

Fiscal Studies (1998) vol. 19, no. 2, pp. 153–174

Asset Wealth and Asset Decumulation among Households in the Retirement Survey

RICHARD DISNEY, PAUL JOHNSON and GARY STEARS*

Abstract

This paper examines the asset positions of households at and around retirement in Britain using the Retirement Survey ‘waves’ of 1988–89 and 1994. The data provide the first panel evidence on retirement behaviour and asset evolution for a sample of older households in Britain. The analysis in this paper shows the importance of housing and private pension wealth for this age-group in Britain, and also the differential wealth holdings between surviving respondents and those who died or failed to respond for other reasons in 1994. It provides some preliminary evidence as to whether households decumulate assets after retirement in accordance with the ‘textbook’ version of the Life-Cycle Hypothesis of consumption.

JEL classification: D31, D91, J26.

I. INTRODUCTION: ISSUES AND DATA DESCRIPTION

This paper examines the wealth position of households over the two waves of the Retirement Survey, focusing on three main issues. First, it calculates values of

*Institute for Fiscal Studies, London. Richard Disney is also at Queen Mary and Westfield College, London. The Retirement Survey was carried out by the Office for National Statistics (ONS) on behalf of the Department of Social Security (DSS). The DSS provided the finance for the initial analysis of the Retirement Survey dataset. This paper was written with support from the Leverhulme Foundation as part of the research programme at IFS entitled ‘The changing distribution of consumption, economic resources and the welfare of households’. James Banks, Lorraine Dearden, Amanda Gosling and Julian McCrae should be thanked for advice concerning the econometric procedures — in particular, Lorraine Dearden and Amanda Gosling for allowing us to use their STATA™ GDV estimator and for help in SAS programming. Michael Hurd, a referee and participants at a TMR savings workshop in Naples are also thanked for their comments, especially our discussant, Tullio Jappelli. The interpretation of the data in this paper is the responsibility of the authors alone.

financial assets, housing wealth and pension wealth for all households in the 1988–89 sample. Second, it examines whether the asset values thereby calculated for those who respond ('survivors') in 1994 are different from those calculated for people who are known to have died between 1988–89 and 1994 or who failed to respond at re-interview for other reasons. By so doing, the paper confirms that differential mortality by wealth ownership is an extremely important factor in modelling the trajectory of assets for cohorts late in life. Finally, the paper provides some preliminary evidence as to whether households decumulate assets between the two waves of the Retirement Survey, which, given the age-group (55–69 in the 1988–89 wave), provides some tentative evidence as to the validity of economic models of lifetime consumption behaviour.

The time path of asset accumulation/decumulation over the lifetime is, of course, a central question considered by the Life-Cycle Hypothesis of consumption (LCH) developed by Modigliani and his collaborators (e.g. Modigliani, 1986). In its simplest textbook version, the LCH argues that households smooth their consumption expenditure over income variability, so as to accumulate assets when income is high and to run assets down in retirement as income declines. Even if there is an additional precautionary motive for saving, the central prediction — that older consumers will be dissaving accumulated wealth — should still hold.

There have been numerous tests of the predictions of the LCH for households headed by elderly individuals, especially in the US, including Bernheim (1987) and Hurd (1987 and 1990) amongst others. There are rather fewer studies in Europe: for Germany, there are the papers by Börsch-Supan and Stahl (1991) and Börsch-Supan (1992) on household assets after retirement, and for the Netherlands, more recently, the study by Alessie, Lusardi and Kapteyn (1995). Such studies generally provide qualified support for the LCH, although re-emphasising that cohort differences in wealth trajectories are important.¹ Salient features of this whole literature include: whether studies handle cohort effects and differential mortality adequately; the treatment of intra-household inheritances (e.g. of pension rights); and the general inclusion or otherwise of pension rights. Indeed, since the 'stripped-down' LCH suggests that individuals should fully annuitise their wealth (Yaari, 1965), the decision as to what proportion of wealth to annuitise is an important question concerning the validity of the simplest form of the LCH, and the issue of over- or under-annuitisation is also pertinent (Bernheim, 1991).

One asset of particular importance is wealth held in the form of housing equity. The issue that has arisen is essentially one of portfolio composition. Several studies, such as Feinstein and McFadden (1989), have pointed to the phenomenon of 'excess' or 'inappropriate' housing wealth among the elderly

¹The classic paper on age–wealth effects with cohort effects is Shorrocks (1975).

when, despite low current income and financial assets, and household dissolution due to children leaving home or widowhood, elderly people often live in houses that are large and costly to maintain relative to current income. However, notwithstanding this potential liquidity problem, studies from the US (such as Merrill (1984), Venti and Wise (1989) and Skinner (1993)) find little evidence of ‘downsizing’ of housing equity later in life. Disney, Gallagher and Henley (1995), using the recall information in the first wave of the Retirement Survey, find evidence for Britain that individuals with high levels of housing costs relative to income have run down financial assets since retirement to a greater extent than the sample as a whole, indicating that ‘excess’ housing costs may be partially financed by reducing liquidity. Nevertheless, Ermisch and Jenkins (1997), using the British Household Panel Survey, do provide support for the proposition that elderly households with high housing wealth (relative to current income) are more likely to move in order to ‘downsize’ housing wealth later in life.

A more general issue in analyses of panels concerns the separation of cohort effects, age effects and changes over time. Thus, in analysing the validity or otherwise of the Life-Cycle Hypothesis of consumption concerning consumption smoothing at different ages, it is necessary to control for cohort-specific differences in lifetime resources and for time-specific ‘shocks’ to income and wealth profiles. These effects cannot be separately identified without strong restrictions on the model used to generate the results and, in any event, with two observations over time of the Retirement Survey sample, there are not enough temporal data points to undertake a comprehensive test. It should therefore be noted, as is emphasised throughout this paper, that the Retirement Survey covered a particularly unusual period in terms of macroeconomic ‘shocks’, in particular in the behaviour of the housing market. Nevertheless, as we show below, it is possible to separate out the effects of age *within* the rather broad cohort of the Retirement Survey sample and to confirm that there is strong evidence of differential attrition of the sample within the cohort by level of wealth holding for all the categories of wealth analysed here.

Given these general issues, the structure of the remainder of the paper is as follows. After a discussion of some of the methodological issues that arise in using the Retirement Survey to study asset evolution, Section II focuses on each of the main assets in turn: housing wealth, financial wealth, state pension (social security) wealth and occupational pension wealth. It summarises how household wealth measures for each asset were constructed from the data, which was a far from trivial task (fuller details are to be found in Disney, Grundy and Johnson (1997)). As suggested, it emphasises that, for all forms of wealth, those who died after 1988–89, or were not re-interviewed in 1994 for some other reason, had lower asset levels and coverage in 1988–89 than ‘survivors’ to 1994. This shows the pitfalls that may arise from exclusive concentration on cross-section estimates of wealth, and on estimates of wealth for survivors only within a given

period among this age-group. However, in order to examine wealth *transitions*, it is necessary to focus only on surviving respondents, and Section III therefore combines all the sources of wealth to look at the asset transitions between 1988–89 and 1994. Asset positions, and in particular the composition of assets, change markedly over the period although these changes are primarily driven by outside shocks, namely the house-price cycle and high real returns on financial assets, which dominate any life-cycle effects. Section IV provides a brief summing-up and conclusion to the paper.

Although the Retirement Survey dataset is rich and contains novel information, it has several limitations in its application to wealth transitions. The first is the problem of attrition: the 1994 re-interviews were only able to recover 67 per cent of the original respondents — around 1,700 households. Known deaths account for 8 per cent of the original sample of households (11 per cent of members), but there is also attrition of almost 25 per cent of the 1988–89 sample due to non-response. The data suggest that mortality is non-random, as is non-response, and, as suggested previously, we are careful to distinguish the asset positions of surviving respondents from those of respondents who had died by 1994, and non-responders in 1994, in the remainder of the paper.

Second, most of the financial information — notably house values — is self-reported. This is common to such datasets but it should be noted that this was an unusual period for house prices in that 1988–89 was near the end of the housing boom of the late 1980s and, after a prolonged and severe slump in prices, 1994 was just at the turn of the recovery of house prices which has occurred until the current time. This period of declining house values will undoubtedly have affected behaviour amongst this cohort, most notably their willingness to move in order to realise housing wealth. Of those who were owner-occupiers in 1988–89 in the survey, only 1.2 per cent had moved into the rental sector by 1994 and in fact 3 per cent made the opposite transition. Less than 7 per cent of owner-occupiers moved at all in the period compared with just under 10 per cent of renters.² The average reported change in house prices for those who did not move and who owned their house outright was a *nominal* decrease of 2.6 per cent over the period; this is similar to the nominal decline in house prices of 2.7 per cent from 1989Q1 to 1994Q3 for the whole population reported by the official *Housing and Construction Statistics*. Deflated by the rise in retail prices, the decrease in real house prices among non-movers is closer to 25 per cent. Some support for the downsizing hypothesis arises from the fact that, of those who did report moving during the period and who owned outright at the beginning of the period, the average decline in the house price was almost 11 per cent in nominal terms and over 30 per cent in real terms. But if people were systematically over-optimistic about their house prices (especially in a market

²Ermisch and Jenkins (1997) examine moving rates for the over-55s in the period 1991–94 and find a moving ‘rate’ of 3.3 per cent, which is in turn half that obtained by Feinstein and McFadden (1989) for the US.

going into recession), ‘real’ reported prices from recent purchases may be more accurate (and systematically lower) than other self-reported prices — giving spurious validity to the downsizing hypothesis.

A third issue is that all the self-reported asset values are banded and reported at the individual level. There is a simple technical problem: it is necessary to aggregate up individual reported values in bands to household values, and preferably to obtain point values of housing and financial assets. The treatment of this issue is detailed in what follows; the original data are given more fully in Disney, Grundy and Johnson (1997). In addition, there are the framing and anchoring problems of banded data; these problems are not directly handled here except to note that the nominal values of the bands remain the same between the surveys; hence there is no spurious change in reported values arising simply due to changes in the nominal anchor points. A final limitation of the data is that there are no explicit data on consumption and there is therefore no indirect route to looking at net saving behaviour by comparing reported income and consumption at the household level.

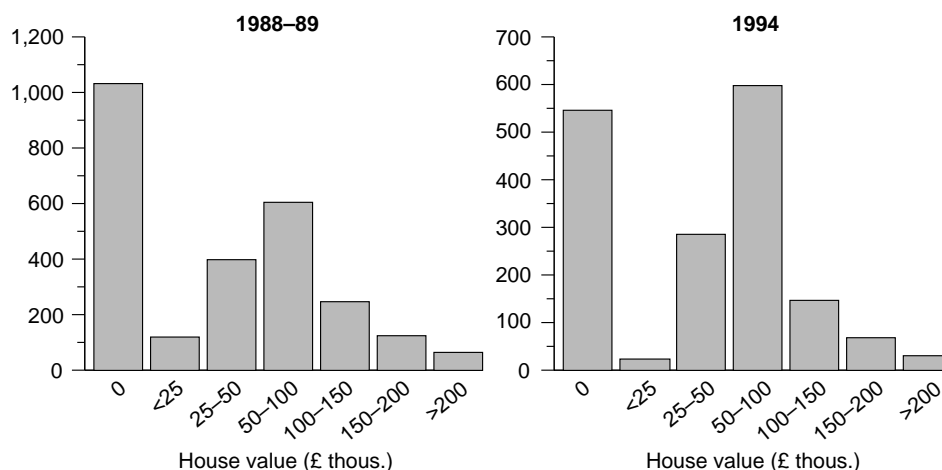
II. MODELLING THE COMPONENTS OF WEALTH IN THE RETIREMENT SURVEY DATASET

1. Housing Wealth

As with all the self-reported asset data in the survey, house values are reported in bands: in this case, of six intervals — <£25,000, £25,000 to <£50,000 and thereafter in £50,000 intervals to an upper open band of £200,000 or above. In order to model overall housing wealth for each observation of each household, therefore, two steps are needed: first, a point estimate of house value per household and, second, a model of mortgage (loan) repayment in order to move from an estimate of house value to one of housing wealth.

The first step uses a grouped-dependent-variable (GDV) estimation procedure which utilises a set of covariates to identify individual values, subject to the assumption of some functional form to the underlying distribution of values of the variable (see Stewart (1983)). Visual inspection of the banded house values (see Figure 1) suggests, omitting the zeros (renters), that log-normality is a not unreasonable assumption (although, of course, strictly speaking such an inspection should concern the distribution of the residuals when the impact of the covariates has been deducted). A GDV estimator assuming log-normality was therefore used, with additional regressors comprising a quadratic in the age of the head of the household, a full set of regional dummies, marital status, socio-economic group, employment status and gender of the head of the

FIGURE 1
Household Self-Reported House Value Bands



household, and whether or not the property was connected to mains drainage and water supplies, in order to derive housing values for each observation.³

For the second step — moving from house value to a measure of housing wealth — an adjustment has to be made for the value of outstanding mortgages. Enough information is contained in the Retirement Survey for us to construct stylised repayment profiles on the average expected duration of the mortgage contract and to estimate prospective values of the ‘net’ bonus at redemption of any endowment policy, given prospective returns. It should be noted that only a minority of this age-group who are owner-occupiers had an outstanding mortgage: 27 per cent of owner-occupiers in 1988-89 and 15 per cent in 1994. The values of ‘housing wealth’ reported here are adjusted from the calculated house values by this method.

