Ageing & Society **22**, 2002, 131–159. © 2002 Cambridge University Press
DOI: 10.1017/S0144686X02008632 Printed in the United Kingdom

Retirement and the income of older people: a British perspective

ELENA BARDASI*, STEPHEN P. JENKINS*
and JOHN A. RIGG*

ABSTRACT
Little is known about the income dynamics of retirement in Britain, in part because of a lack of data. The information is of some topical interest given the growing number of older people, the trend towards earlier retirement, the decline in the value of the basic state pension, the growing reliance on occupational and private pensions, and continuing relatively high poverty rates among people in old age. This paper considers the important question of income and retirement and, in particular, the association between transitions into retirement and the probability of becoming poor. It is based on longitudinal data from the British Household Panel Survey waves 1–9, covering 1991–1999. We also relate differences in poverty entry probabilities among the retired to differences in factors such as a retiree's health, housing tenure, age and sex, education, labour market status and history, household composition and spouse's characteristics.

KEY WORDS – retirement, low income, employment, panel data, older people.

Introduction

Much is known in Britain about the association between old age, retirement, and low income, but little research has been done examining the relationship between the onset of retirement and the probability of becoming poor. To a large extent this reflects data availability: most research to date has relied on cross-sectional data sources rather than genuine longitudinal data. In this paper we use the British Household Panel Survey data covering 1991–1999 to provide new longitudinal evidence about the association between entering retirement and beginning a low income spell.

The relationship between low income and retirement is of interest for several reasons. First, there have been marked increases in the numbers

* Institute for Social and Economic Research, University of Essex.

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

of people in old age in all western societies including the UK, as life expectancy has increased. An important question is therefore whether the increasing number of retired people is at risk of being poor and, from a dynamic perspective, whether the transition into retirement is associated with a greater probability of becoming poor. Moreover, in Britain the decline in the value of the basic state pension (relative to the incomes of the working population), and the growing reliance on occupational and private pensions, are likely to change the risks of becoming poor for different groups of individuals, for example of people with 'irregular' working patterns, more than for people who have been continuously in employment in good jobs.

A large literature exists in Britain about poverty in old age, mainly based on cross-sectional survey data. Goodman and Webb (1994) looked at changes in the relative position of pensioners within the overall income distribution over the period 1961–1991 using the Family Expenditure Survey. Johnson and Stears (1995) focused on the evolution of inequality among pensioners between the early 1960s and early 1990s. Subsequent work by the same authors (Johnson and Stears 1998) analysed the relationship between age and income and offered explanations for the higher poverty rates among older pensioners. The Seventh Report on Pensioner Poverty by the Social Security Committee (2000) provided an overall picture of poverty among pensioners – focusing on recent changes and trends expected for the future – with the view of formulating policy recommendations to tackle poverty in old age. Even when they looked at changes in poverty and inequality, however, these studies referred to subsequent cohorts of retirees; they did not follow the evolution of incomes for the same people as they age and retire.

Existing studies that have used a longitudinal perspective have largely focused on other topics, for example documenting labour force transition paths into retirement, and the determinants of early retirement. Meghir and Whitehouse (1997), for example, modelled the transitions in and out of work for men born between 1919 and 1933. Oswald (1999) analysed early retirement patterns of German and British workers. Campbell (1999) investigated the decline in employment rates among old people focusing mainly on changes between 1979 and 1997.

One important reason for the lack of emphasis on longitudinal aspects of retirement-related issues was a lack of data. The Retirement Survey, the first British survey specifically designed for research on retirement, was undertaken in 1988/89, and a second wave in 1994 re-interviewed respondents. The survey is a major new British resource for

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

research on retirement and its correlates (see Disney *et al.* (1997) for a description of the survey and extensive research findings). The principal advantage of the Retirement Survey is its specialist focus on the group of interest, the large sample, and the depth of detail for a wide range of relevant topics (including disability and health status, incomes, and housing and financial assets). The number of wave 1 respondents was some 3,500 individuals aged 55–69 years at the time of the interview (plus 600 spouses outside this age range). Sample attrition was substantial, however, and only two-thirds of the original sample were re-interviewed (a quarter due to non-response; the remainder had died). The first wave of the Retirement Survey has been used by Ginn and Arber (1996) to explore gender inequality of income in later life and how it links to earlier employment history. In their analysis they related the personal non-state pension income received in 1988 of individuals over pensionable age to retrospective information about their employment career, to show how women's irregular working patterns translate into substantial income disadvantages in old age.

Research about income dynamics using the Retirement Survey has mostly focused on income changes during the period of retirement (rather than around the transition into retirement). Johnson *et al.* (1998) examined the changes in incomes of men aged 65–69 and women aged 60–69 in 1988–89 over the subsequent five years. The main focus was on individual's own incomes rather than the incomes of the family or household to which the person belonged – they were mostly interested in the evolution of various income sources rather than in changes in living standards. Webb (1997) examined both individual and benefit unit (family) income in his study of income dynamics, relating income changes between 1988–89 and 1994 to pre-retirement characteristics (such as work status) and pension receipts. Neither study examined in detail the relationship between the retirement process and changes in living standards, and low income incidence in particular (as we do).

Finally, Zaidi *et al.* (2001) described the income dynamics of the older population. However, because of their definition of 'later life' (older than the statutory retirement age) and their choice of the reference period (the whole life span in old age), they were not able to isolate income mobility associated with the retirement process itself.

The British Household Panel Survey (BHPS), a general-purpose household panel survey with nine waves of data currently available (covering 1991–9), has been relatively unexploited for studies of retirement. It is an important complementary source to the Retirement

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

Survey and, when nine waves of data are pooled, the sample sizes of the two datasets for many analyses become very similar. The BHPS is representative of the whole British population, which facilitates comparisons of the experiences of retiring, retired and non-retired people. It covers a wide range of topics concerning individual, family and household circumstances, many in great detail. One particular advantage of the BHPS relative to the Retirement Survey is that interviews are of a higher frequency: for example, year-on-year income changes can be tracked (for up to nine years in many cases), so that a more detailed picture about the relationships with retirement can be derived.

Our empirical analysis exploits these features of the BHPS in analysing income changes around the time of retirement. Whereas previous research has shown that old and retired people are poorer than the rest of the population at a point in time, we consider how the process of becoming retired is associated with an increased risk of having a low income. In particular, we focus our attention on changes in the household income in the years immediately before and after retirement for people who retire.

The background to, and results of, the study are presented as follows. In Section 1, we introduce the BHPS and discuss our sample selection criteria. We explain our choice of definitions of 'retirement', 'income', and 'low income' – concepts that are central to our analysis. In Section 2 we present evidence comparing low income incidence among retired people and the rest of the population, drawing on cross-section data from the BHPS. The remainder of the paper takes a longitudinal perspective. In Section 3 we show that retirement is a gradual process for most individuals rather than a discrete event at a single date. We examine some of the factors associated with the changes in individuals' economic wellbeing over a number of years around retirement. The dynamics of household income changes for people who retire are presented in Section 4. We also analyse which personal and household characteristics are associated with a higher risk of having low income in the years around retirement (where low income refers to the poorest third of the income distribution). In Section 5 we use multivariate analysis to analyse the impact of individual and household characteristics on the probability of entering low income at the time of retirement. The final section presents a summary and conclusions, and discusses some directions for future research.

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

1. Data and definitions

Our analysis uses data drawn from the first nine waves of the British Household Panel Survey (BHPS) covering 1991–1999. The first wave of the BHPS was designed as a nationally representative sample of the population of Great Britain living in private households in 1991. Original sample respondents (including both partners from a dissolved wave 1 partnership) have been followed and they, and their co-residents, interviewed at approximately one year intervals subsequently.[1] Children in original sample households are also interviewed when they reach the age of 16 years. Thus the sample remains broadly representative of the population of Britain as it changes through the 1990s.

For our dynamic analysis, the subsample consists of the 883 individuals (402 men, 481 women) aged 50–69 years at the time of entering the panel (contributing 7,223 person-wave observations) who are observed to retire during the panel. More specifically, these individuals were in a state other than 'retirement' when they entered the panel, and are observed to make a transition into retirement. For our cross-section analysis in Section 2, we consider instead all individuals who, in each wave, define themselves as 'retired'.

The definition of 'retirement' adopted in this paper is based on each individual's own assessment of his or her labour market status.[2] This is the definition adopted in many other studies, both in Britain (see studies based on the Retirement Survey such as Tanner 1997) and for other nations (see Oswald 1999). The definition of retirement (and when retirement occurs) is of course not clear cut. At least three definitions of retirement have been used in the literature. One is to analyse individuals' self-reported job status (as we have). A second type of definition is a composite one, derived by looking, for example, at the number of hours worked and the job search activity. A third type of definition uses data about receipt of retirement pensions.

Each definition of retirement has advantages and drawbacks. The one based on self-reported working status does not take account of the fact that one person may be keen to define him or herself as 'retired', whereas other persons in the same circumstances might prefer to describe themselves as a 'family carer' or 'disabled'. The second type of definition also has some drawbacks. The definition of 'retired' as somebody who is working zero hours and/or is not looking for a job is a quite restrictive one. (Tanner (1997) reports that 24 per cent of men and 26 per cent of women who were working in 1994 considered themselves to be retired.) Finally, information about pension receipt is

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

potentially problematic if only because there may be delays between the time an individual retires and when s/he starts receiving the pension.

A further complication arises from the fact that 'retirement' need not be a discrete event happening at a single date, but may be a process that takes place over a period of time. This interpretation has been stressed by Quinn (2000) and is consistent with evidence that we provide later. Two main reasons underlie it. First, there may be a 'pre-retirement' transition period during which individuals voluntarily or involuntarily modify their job status. This may involve, for example, moving from a regular full time job to a part time job, or becoming unemployed or disabled and, as a consequence, opting for entering (early) retirement. Second, persons living together as partners may synchronise their retirement decisions, *i.e.* one person may retire and his partner then retires also within a short delay (because, for example, of complementarity in their leisure times). Even if retirement is a discrete change of status for each partner, it need not be for the household as a whole.

The economic wellbeing of individuals is measured throughout the paper in terms of income. More specifically each person's economic wellbeing is measured by the equivalised real current net household income of the household to which she or he belongs ('income' for short). Household income is defined as the sum of cash income from all sources: labour market earnings from employment and self-employment, investment and savings income, occupational and private pensions, plus all cash benefits from the government (including retirement pensions), minus direct income taxes, National Insurance contributions, and local taxes (the poll tax until April 1993 and the council tax afterwards). Income refers to current income (expressed as a weekly amount), for which the reference period is typically the period immediately before the interview.[3] The choice of the current income allows us to match the amount of income received by the household with the self-reported working status of the individual – on which we base our definition of retirement – this latter also referred to the period of the interview. Moreover, the net current income definition is the one used in the official low income statistics for Britain (Department for Work and Pensions 2001).

Net current income data are not directly available: the focus of the BHPS's questions is current gross incomes. Net incomes have been derived from gross amounts by estimating income taxes, National Insurance contributions, and local taxes paid in the reference period from a simulation model.[4]

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

To take account of differences in household size and composition, all incomes have been adjusted using the 'McClements Before Housing Costs' equivalence scale (the semi-official UK one – see Department for Work and Pensions 2001). For real income comparisons over time, income has also been adjusted to a common date using a suitable monthly price index.

2. The incomes of the retired: cross-sectional evidence

Being retired is clearly associated with a higher probability of being in a low income group. Table 1 reports the percentages of retired people who are in the bottom part of the income distribution in the years covered by the BHPS (1991 to 1999) and compares them with the corresponding estimates for non-retired adults and workers. For brevity's sake, only alternate years are shown.

We used three different definitions of a 'low income' threshold: the bottom quintile and the 33rd percentile of the distribution, and the two-thirds of median 1991 real income. The first definitions change in value over time with secular growth in real incomes, whereas the third definition is fixed in value. The percentiles refer to the distribution of current net household income among all persons in the population (including children).

The top panel of Table 1 shows the percentage of persons in each low income group for the pooled sample (men and women combined). If equivalent household income were not related to age, gender, or employment status we would expect, for example, that on average 20 per cent of each group of the population would be found in each quintile of the income distribution. However, regardless of which of the three definitions is used, retired people are over-represented in the bottom part of the income distribution. Moreover, the percentage of retired people who are in the low income group is much higher than the corresponding percentages for the non-retired and (especially) for the workers. In 1999, for example, more than 30 per cent of retired people were in the poorest fifth, compared with 14 per cent of the non-retired adults and seven per cent of the workers. The figures are slightly lower if we look at the two-thirds of 1991 median real income. Taking instead the bottom third of the distribution as a definition of low income, more than 50 per cent of retired were 'poor' compared with 24 per cent of the non-retired and 15 per cent of the workers. In general, the relative position of the retirees with respect to the other groups appears to improve slightly over the nine years. This is not the case,

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

TABLE 1. *Cross sectional comparisons of low income incidence: retired, not retired and working adults*

	Poorest fifth			Poorest third			Below 2/3 of 1991 median		
	Retired	Not retired	Workers	Retired	Not retired	Workers	Retired	Not retired	Workers
All									
1991	31.4	15.2	6.0	56.7	25.4	13.3	43.2	18.8	8.3
1993	26.8	15.3	6.0	49.4	25.5	13.3	32.5	17.6	7.3
1995	31.6	14.6	6.1	51.7	25.4	14.0	30.5	14.0	5.7
1997	29.8	14.1	6.6	49.8	24.6	14.4	25.8	13.0	6.0
1999	30.8	14.0	6.9	51.5	24.2	15.1	24.3	11.2	5.1
Men									
1991	27.8	13.0	5.7	49.9	21.8	12.8	37.9	16.0	7.8
1993	21.2	14.0	6.1	41.5	22.9	12.8	27.0	15.9	7.3
1995	25.9	12.0	5.8	44.4	21.8	13.6	24.5	11.5	5.4
1997	25.8	12.4	6.3	44.6	21.6	13.8	22.2	11.3	5.7
1999	26.9	12.3	6.6	47.9	21.4	14.3	21.7	10.2	5.2
Women									
1991	33.9	17.3	6.4	61.5	28.7	13.8	47.0	21.5	8.8
1993	30.6	16.5	5.8	54.7	27.9	13.8	36.3	19.1	7.2
1995	35.5	17.0	6.5	56.7	28.6	14.4	34.6	16.3	6.0
1997	32.5	15.8	6.9	53.3	27.3	15.0	28.1	14.5	6.3
1999	33.5	15.6	7.1	53.9	26.7	15.9	26.0	12.1	5.0

Table cells show the percentage of retired, non-retired and working adults in the bottom part of the income distribution. Income is needs-adjusted current net household income (using the McClements Before Housing Costs equivalence scale). The percentiles refer to the distribution of current net household income of all persons in the population (adults and children). They have been calculated using the BHPS cross-sectional enumerated individual weights. Definition of 'retired' and 'worker' is based on self-assessment (variable JBSTAT). The sample includes everybody who is in the relevant categories in the corresponding year. 1991 median income (equivalised and deflated to Jan 1998 prices) was £233 per week.

however, when we focus on the bottom fifth of the income distribution; the percentage of retired people who are poor is essentially stable over the decade.[5]

In the second and third panel of Table 1, separate percentages for men and women are reported. The proportion of retired people in the bottom group of the income distribution fluctuates over the 1990s, but none of the measures of low income display a substantial decreasing trend, except for the percentage of retired women in the bottom third of the income distribution.[6] However, a higher percentage of retired women than men live in poor households, even at the end of the period.

We repeated the analysis separately by birth cohorts in order to check whether any genuine increase in the living standards of retired people relative to the rest of the population occurred during the 1990s for each or some cohort groups. In fact, we may expect that the inflow of youngest retirees enjoyed better retirement conditions than the older

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

TABLE 2. *Composition of income for retired, not retired and working adults (row percentages)*

	Net earnings	Pension income	Benefit income	Investment income	Transfer income	Local taxes	Total
All							
Retired	6.6	24.9	65.7	9.6	0.4	−7.4	100.0
Not retired	75.8	3.1	19.0	3.7	2.0	−3.7	100.0
Workers	89.3	2.2	7.7	3.4	0.8	−3.5	100.0
Men							
Retired	6.9	28.9	59.6	10.8	0.3	−6.5	100.0
Not retired	80.6	2.3	15.2	3.6	1.8	−3.6	100.0
Workers	90.8	1.9	6.6	3.7	0.5	−3.6	100.0
Women							
Retired	6.4	22.2	70.0	8.8	0.5	−8.0	100.0
Not retired	71.4	3.8	22.5	3.8	2.2	−3.7	100.0
Workers	87.4	2.6	9.1	3.1	1.1	−3.4	100.0

Average percentages over all individuals and all years (1991 to 1999). Income is needs-adjusted current net household income (using the McClements Before Housing Costs equivalence scale). Net earnings are defined as gross earnings *minus* income taxes and *minus* National Insurance contributions. Local taxes are the poll tax until April 1993 and the council tax afterwards.

cohorts and that this composition effect would produce a downward trend in the percentage of retired people in the poorest group without any 'real' improvement occurring at the cohort level. We considered the percentages of retired people in the bottom fifth and in the bottom third of the income distribution for four separate cohorts.[7] Older cohorts were always poorer than younger cohorts, irrespective of the choice of the 'low income' definition. This is true for both men and women. However, no real improvement in the living standards occurred over 1991–1999 for any cohort group. Indeed, the percentage of old people born in the years 1925–1934 who are in the bottom fifth and third of the income distribution appears to have increased for both men and women over the 1990s. By contrast, the income of the oldest cohort of women (born before 1915) appears to have improved over 1991–1999, determining a convergence of low income rates for the various cohorts of women.[8] For this group an improvement of its position relative to the rest of the population did occur.

Not only do retired people have lower incomes than the rest of the population on average, but the composition of their income also differs. Table 2 shows the shares in total household income of various income sources, contrasting the retired, non-retired and workers. (The numbers reported in the table are averages derived from pooling data for nine waves).[9] Pensions and benefits make up more than 90 per cent of the household income of retired people.[10] Investment income is also

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

important for the retired, representing more than nine per cent of their total household income. Not surprisingly, the pattern is reversed for workers, among whom, for example, labour earnings comprise 89 per cent of total household income on average. For retired women, benefit income represents a bigger share of household income than it does for retired men (70 per cent vs. 60 per cent); on the other hand, retired men rely on pension income more than women do (29 per cent vs. 22 per cent). This is because men are more likely than women to be entitled to an occupational or private pension. Investment income is also more important for men (11 per cent) than for women (nine per cent). Council tax payments form a larger share of older people's income than of workers' income (more than seven per cent vs. 3.5 per cent), and a larger share of women's income (eight per cent) than of men's income (6.5 per cent).

3. Retirement as an evolving process: longitudinal evidence

Moving now to a longitudinal perspective, we wish to assess how much the event of 'becoming retired' is associated with a greater risk of being in the bottom part of the distribution. In other words, we address the issue of the short-run effects of retirement on the position of the individual in the income distribution. In particular, we want to find out which individual and household characteristics are more likely to increase the risk of 'becoming poor' following retirement.

The modal age of retirement for our longitudinal sample corresponds to the state retirement age for both men and women (65 and 60). Many transitions into retirement, however, are observed before and after this age. In particular, 55 per cent of men already define themselves as retired before 65 years of age.

Figure 1 shows how household income of people who retire evolves in the years around retirement. Our analysis was based on identification of the year in which an individual was first observed to be retired – we label this year 0 in Figure 1 – and then examination of incomes in the years leading up to the retirement year and in the years following retirement. (Years prior to the retirement year were labelled -1, -2, -3, … , etc., and the years following the retirement year were labelled 1, 2, 3, … , etc.) Having identified all the individuals that had retired, we arranged each individual's income history so that all the retirement years were aligned across individuals to a common retirement year. We then derived an 'average' picture of what happened to income in the years around the time of labour market withdrawal by summarising

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

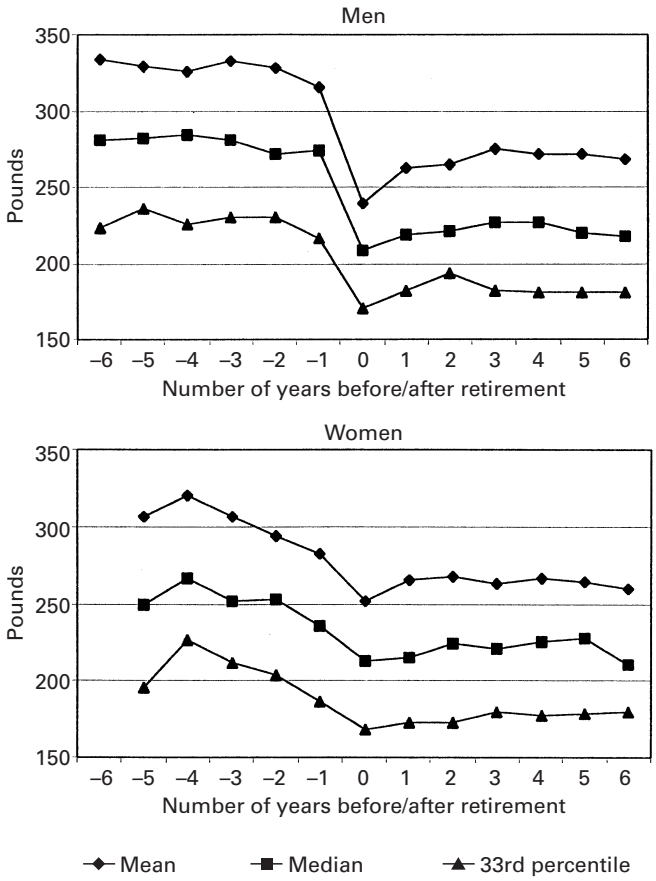

Figure 1. Income by year, relative to retirement year: mean, median and 33rd percentile (weekly amounts). The year of retirement is year '0'. Income is needs-adjusted current net household income (using the McClements Before Housing Costs equivalence scale). Mean, median, and 33rd percentile refer to the distribution of current net household income of all persons in the population (adults and children) and are calculated for each year separately. The amounts are per week and are expressed in January 1998 prices.

the data across individuals for each year before and after the retirement year.[11] For women, the decrease in the mean, the median and the 33rd percentile of the distribution prior to the year of retirement indicates that the income of retirees worsens progressively rather than precipitately. By contrast, for men, income appears to be quite stable in the years preceding retirement and then falls abruptly between the year before retirement and the retirement year. Thereafter, income appears to stabilise at a lower level for both sexes.[12]

The movement into retirement is also accompanied by changes in

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

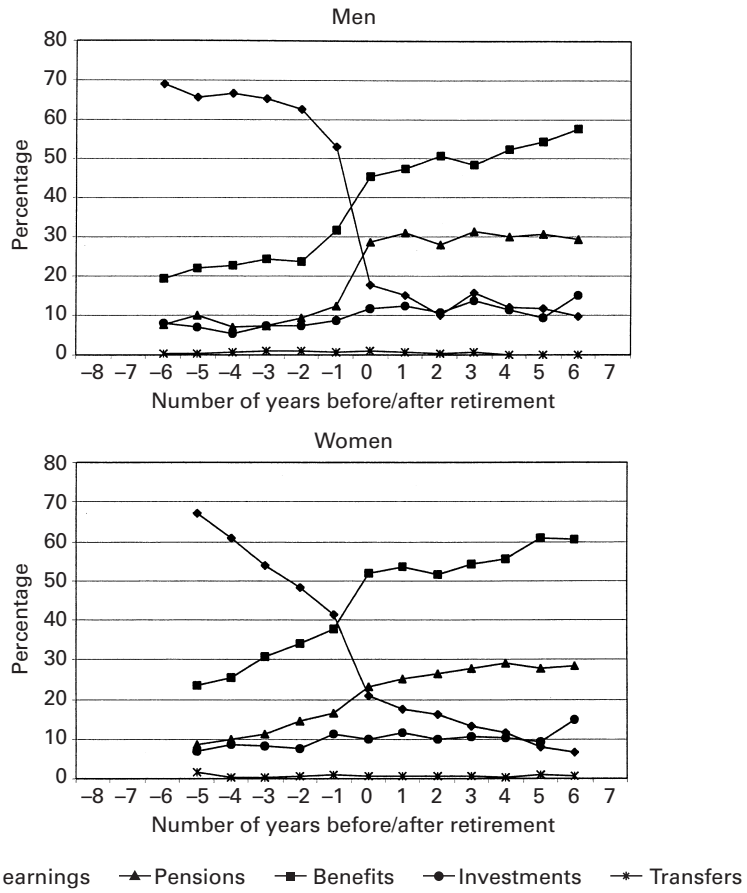

Figure 2. Composition of income by year relative to retirement year. The year of retirement is year '0'. Income is needs-adjusted current net household income (using the McClements Before Housing Costs equivalence scale). Percentages are computed over total income for each year separately. Net earnings are defined as gross earnings *minus* income taxes and *minus* National Insurance contributions. Occupational and private pensions are included in 'pension income'. National Insurance pensions are included in 'benefit income'. Evolution of local tax payments around retirement not shown.

household income composition: see Figure 2. Entry into retirement involves for both sexes a progressive replacement of labour earnings with income from pensions, benefits, and investments and saving. The decrease over several years of the importance of earnings and their replacement with pensions and benefits supports the interpretation of retirement as an evolving process, rather than a discrete change in status at one date. The patterns reported, however, differ for men and women. Although income composition is similar both four to five years

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

prior to retirement and four to five years after retirement, the evolution in between is different. For men, there is a sharp decrease in the earnings share that occurs between one year before and one year after retirement. For women, the fall in the earnings share begins some years before retirement, is more gradual, and lasts longer.

What explains the difference between men and women in the changes in income composition around retirement? There are several potential answers. First, focusing on individuals' work status in the years immediately before retirement, it might be that a transition directly from a full time job into retirement – which would characterise retirement as a strong and dramatic change in status – is only one of many different options available to the individual. For example, it is possible that, when approaching retirement, workers voluntarily decrease their working hours, moving from full time jobs to part time ones. Or it may be that retirement is involuntary, and the consequence of, say, becoming unemployed or disabled late in life, when chances of re-employment are low.

Figure 3 investigates this issue by contrasting the changes in work status in the three years before retirement for men and women. To provide a reference point, the proportions of non-retired adults of all ages in each of the work status groups are represented in the first group of bars of each graph.

Three years before retirement, 50 per cent of men were full time employees. This percentage sharply decreased in the subsequent two years, and one year before retirement only 38 per cent of men were in full time paid work. At the same time, the percentage of men close to retirement who worked part time is three times larger than the proportion working part time among the population as a whole. This suggests that a movement into part time work might have already occurred in the earlier years (if we rule out cohort effects, and they are unlikely). Moreover, the proportion working part time was still increasing immediately before retirement. