month. Between 1993 and 1999 86% of households engaged in active saving in at least one of these seven years. The research has established that there is a significant negative relationship between active and passive saving, and that it is important to condition estimates of the marginal propensity to consume from housing wealth on movements in financial wealth. Estimates of the mpc from housing wealth will be biased if passive saving is omitted from the regression model.

On objective b): the research has established a significant asymmetry in the way in which households adjust active saving in response to housing wealth gains and losses. Specifically the median increase in consumption in response to a given positive housing wealth shock substantially exceeds the median reduction in consumption in response to an equivalent negative housing wealth shock (see nominated output 1, Table 4). Booming housing markets appear to fuel consumer spending. There does appear to be a connection in micro data between currently rising real house prices and the falling personal sector saving ratio.

On objective c): the research has established that around 30% of owner-occupiers moved during a six year period between 1993 and 1999, with higher rates of mobility among younger age cohorts. Of these movers around a quarter appear to have withdrawn housing equity on moving. Table 1 reports that the average withdrawal (in 1995 prices) was £15k.

Table 2 reports that 12% of owner-occupiers also took out additional mortgages between 1993 and 1999, averaging £14k. However 65% of re-mortgages were in order to improve or extend the home. It is not possible to assess the impact that this may have had on home market value and therefore the extent to which re-mortgaging activity coincides with equity withdrawal. Overall younger households are more likely to withdraw equity or re-mortgage. However the average amounts withdrawn are higher for older cohorts. This points to the conclusion that increased residential mobility, in particular, appears to be associated with housing equity withdrawal.

The project also addressed the impact of being initially in negative equity on the marginal propensity to consume from housing wealth. A striking result was established that those who were initially in negative equity appear to have an mpc from housing wealth that, at the median, is around three times higher than that of other households (see nominated output 1, Table 4).

Almost 30% of households in the BHPS report that they have other non-mortgage credit. Just over a third of these households (12% of the total) report that they find meeting their repayments “burdensome”. The project has also established that households with other non-mortgage credit have significantly lower levels of active saving, other things equal. Savings regressions that incorporate an interaction of real house price gains with a binary variable capturing burdensome credit repayments suggest that, for such liquidity constrained households, the wealth effects on spending of a given real house price increase are substantially larger (regression results available on request). In other words liquidity-constrained households may “spend down” their housing wealth faster.

From the BHPS of owner-occupiers over 46% in 1993 had an endowment mortgage (73% of all mortgages). The project has found that an endowment policy holder household had a median level of active saving between 1993 and 1999 that was £1400 less than an otherwise similar repayment mortgage holder. However although endowment policy saving appears to offset active saving, endowment policy holders were found to have an mpc from housing wealth which was less than half that for repayment mortgage holders. Outright owners (i.e. those with no mortgage) were found to have a still lower mpc from housing wealth (regression results available on request). In other words it appears to be repayment mortgage holders who “spend down” housing wealth gains. The time period under investigation just

predates the instruction by the UK Financial Services Agency that endowment policy holders should be provided with new lower forecasts about projected maturity values. These results offer mixed conclusions. It is reassuring that endowment policy holders appear to have a lower mpc from housing wealth. On the other hand the lower overall levels of active saving by endowment policy holders suggest cause for concern.

On objective d): the research has established that the cohort of households whose head was under the age of 40 in 1993 have a marginal propensity to consume from housing wealth which is 18 times larger than that for those 55 years and over (see Table 3, columns (2)-(4)). An extra £1000 of housing wealth acquired between 1993 and 1999 is associated with increased spending of £105 at the median. For those 55 years and over the same increase in housing wealth is associated with an increase in spending of only £6 (and this is not statistically significant). In fact the results suggest that the relationship between housing wealth and consumer spending is driven by the behaviour of younger cohorts. The strength of the effect for younger households is an important result given the absence of information on active dissaving in our data source. Active dissaving is more likely to be a feature of behaviour for older households. Consequently for younger households any estimated effect is less likely to be biased by the omission of dissaving (negative active saving). This conclusion also appears to confirm earlier work on the growth of consumer spending across age cohorts in the UK in the late 1980s.

The elderly are a particular case since they might be expected to spend down housing and other wealth to fund consumption. Work begun prior to but completed as part of this project, using the 1988 and 1994 Waves of the DSS Retirement Survey, finds a significant offsetting financial savings effect in response to the negative real housing wealth shock between the waves for households who were able or willing to move (85 pence for every £1 lost). The offset is much less (and not statistically significant) for non-movers (11 pence for every £1 lost). This mirrors a result that has been found to hold in American micro data (Merrill, 1984, Venti and Wise, 1989, 1990). It suggests the existence of strong preferences for the consumption of housing service in old age, or the existence of a strong bequest motive, or high (psychic and non-psychic) moving costs or the absence of reverse mortgage vehicles. The impact of these effects must outweigh the value of housing wealth as a source of funds for consumption in old age.

Renters, if they anticipated moving in the future, may reduce spending (increase saving) in response to house price increases, as any the size of an anticipated downpayment on a house purchase may be higher. However the research has established that renters typically do not reduce and may even increase spending in response to house price gains, particularly if the housing market is in an upswing. This is consistent with them being discouraged from saving to make the transition into owner-occupation. However the scale of the relationship is smaller than for owner-occupiers (see Table 3, column (5)).

The project has also established consistent results for the effect of housing gains on labour supply, using the same BHPS data source (see nominated output 2). These show that between 1992 and 1999 for men a 10% fall in real house prices (£8000 at the sample mean) is associated with on average a 28 minute increase in the length of the working week. However no significant effect is found for real house price gains. So falling house prices appear to generate increased labour supply but no impact on spending, whereas rising house prices lead to increased spending but no impact on labour supply. For female labour supply the results are converse to those for men. A 10% rise in real house prices is associated with a reduction of 59 minutes in the length of the working week; but there is no significant effect if real house prices fall.

5. Activities

We have presented papers associated with this project at a number of venues both in the UK and overseas, as detailed below.

Andrew Henley, “Capital gains and labour supply”, invited paper presented to 3rd International Colloquium, *Structural Change, Growth and Redistribution*, Universidade de Brasilia e Universidade Catolica de Brasilia, Brasilia, May 9th-11th, 2001, and in published conference proceedings (see below) and at <http://www.cce.ucb.br/coloquio2001/12.pdf>

Andrew Henley, “Capital gains and labour supply: British evidence”, *DfEE Education and Employment Economics Group Annual Conference*, University of Leicester, July 2nd-4th, 2001 at <http://www.essex.ac.uk/ilr/eeeg/Conference3/henley.pdf>

Andrew Henley, “Capital gains and labour supply: British evidence”, *European Association of Labour Economists 13th Annual Conference*, School of Business and Economics, University of Jyväskylä, Finland, September 13th-16th, 2001. Proceedings published on CD-ROM.

Richard Disney, “House price shocks and household saving in the UK”, workshop presentation to the Bank of Sweden, Stockholm, November 30th, 2001.

Richard Disney, Andrew Henley and David Jevons, “House price shocks, negative equity and household consumption in the UK in the 1990s”, *Royal Economic Society Annual Conference*, University of Warwick, March 25th-27th, 2002 at <http://www.warwick.ac.uk/res2002/papers/Disney.pdf>

Richard Disney, Andrew Henley and David Jevons, “House price shocks, negative equity and household consumption in the UK in the 1990s”, *57th European Meeting of the Econometric Society*, Venice, August 25th-28th, 2002.

6. Outputs

Andrew Henley, “Capital gains and labour supply”, in eds. J.R. Teixeira and F.G. Carneiro, *Growth, Redistribution and Structural Change*, Editora Universa, Taguatinga DF, Brazil, 2001 ISBN: 85-86591-23-8 (published proceedings of 3rd International Colloquium on *Structural Change, Growth and Redistribution*, Brasilia, May 9th–11th, 2001).

Andrew Henley, “Capital gains and labour supply: British evidence”, *University of Wales Aberystwyth School of Management and Business Research Paper No. 2001-7* (May 2001) at <http://www.aber.ac.uk/smba/docs/public/research/reps2001/rp2001-7.pdf>

Richard Disney, Andrew Henley and Gary Stears, “Housing costs, house price shocks and savings behaviour among older households in Britain”, *Regional Science and Urban Economics*, 2002 (in press).

Richard Disney, “Household saving and wealth in the UK”, Experian Centre for Economic Modelling (ExCEM), School of Economics, University of Nottingham at <http://www.nottingham.ac.uk/economics/ExCEM/issues/issues1.html>

Richard Disney, Andrew Henley and David Jevons, “House price shocks, negative equity and household consumption in the UK in the 1990s”, *Working Paper*, Experian Centre for Economic Modelling (ExCEM), School of Economics, University of Nottingham, January 2002 (under submission to *European Economic Review*) at http://www.nottingham.ac.uk/economics/ExCEM/publications/pdfs/RES02_house.pdf
[nominated output 1]

Andrew Henley, “House price shocks, windfall gains and hours of work: British evidence for the 1990s”, *mimeo*, April 2002 (under submission to *Economica*). [nominated output 2]

7. Impacts

The research conducted as part of this project has attracted interest from other researchers in the UK and in Europe. Rates of real house price appreciation continued to climb as the

project progressed. The consequences of house price inflation and housing equity withdrawal for the wider economy once more became a hot issue in the media. A selection of the way in which the research was picked up by the media is detailed below:

Newspaper coverage:

Philip Thornton, “Negative equity victims carry on spending”, *The Independent*, March 25th, 2002 (copy attached);

David Turner, “Consumers’ warm feeling keeps economy growing”, *Financial Times*, April 5th, 2002 (copy attached).

Radio/TV appearances:

BBC Radio 4 “Moneybox”, April 13th, 2002 (Henley);

BBC1 “4x4 Reports”, May 20th, 2002 (Henley).

BBC Radio 4 “You and Yours”, June 13th, 2002 (Henley)

BBC Radio 4 “Analysis”, August 1st, 2002 (Henley)

8. Future Research Priorities

The research has identified a number of limitations in the definition of savings and wealth variables in current data sources. If and when these are resolved we will wish to continue with research to further investigate the robustness of our findings to alternative definitions. In particular the lack of information on active dissaving is hindrance, since it may prevent us from understanding behaviour across the distribution of households. It also means that our identification of the impact of upward real house price shocks on active saving is likely to be an under-estimate of the true impact, since some households may increase their active dissaving in response to increased property values. The availability of the results of the household asset module in Wave 10 will afford us the opportunity to examine directly changes in financial assets between Waves 5 and 10 and to assess impact of rapid real house price growth after 1999.

References

- J.G. Altonji (1986), "Intertemporal substitution in labor supply: evidence from micro data", *Journal of Political Economy*, 94(3): S176-S215.
- O. Attansio and G. Weber (1994), "The UK consumption boom of the late 1980s: aggregate implications of microeconomic evidence", *Economic Journal*, 104: 1269-1302.
- K.B. Bhatia (1987), "Real estate assets and consumer behaviour", *Quarterly Journal of Economics*, 102: 437-443.
- B. Bosworth, G. Burtless and J. Sabelhaus (1991), "The decline in saving: some microeconomic evidence", *Brookings Paper on Economic Activity*, 26: 313-336.
- A. Carruth and A. Henley (1990a), "Can existing consumption functions forecast consumer spending in the late 1980s?", *Oxford Bulletin of Economics and Statistics*, 52: 211-222.
- A. Carruth and A. Henley (1990b), "The housing market and consumer spending", *Fiscal Studies*, 11(3): 27-38.
- G. V. Engelhardt (1996) House prices and home owner saving behaviour, *Regional Science and Urban Economics*, 26: 313-336
- A. Guariglia (1998), "Understanding saving behaviour in the UK: evidence from the BHPS", Institute for Labour Research, University of Essex, *Discussion Paper*, No. 98/26.
- J.J. Heckman and T.E. MaCurdy (1980), "A life-cycle model of female labour supply", *Review of Economic Studies*, 47: 47-74.
- P.H. Hendershott and J. Peek (1985), "Household saving: an econometric investigation", pp. 3-100 in P.H. Hendershott (ed.), *The Level and Composition of Household Saving*, Ballinger, Cambridge MA.
- S. Hochguertel and A. van Soest (2001), "The relation between financial and housing wealth: evidence from Dutch households", *Journal of Urban Economics* 49: 374-403.
- D. Holtz-Eakin, D. Joulfaian, and H.S. Rosen (1994), "Entrepreneurial decisions and liquidity constraints", *Rand Journal of Economics*, 25(2), 334-347.
- H.W. Hoynes and D. McFadden (1994), "The impact of demographics on housing and non-housing wealth in the United States", National Bureau of Economic Research, *Working Paper* No. 4666.
- G.W. Imbens, D.B. Rubin, and B. Sacerdote (1999), "Estimating the effect of unearned income on labor supply, earnings, savings and consumption: evidence from a survey of lottery players", National Bureau of Economic Research, *Working Paper* No. 7001, March.

- D. Joulfaian and M.O. Wilhelm (1994), "Inheritance and labor supply", *Journal of Human Resources*, 29(4): 1205-34.
- T.E. MaCurdy (1981), "An empirical model of labor supply in a life-cycle setting", *Journal of Political Economy*, 89: 1345-70.
- J.M. Manchester and J.M. Poterba (1989), "Second mortgages and household saving", *Regional Science and Urban Economics*, 19: 325-346.
- S. Merrill (1984), "Home equity and the elderly", in Aaron, H.J. and Burtless, G. (eds) *Retirement and Economic Behaviour*, Washington D.C.: The Brookings Institution.
- J. Peek (1983), "Capital gains and personal saving behavior", *Journal of Money, Credit and Banking*, 15: 1-23.
- J. Skinner (1994) 'Housing and saving in the United States' 191-214 in: Y. Noguchi and J.M. Poterba (eds) *Housing Markets in the United States and Japan*, Chicago: Chicago University Press, for National Bureau of Economic Research.
- J. Skinner (1996) 'Is housing wealth a sideshow?' in D. Wise (ed) *Advances in the Economics of Aging*, Chicago: Chicago University Press, for National Bureau of Economic Research.
- R.H. Thaler (1990), "Anomalies: Saving, fungibility and mental accounts", *Journal of Economic Perspectives*, 4: 193-206.
- S.F. Venti and D.A. Wise (1989), "Aging, moving and housing wealth", pp. 9-48 in Wise, D.A. (1989) *The Economics of Aging*, Chicago: Chicago University Press for NBER.
- S.F. Venti and D.A. Wise (1990), "But they don't want to reduce housing equity", pp. 13-29 in D.A. Wise (ed) *Issues in the Economics of Aging*, Chicago: Chicago University Press for NBER.

Table 1: Housing Equity Withdrawal – Withdrawal on House Move

	Age cohort (head of household in 1993)	% movers	% of movers withdrawing equity	Mean equity withdrawal	Mean non-zero equity withdrawal
1993-99	All	28.7	23.4	£999	£14,856
	Under 40	45.2	24.4	£1,373	£12,647
	40-54	22.8	26.2	£1,000	£16,761
	55 and over	19.1	18.6	£663	£18,464
1993-94	All	5.8	35.8	£333	£17,292
1995-96	All	5.5	25.3	£194	£16,244
1998-99	All	5.5	21.4	£157	£17,109

Source: computed from BHPS Waves 3 to 9.

Notes: Housing equity withdrawal is estimated as the difference between housing equity in year t and year t-1, where the difference is negative. Housing equity is estimated as the difference between self-reported house value and outstanding mortgage. Sample: 1993 owner-occupier households.

Table 2: Housing Equity Withdrawal – Re-mortgaging

	Age cohort (head of household in 1993)	% of owner- occupiers re- mortgaging	Mean re- mortgaging amount	Mean non-zero re- mortgaging amount
1993-99	All	11.7	£1745	£13,883
	Under 40	20.2	£2857	£13,074
	40-54	14.8	£2233	£14,724
	55 and over	1.4	£232	£16,864

Source: computed from BHPS Waves 3-9.

Notes: Sample: 1993 owner-occupiers.

Table 3: Median Regression Saving Estimates by Tenure Status and Age Group – Key Results

	(1) 1993-99 owner-occupiers	(2) 1993-99 owner-occupiers <40 years	(3) 1993-99 owner-occupiers 40-54 years	(4) 1993-99 owner-occupiers ≥55 years	(5) 1993-99 renters
A	0.910 (0.099)***	1.791 (0.571)***	1.222 (0.535)**	0.528 (0.071)***	0.369 (0.081)***
ΔA	0.466 (0.085)***	0.707 (0.409)*	0.753 (0.536)	0.309 (0.060)***	0.277 (0.049)***
ΔH	-0.015 (0.003)***	-0.031 (0.015)**	-0.012 (0.019)	-0.004 (0.003)	-0.004 (0.002)**
N	2293	752	758	783	874
Pseudo R ²	0.219	0.222	0.209	0.163	0.210
Mpc	0.028	0.105	0.050	0.006	0.006

Source: computed from BHPS Waves 3 to 9

Notes: Standard errors in brackets; * denotes significance at 10%, ** at 5%, *** at 1%. Dependent variable: total household active saving 1993-1999. Regressions include additional demographic and other controls. Age refers to the age of the head of household in 1993. Tenure status is status in 1993. Full results available on request.