Just under 60 per cent of respondents reported owning a house in 1988-89 (Table 1), although, among survivors, 64 per cent owned a house in 1988-89. By

³An important point concerns the error attached to each estimated value of housing wealth (and, subsequently, financial wealth). In a ‘standard’ least squares regression, the predicted value, given the coefficient estimates, can be compared with the observed value. Here, the ‘observed value’ is a latent value, given that the information is banded. Thus, while there is an error attached to the equation used to estimate values, and various possible measures of overall predictive success, it is not straightforward to attach an error to each predicted outcome in the present context. In what follows, we try to be careful in avoiding the term ‘significance’ or, at least, do not use it in the strictly statistical sense.

TABLE 1
Average Housing Wealth in 1988–89 for Different Groups of Home-Owners

	<i>Number of home- owners</i>	<i>Percentage of households with housing assets</i>	<i>Mean (£)</i>	<i>Median (£)</i>	<i>Standard deviation (£)</i>
Non-responders in 1994	344	52.6	70,300	68,800	32,600
Died between 1988–89 and 1994	107	45.7	69,400	52,800	41,400
Survivors to 1994	1,052	64.0	76,100	70,300	39,700
<i>of whom:</i>					
Couples throughout	693	73.3	80,500	73,000	41,200
Single throughout	262	50.3	67,000	59,700	34,100
Widowed between 1988–89 and 1994	84	53.9	68,400	57,200	37,200
Other ^a	13	59.1	75,300	76,400	45,200
All	1,503	59.3	74,300	69,500	38,400

^a‘Other’ includes single people who (re)married etc.

Notes:

Number of observations = 2,533 and differs from Table 2 due to omission of renters and missing values.

Some individuals moved between renting and owning status over the period. This will affect averages for surviving respondents in subsequent comparisons.

1994, just under 68 per cent of respondents owned a house, indicating a small shift into owner-occupation over time. This last figure is comparable to the owner-occupation rate of just over 66 per cent reported by Banks and Tanner (1996) from the 1993 Family Expenditure Survey for families where the head of household was aged between 60 and 75.

The mean *nominal* predicted value of housing wealth among survivors fell from £76,000 in 1988–89 to £73,000 in 1994, a fall of 3.9 per cent. Median housing wealth, in nominal terms, was roughly constant, representing a fall of around 25 per cent in real terms. However, these averages conceal a number of compositional changes in housing equity values including (i) paying off mortgages (thereby increasing housing wealth), (ii) differential wealth changes of movers versus non-movers, (iii) buying and selling of second houses and (iv) differential probabilities of survival and non-response in 1994. We can abstract from (i) and (iii) by excluding the value of houses with outstanding mortgages, which was typically higher than the value of houses owned outright, and excluding second homes. So, looking only at houses owned outright in *both* periods, the mean fall was from £73,900 in 1988–89 to £71,000 in 1994, a fall of 3.9 per cent. Taking out movers to abstract from (ii) as well, the change is from

£73,100 to £70,600, a fall of 3.4 per cent. This suggests movers (only 7 per cent of owners) did thereby reduce their housing wealth but, as argued previously, this dip may arise not from any deliberate ‘downsizing’ but from prior over-optimism concerning the value of their house. One group that did see a dramatic fall in their housing wealth over the period was households where widowhood took place between 1988–89 and 1994: among those who owned outright and experienced widowhood ($n = 61$), mean house value fell from £70,900 in 1988–89 to £64,300 in 1994 (a fall of almost 10 per cent in nominal terms) which suggests deliberate downsizing of the family home.

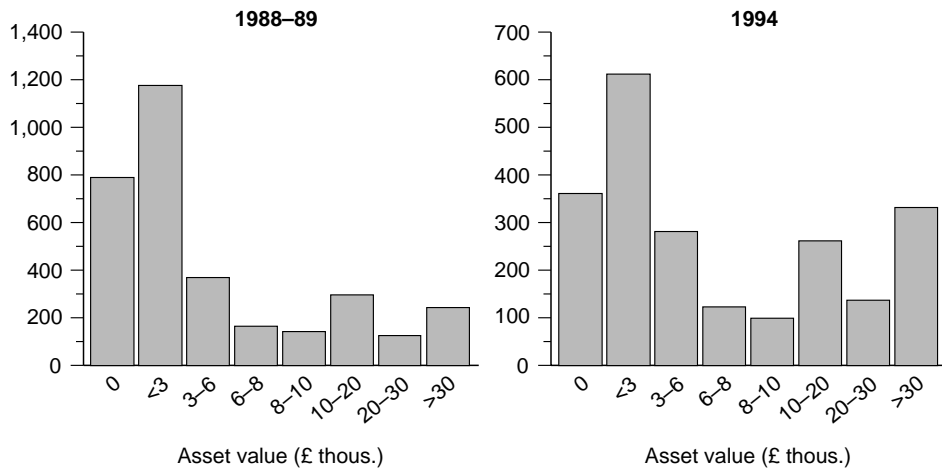
A key issue is (iv): the differential wealth of survivors relative to those who died and those who failed to respond for other reasons in 1994. Table 1 shows that the housing wealth of those who survived differs from that of those who died or did not respond for other reasons in the 1994 interviews. Whereas around 64 per cent of survivors had some housing wealth (i.e. were not renters), only 46 per cent of those who definitely died, and 53 per cent of those who did not respond for other reasons in 1994, had some housing wealth in 1988–89. So home-owners are much more likely to survive, and to remain in the sample for other reasons, than renters. Table 1 also shows that mean and median housing wealth *among* owner-occupiers were also higher among survivors to 1994 than among those who died and other non-respondents. In addition, it shows the summary statistics for surviving households concerning family composition and housing wealth. Not surprisingly, housing wealth of couples is higher than that of single people, with widows between the two average values.

2. Financial Wealth

The Retirement Survey asks about holdings of a variety of financial assets including bank and building society deposits, National Savings accounts, securities, unit trusts (mutual funds) and newer tax-privileged instruments such as TESSAs. There is also information as to whether lump-sum payments are made by private pension plans. The financial asset data are again self-reported and banded. Information as to the total value of interest payments, dividends and so on is also reported. Almost 30 per cent of respondents reported having no financial wealth in 1988–89, and an even greater proportion reported having less than £3,000 (see Figure 2); however, these are *individual*, not household, holdings of financial assets. Since household asset values are the focus of the present analysis, these individual asset bands were first aggregated to produce a possible band interval for each household’s reported financial assets.⁴ Thus the data are grouped into a set of overlapping bands on household financial wealth, although the overlap makes no difference to the solution to the problem of estimation.

⁴That is, if one individual member of the household reported assets of between 0 and £3,000, and another between £3,000 and £6,000, the household banded asset value lies between £3,000 and £9,000.

FIGURE 2
Individual Self-Reported Financial Asset Bands



Inspection of Figure 2 suggests no clear functional form underlying the distribution of individual financial assets; indeed, there is evidence for 1994 for a two-peaked distribution.⁵ Accordingly, we experimented with a number of underlying distributions in the estimator for household financial assets, including the log-normal, the Weibull and a Gamma distribution, again excluding those with zero financial assets.⁶ Ultimately, we chose the Gamma distribution to represent the underlying distribution of financial assets, on the criteria of highest log-likelihood and the success rate at predicting self-reported values. Independent regressors were regions, household characteristics, a variety of information on individual asset holdings and the individual's reported estimate of net investment income.

The results are presented in a comparable format to those for housing wealth. Just over 70 per cent of families report owning financial assets in 1994 (Table 2) and the rate of asset holding was higher among survivors. By 1994, the Retirement Survey respondents report an increase in the proportion holding financial assets to 84 per cent, which is somewhat higher than the rate of around 76 per cent reported in the age-group 66–75 in 1993 by Banks and Tanner (1996)

⁵Of course, there may be an obvious functional form underlying the distribution of financial assets across *households* but this cannot be presented easily in a graphical manner since the calculated bands can overlap.

⁶This exclusion of zero assets is not strictly necessary where we are trying to fit more complex (e.g. two-parameter) functional forms, unlike the housing asset case where a spike at zero plus a log-normal distribution for positive assets looks reasonably plausible.

using Family Expenditure Survey data.⁷ The significant difference between the trajectories of financial assets and of housing wealth is that the period between 1988–89 and 1994 saw positive real returns to financial assets and a consequent rise in their value, net of any decumulation. Thus the mean predicted value of assets in 1988–89 was around £13,900 for those holding assets (£10,400 overall including those with no assets) while by 1994 this had risen to £22,700 (£19,300 overall), a rise of over 60 per cent. The median rise, from £5,300 to £8,500, is a similar proportion. Part of this increase may arise, not just from the general increase in financial asset prices over the period, but also from receipt of cash lump sums from private pension schemes. Indeed, a regression of the change in financial assets between 1988–89 and 1994 on a range of variables does indeed suggest a significant positive relationship between receipt of a lump sum and the change in financial assets.⁸ Moreover, there is little sign of dissaving of financial assets overall; indeed, as we have suggested, the proportion of households owning some financial assets increased over the period. Some 6 per cent of households that reported having financial assets in 1988–89 reported no assets in 1994, but 15 per cent reporting no assets in 1988–89 reported some assets by 1994. It may, of course, be that the decline in the real value of housing wealth over the period induced households to retain or augment financial wealth which they would have otherwise utilised for consumption.⁹

Again, those who became widows have a different trajectory of assets: average predicted financial assets are lower for their households in 1988–89 than for other households (mean = £10,900, median = £4,800 for those who had assets throughout) but by 1994 had only reached a mean of £14,000 and a median of £6,600. This is slightly surprising, given that the last section suggested some downsizing of housing wealth associated with widowhood, and it may be that this liquid wealth was used in moving costs, in other major expenditures or in bequests rather than in acquiring financial assets. Moreover, as we shall see, prospective household pension wealth typically falls at widowhood because the widow's expected longevity being greater than that of the original beneficiary is already incorporated in the calculation of the value of survivor benefits.

⁷One reason for this disparity in the change in asset holdings over time may be that the Retirement Survey asks whether an individual holds 'an interest-bearing account' whereas the Family Expenditure Survey asks whether the individual has a savings account. Thus our financial assets variable here refers throughout to interest-bearing assets. Between the two waves of the Retirement Survey, the proportion of savings accounts (such as bank accounts) that paid interest increased. The difference in *levels* of asset holding between the two surveys may arise from the differential attrition of the Retirement Survey by wealth level, as illustrated here.

⁸See also the discussion of the path of saving and consumption after retirement in Banks, Blundell and Tanner (1998).

⁹For further analysis of the issue, see Disney, Johnson and Stears (1997). This paper also differentiates households by retirement status, although focusing only on households present in both the 1988–89 and 1994 waves.

TABLE 2
Average Financial Wealth in 1988–89 of Asset Owners, by Household Type

	<i>Number of households with financial assets</i>	<i>Percentage of households with any financial assets</i>	<i>Mean (£)</i>	<i>Median (£)</i>	<i>Standard deviation (£)</i>
Non-responders in 1994	400	61.2	10,000	3,400	16,700
Died between 1988–89 and 1994	153	65.4	12,300	3,800	20,300
Survivors to 1994	1,240	75.4	13,900	5,300	22,700
<i>of whom:</i>					
Couples throughout	738	78.0	16,100	6,500	25,300
Single throughout	382	73.3	10,500	3,600	17,800
Widowed between 1988–89 and 1994	112	71.8	10,500	4,600	14,400
Other ^a	8	36.4	23,000	2,300	43,200
All	1,793	70.6	12,900	4,600	21,400

^aOther' includes single people who (re)married etc.

Notes:

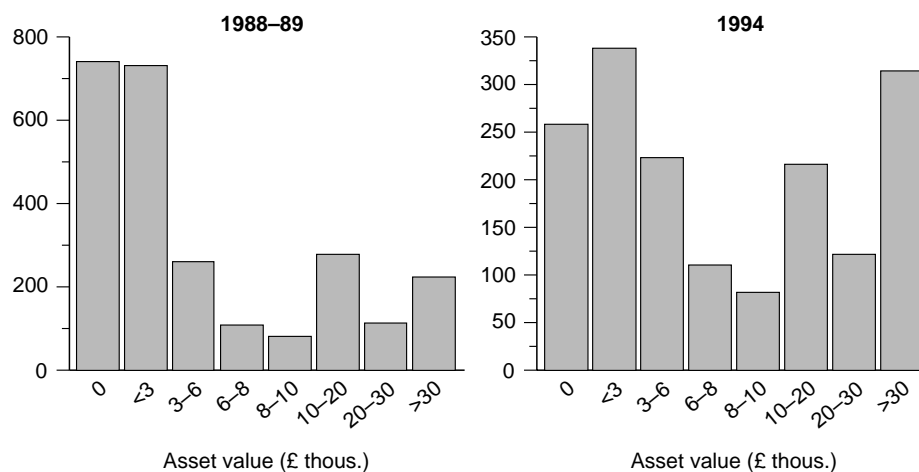
Total number of observations on household financial wealth = 2,540. Original number of individual observations from which household financial wealth calculated in 1988–89 = 3,219.

Means, medians and standard deviations are only for positive values of financial assets. Means can be multiplied by percentage holding any assets to obtain overall mean asset holdings, e.g. for 'All', the mean overall asset holding ($n = 2,540$) is £9,107.

Figure 3 depicts the *calculated* household financial asset distributions (contrast with Figure 2, which reports the self-reported individual distributions). The two-peaked nature of the distribution remains apparent. The small size of assets for a large proportion of households is confirmed by Figure 3: in 1988–89, 29 per cent reported having no income-yielding financial assets at all, and a similar proportion are calculated to have assets of less than £3,000. By 1994, the picture changes, but it must be borne in mind that the fall in the proportion with few assets is in part driven by differential mortality again.

The differential experience of those who survived, died and failed to respond is apparent in Table 2. Survivors are more likely to have had some financial wealth in 1988–89 (75 per cent) than those who died (65 per cent) and those who otherwise did not respond in 1994 (61 per cent), and the mean and median values of financial wealth, for those households that had any in 1988–89, were higher amongst survivors than amongst the other categories. It will be noted that the variance of financial wealth is extremely high and the divergence of the mean and median between 1988–89 and 1994 suggests that it is increasing. The

FIGURE 3
Calculated Household Financial Asset Distributions



financial wealth of couples, who may be younger than single-person households, has risen faster.

Comparing 1988-89 and 1994, financial assets are characterised by both a greater concentration around very low values and a greater dispersion of financial asset transitions. This latter point is confirmed by a simple correlation coefficient across households of housing asset values in 1988-89 and in 1994 of 0.7926 and a lower coefficient of 0.6556 for financial assets.

3. Pension Wealth

Given that the Life-Cycle Hypothesis of consumption predicts that wealth will be annuitised, one cannot reasonably assess the wealth of this age-group without taking full account of annuitised wealth. Here, we consider the two most important aspects of annuitised wealth — state pensions (in US parlance, social security) and private pensions. In the UK, state pensions are effectively universal among those over state pension age (currently 60 for women and 65 for men). Around two-thirds of households also have a private pension.¹⁰ Overall, for those in this age-group, mean values of state and private pension wealth are roughly

¹⁰Here, we use the term private pension to cover occupational pensions derived from an individual's employment as well as the small number of personal pensions owned by this age-group.

equal (see Tables 3 and 4), although the variances of the two forms of pension wealth are very different.

In principle, calculating pension wealth is straightforward, using life expectancy at each age from actuarial life tables. Knowing the amount of pension in payment and the indexation rules for the pension, we should then be able to calculate a value for pension wealth conditional on life expectancy and given a real discount rate (assumed to be 3 per cent).¹¹ On the whole, this procedure is followed here for state pensions (social security wealth = SSW). All elements of the state retirement pension are indexed in line with prices. A man's pension is inherited in full by his widow; this point is important since we are considering *household* SSW. For the group of male heads of households in the sample who have not yet reached the state pension age of 65, it is known that they will all receive the basic pension (in 1996, just over £60 per week) when they reach the age of 65. The only difficulty is estimating the amount of earnings-related pension (SERPS) that they will receive.¹² Fortunately, the Retirement Survey contains information on wages in 1988–89 and in 1994 and on years in work since 1978 while *not* a member of an occupational scheme (SERPS was introduced in 1978). This is adequate information for making an estimate of future SERPS payments.

Table 3 gives some idea of the averages and variance of social security wealth; again, it is observed that those who are missing from the 1994 wave through death or non-response have lower values of social security wealth although there is no significant difference in coverage, since participation in the social security programme is mandatory for any economically active person. The variance of SSW is relatively low and the distributions of SSW are compact, illustrating the dominant effect of the basic flat-rate state retirement pension for this age-group.

Greater difficulties are encountered when considering private pensions, primarily company salary-related pension schemes for the age-group, commonly called 'occupational pensions' in the UK (occupational pension wealth = OPW). One important issue is that there is a great diversity in post-retirement indexation rules applying to salary-related schemes, and, while there is some self-reported information on these rules — for example, whether the pension increases at all after retirement — it is not accurate enough to tell us exactly what the rules are. In any case, most schemes have considerable discretion over indexation. Furthermore, the most common rules allow for limited price indexation in such a way that the real value of pension wealth will depend on future inflation. For the base calculations, it was therefore assumed that inflation would be 5 per cent a year into the future, this being average inflation between 1988–89 and 1994.

¹¹The values are, of course, sensitive to the discount (interest) rate assumed: see Kotlikoff and Wise (1985) and the sensitivity analysis below.

¹²For further details on SERPS, see Creedy, Disney and Whitehouse (1993).

TABLE 3
Household Social Security Wealth (SSW) in 1988–89, by Household Type

	<i>Number of households with SSW</i>	<i>Percentage of households with SSW</i>	<i>Mean (£)</i>	<i>Median (£)</i>	<i>Standard deviation (£)</i>
Non-responders in 1994	600	100.0	37,700	37,900	11,000
Died between 1988–89 and 1994	207	100.0	36,800	36,000	10,500
Survivors to 1994	1,512	99.1	49,200	47,900	18,300
<i>of whom:</i>					
Couples throughout	856	99.9	54,000	53,600	15,300
Single throughout	511	97.9	36,200	35,000	12,800
Widowed between 1988–89 and 1994	123	98.4	70,800	72,900	19,800
Other ^a	22	100.0	46,600	39,500	23,800
All	2,319	99.4	45,100	41,900	17,000

^aOther' includes single people who (re)married etc.

Note: Number of observations = 2,333 and differs from Table 2 due to households where it was impossible to calculate SSW.

For those individuals who are in receipt of an occupational pension in both 1988–89 and 1994, the rules can be derived from the observed actual change in the pension relative to price increases. For those in payment in 1994 only, we estimate the type of indexation from the relationship between reported and actual indexation found for those pensions in payment in both years. The real difficulties arise for those pensions not yet in payment by 1994. Whether any individual will have a right to a pension, his or her last earnings and the number of years in the scheme are known, but the rules of the scheme are not known without matching the Retirement Survey to further datasets.¹³ For these individuals, we calculated OPW by running a regression for those currently receiving an occupational pension, with amount received as the dependent variable and social class, years in a pension scheme and number of pension schemes belonged to as regressors. By selecting only on pensions drawn from the age of 65, there should be no selection bias in the estimates.¹⁴

Table 4 shows that, as with financial and housing wealth, occupational pension wealth was substantially higher among survivors in the sample than among either those who died between surveys or among those who did not respond to the second survey. Mean and median levels of pension wealth are

¹³As in Disney and Whitehouse (1996).

¹⁴Additional variables that might be useful, such as past wages, are simply not available, although in Disney and Whitehouse (1996) past occupation and industry-specific average earnings growth are used. However, that study used the General Household Survey as the base sample, not the Retirement Survey.

TABLE 4
Occupational Pension Wealth (OPW) in 1988–89, by Household Type

	<i>Number of households with OPW</i>	<i>Percentage of households with OPW</i>	<i>Mean (£)</i>	<i>Median (£)</i>	<i>Standard deviation (£)</i>
Non-responders in 1994	204	34.2	32,600	21,900	36,900
Died between 1988–89 and 1994	88	43.0	29,100	13,500	32,400
Survivors to 1994	966	64.1	50,600	30,100	57,800
<i>of whom:</i>					
Couples throughout	650	76.4	56,800	34,300	62,600
Single throughout	232	45.2	36,300	26,000	36,600
Widowed between 1988–89 and 1994	75	61.6	36,500	14,800	52,900
Other ^a	9	45.5	87,800	76,900	85,900
All	1,258	53.9	46,200	24,900	53,600

^a'Other' includes single people who (re)married etc.

Note: Number of observations = 2,334 and differs from Table 2 due to households where it was impossible to calculate OPW.

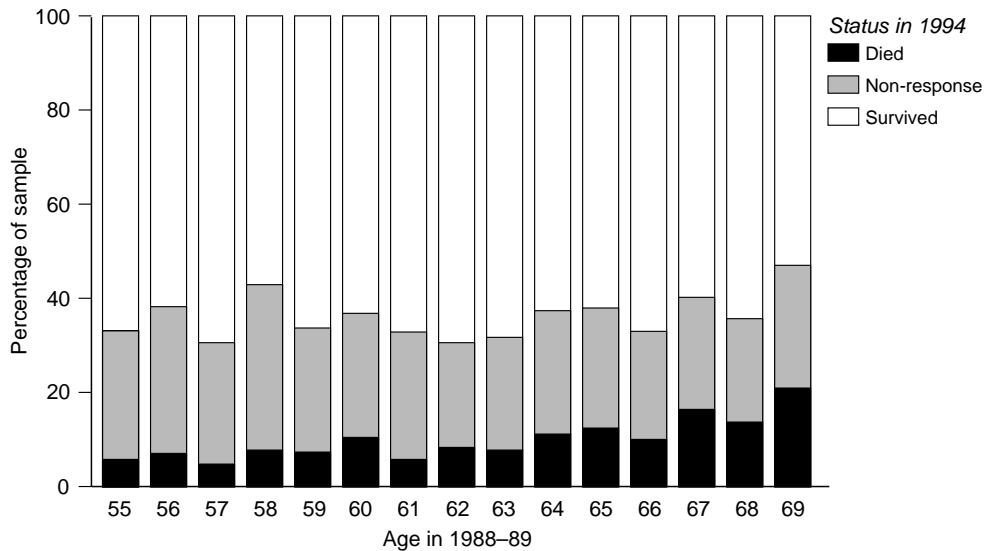
very substantially higher than the equivalent levels of financial wealth, and also among later cohorts than among earlier ones (see also Disney, Grundy and Johnson (1997)). In fact, nearly half of all households have no OPW and thereafter the distribution decays approximately exponentially, with considerable bunching in the £50,000 to £150,000 range, but a very long tail to the distribution, with about 5 per cent having OPW in excess of £400,000. The variance of OPW is much higher than that of SSW, and the differential in OPW between survivors, those who died and non-respondents in Table 4 is most apparent.¹⁵ The proportions reporting occupational pension wealth again seem comparable with other surveys: for example, the General Household Survey for 1991 reports that around 54 per cent of people aged 55 and over had an occupational pension (Tables 6.2 and 6.5).

4. Are the Differences in Tables 1 to 4 All an Age Effect?

So far, the analysis has implicitly assumed that the differences in wealth observed between survivors and non-survivors arise from differential mortality within the cohort by wealth category. One simple reason why wealth differs so

¹⁵We examined the sensitivity of these values to choice of discount rate. Doubling the discount rate from 3 per cent (real) to 6 per cent (real) reduces the value of OPW by just under 23 per cent in 1988–89 and by just under 18 per cent in 1994.

FIGURE 4
Survival in the Retirement Survey



substantially between those who respond in both waves (survivors) and those who are known to have died as well as non-respondents may be that both the last two groups are, on average, older. Older age-groups should certainly have lower annuitised wealth and, if there are cohort differences in other forms of wealth and/or there is significant dissaving of wealth in later life, also lower levels of other forms of wealth. Thus any age differences in the probability of survival within the sample will overstate the ‘differential mortality effect’ apparently observed for wealth values.

Figure 4 plots the probabilities at each age within the Retirement Survey sample that the head of the household died between the 1988–89 and 1994 waves of the survey, that they failed to respond in 1994 and that they survived. It is apparent that non-response is distributed randomly across the age intervals but that there is some systematic tendency to death of respondent at higher ages. Consequently, this differential age pattern may explain part of the disparity between the wealth holdings of survivors and those who died, although not between respondents and non-respondents. A simple test therefore is to break the data down into age-groups and see whether there continues to be a disparity in wealth holdings between the three categories — survivors, non-respondents and those who died — within smaller age-groups. Further analysis of this issue (not shown here) suggests that there is little difference across age-groups in the ratio

of average assets of ‘survivors’ to those of people who died or who failed to respond in 1994 for other reasons. The disparate wealth of the three categories observed in Table 4 is approximately constant across all age-groups. The point of this age breakdown is to suggest that differential mortality within the cohort remains a key explanation of disparate wealth holdings, even when we control for age. Nevertheless, the next section, looking at the wealth trajectories of surviving respondents in both waves, incorporates age breakdowns so as to rule out any age effects.

III. WEALTH TRANSITIONS, 1988–89 TO 1994

In turning to total wealth, and wealth transitions, two important points must be noted. First, all wealth values are updated in this section to 1996 prices. Thus, for example, most owner-occupiers have seen a real fall in their house values and a rise in the real value of their financial assets over the period 1988–89 to 1994, although these will not initially show up in the analyses of total wealth. Second, ‘age’ is defined by the age of the head of the household, not by the age of the respondent, and, where the age of the head of the household lies outside the age range 55–69, the household has been excluded from the sample due to smallness of cell size.

Allowing for missing data, for exclusions because the household head is outside the age range, and for death and non-response in 1994, the sample in the panel is reduced to 1,504 households where the head is aged between 55 and 69 in 1988–89. This is substantially less than the 2,500 households with which we started in 1988–89 but is far more in this age-group than we could hope to obtain from other datasets such as the Family Expenditure Survey and the British Household Panel Survey, even were such studies to have the breadth of questions provided in the Retirement Survey.

A large number of tabulated comparisons of these wealth transitions are presented in Disney, Grundy and Johnson (1997, Chapters 4 to 6) and in Disney, Johnson and Stears (1997). Here we present one table of summary statistics (Table 5), showing how people’s wealth changed according to their change in retirement status between the two waves of the survey, and one figure (Figure 5) showing wealth changes by age.

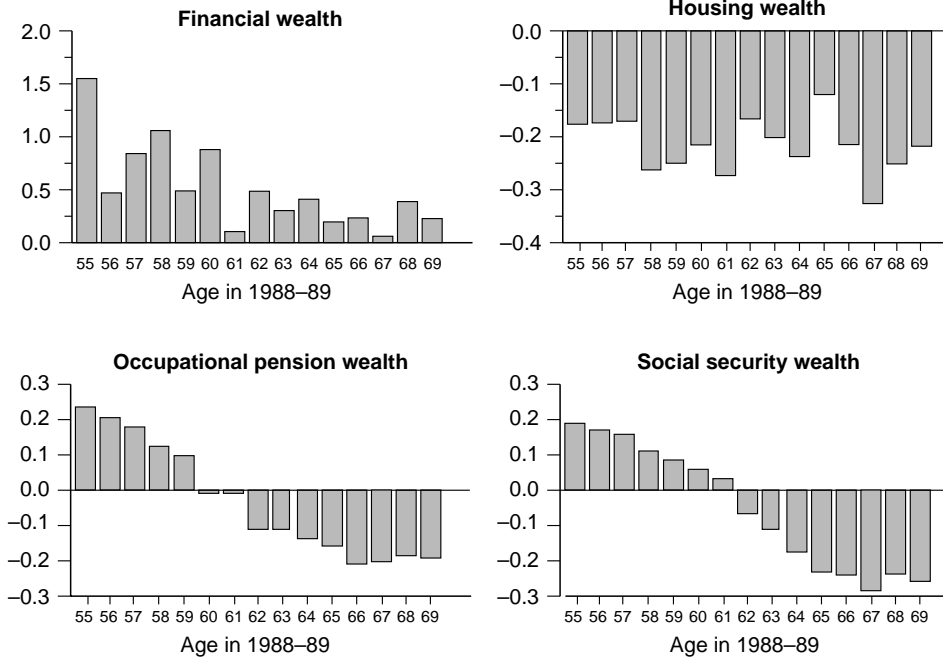
Table 5 shows that those who remained in employment saw very substantial increases in their occupational pension wealth. This reflects growing earnings and, to some extent, the ‘back-loading’ of occupational pensions which favours those who remain in schemes for a long period. Those who are retired throughout, of course, experience a reduction in pension wealth as it is annuitised. This is true of social security and occupational pensions. Housing wealth falls for all groups, being dominated by the falls in real house prices. It is financial wealth that, perhaps, shows the most interesting pattern of changes,

TABLE 5
Transitions in Wealth between 1988–89 and 1994 for Households where the Head is Male in 1988–89 and 1994, by Change in Retirement Status

	n	1988–89			1994			% change in mean (incl. zeros)
		% with	Non-zero mean (£)	Non-zero median (£)	% with	Non-zero mean (£)	Non-zero median (£)	
<i>Occupational pension</i>								
Not retired throughout	182	66.5	40500	24200	67.0	53900	46600	34.2
Retired between	367	70.8	68200	40000	71.7	78200	50200	15.9
Retired throughout	490	76.1	87500	56400	75.9	75000	49000	-14.4
All	1048	72.5	73200	42400	72.8	72700	48400	-0.4
<i>Social security</i>								
Not retired throughout	182	100.0	62600	64000	100.0	71700	76000	14.7
Retired between	367	100.0	66600	66700	100.0	73100	74200	9.8
Retired throughout	490	100.0	71000	73800	100.0	63400	64500	-10.6
All	1048	100.0	67800	69300	100.0	68200	68200	0.6
<i>Housing wealth</i>								
Not retired throughout	182	70.3	114500	111100	75.3	88900	81200	-16.8
Retired between	367	71.9	110100	99400	76.3	75300	69600	-27.5
Retired throughout	490	68.6	101400	88900	72.9	76100	68500	-20.3
All	1048	69.8	106700	98100	74.4	78100	71000	-22.1
<i>Financial wealth</i>								
Not retired throughout	182	78.0	12800	7000	90.1	23300	9100	110.9
Retired between	367	74.7	18000	6300	86.4	28200	11700	80.8
Retired throughout	490	78.8	28100	12100	84.7	32100	11700	22.8
All	1048	77.2	21800	8500	86.4	28900	11500	48.2
<i>Total wealth</i>								
Not retired throughout	182	100.0	180000	177200	100.0	195800	184600	8.8
Retired between	367	100.0	207600	184200	100.0	210900	185400	1.6
Retired throughout	490	100.0	229200	188000	100.0	203000	167100	-11.4
All	1048	100.0	212400	182400	100.0	204200	177700	3.8

Notes: Households where age of head was 55–69 in 1988–89. There were nine households where the head reported retired status in 1988–89 but not retired in 1994; the change in wealth is not given for these households due to smallness of cell size. All values are converted to January 1996 prices.

FIGURE 5
Proportionate Changes in Wealth, by Age and Type of Asset



with a doubling in the mean wealth of the non-retired. In combination with the rapid build-up of pension wealth, this indicates a remarkable growth in (non-housing) wealth for this cohort in the approach to retirement. Even among the retired throughout, there is no evidence of dissaving.

While we do not show it here, there is no evidence of large changes in the distribution of wealth; there is no systematic trend in the interquartile ratio in comparisons across age-groups between 1988-89 and 1994, or across the same cohort. For couples and single people, indeed, there are not great changes in wealth between the periods, although those who became widows between the two observations do suffer falls in their wealth, particularly at the first and third quartiles.

The most natural comparison examines changes in the wealth of successive cohorts by date of birth. This permits us to look both at changes in wealth of cohorts between periods and at these changes across cohorts. Figure 5 therefore plots the average proportionate changes in wealth by the age of the household head for each form of wealth between the two waves of the survey. The decumulation of occupational pension wealth is graphically illustrated. This

occurs not only because some households start to draw down their occupational pension wealth as early as their mid-fifties, but also because accruals of occupational wealth tail off for those remaining in employment as the wage profile ‘flattens’ in the last few years of working life. In contrast, social security wealth continues to accumulate until state pensionable age is reached, at 60 for women and 65 for men, and declines thereafter.

Figure 5 also illustrates the decline in housing wealth which is period-specific and largely independent of age. Of great interest is the pattern of financial wealth accumulation by age; this is, on average, positive for all ages, perhaps reflecting the high real returns in the period and partial compensation for the decline in house prices over the period. But the declining rate of accumulation of financial assets with age is also clearly apparent; and, overall, older households do decumulate wealth across a broad spectrum of assets although, of course, the decline in pension wealth is a mechanical consequence of the fact that households have annuitised a large fraction of their wealth. An excellent ‘natural experiment’ would be to look at the pattern of financial wealth accumulation or decumulation in a period when house values were increasing sharply in real terms (i.e. the mirror image of the 1988–89 to 1994 period). Unfortunately, such data are not at present available.

IV. CONCLUSIONS

This paper provides the first detailed study, to our knowledge, using British data, that is able to look at wealth accrual and decumulation among a group of people at or around retirement age, both over time for date-of-birth cohorts and across cohorts. Given some of the difficulties in using the data — in particular, the banding of key variables, problems of aggregation to a household or family level, and the issue of separating age and cohort effects — we have described the procedures adopted in order to undertake the analysis. More methodological detail is provided in Disney, Grundy and Johnson (1997) and Disney, Johnson and Stears (1997).

The results show differences in the trajectory of assets over time and across cohorts. Almost every individual has social security wealth, which declines once annuitised, but the other main assets — financial and housing wealth, and the value of prospective occupational pensions — are much more unevenly distributed. There is strong evidence that individuals who died, or who failed to respond for other reasons at the second wave of the interviews, had much less wealth than those who ‘survived’ in the dataset, i.e. responded in both waves of the survey.

A typical value of assets at or around retirement, in 1996 prices, was £200,000, the interquartile range being between 2 and 3. Later cohorts tend to be wealthier. There is clear evidence, at least for aggregate wealth, of life-cycle saving behaviour, with wealth accumulating up to age 60 and almost

monotonically declining, on average, thereafter. A natural caveat to this conclusion is that the period over which we have data, and for which this study is valid, is an unusual one, in particular because of the unprecedented falls in house values which form the largest element of wealth for many people. So there is some issue as to the extent to which the results can be generalised. Perhaps the real increase in financial assets occurred as an offset to falling housing wealth, and the very small degree of 'downsizing' in housing was also particular to the period, though there is little evidence from other sources that this is a common feature among individuals in this age-group. Further work on the topic will clearly require rather more explicit modelling of the demand for asset holding and portfolio considerations behind the asset transitions observed here.

REFERENCES

- Alessie, R., Lusardi, A. and Kapteyn, A. (1995), 'Savings and wealth holdings of the elderly', *Ricerche Economiche*, vol. 49, pp. 293–315.
- Banks, J., Blundell, R. and Tanner, S. (1998), 'Is there a retirement savings puzzle?', *American Economic Review*, forthcoming.
- and Tanner, S. (1996), 'Savings and wealth in the UK: evidence from micro-data', *Fiscal Studies*, vol. 17, no. 2, pp. 37–64.
- Bernheim, B. D. (1987), 'Dissaving after retirement: testing the pure life-cycle hypothesis', in Z. Bodie et al. (eds), *Issues in Pension Economics*, Chicago: Chicago University Press for NBER.
- (1991), 'How strong are bequest motives? Evidence based on the demand for life insurance and annuities', *Journal of Political Economy*, vol. 99, pp. 899–927.
- Börsch-Supan, A. (1992), 'Saving and consumption patterns of the elderly', *Journal of Population Economics*, vol. 5, pp. 289–303.
- and Stahl, K. O. (1991), 'Life cycle savings and consumption constraints', *Journal of Population Economics*, vol. 4, pp. 233–55.
- Creedy, J., Disney, R. and Whitehouse, E. (1993), 'The earnings related state pension, indexation and lifetime redistribution in the UK', *Review of Income and Wealth*, vol. 40, pp. 257–78.
- Disney, R., Gallagher, T. and Henley, A. (1995), 'Housing assets and saving behaviour among the elderly in Britain', Institute for Fiscal Studies, Working Paper no. 95/22.
- , Grundy, E. and Johnson, P. (eds) (1997), *The Dynamics of Retirement: Analyses of the Retirement Surveys*, Department of Social Security Research Report no. 72, London: Stationery Office.
- , Johnson, P. and Stears, G. (1997), 'Retirement status and the evolution of assets among older households in Britain', mimeo, Institute for Fiscal Studies.
- and Whitehouse, E. (1996), 'What are occupational pension plan entitlements worth in Britain?', *Economica*, vol. 63, pp. 213–38.
- Ermisch, J. F. and Jenkins, S. P. (1997), 'Housing adjustment in later life: evidence from the British Household Panel Survey', University of Essex, ESRC Research Centre on Micro-Social Change, Working Paper no. 97-22.
- Feinstein, J. and McFadden, D. (1989), 'The dynamics of housing demand by the elderly: wealth, cash flow and demographic effects', in D. Wise (ed.), *The Economics of Aging*, Chicago: Chicago University Press for NBER.

Fiscal Studies

- Hurd, M. (1987), 'Saving of the elderly and desired bequests', *American Economic Review*, vol. 77, pp. 298–312.
- (1990), 'Research on the elderly: economic status, retirement and consumption and saving', *Journal of Economic Literature*, vol. 28, pp. 565–637.
- Kotlikoff, L. J. and Wise, D. (1985), 'Labor compensation and the structure of private pension plans: evidence for contractual versus spot labor markets', in D. Wise (ed.), *Pensions, Labor and Individual Choice*, Chicago: Chicago University Press for NBER.
- Merrill, S. R. (1984), 'Home equity and the elderly', in H. Aaron and G. Burtless (eds), *Retirement and Economic Behaviour*, Washington DC: Brookings Institution.
- Modigliani, F. (1986), 'Life cycle, individual thrift and the wealth of nations', *American Economic Review*, vol. 76, pp. 297–313.
- Shorrocks, A. F. (1975), 'The age–wealth relationship: a cross-section and cohort analysis', *Review of Economics and Statistics*, vol. 57, pp. 155–63.
- Skinner, J. (1993), 'Is housing wealth a sideshow?', National Bureau of Economic Research, Working Paper no. 4522.
- Stewart, M. (1983), 'On least squares estimation when the dependent variable is grouped', *Review of Economic Studies*, vol. 50, pp. 53–73.
- Venti, S. and Wise, D. (1989), 'Aging, moving and housing wealth', in D. Wise (ed.), *The Economics of Aging*, Chicago: Chicago University Press for NBER.
- Yaari, M. E. (1965), 'Uncertain lifetime, life insurance, and the theory of the consumer', *Review of Economic Studies*, vol. 32, pp. 137–58.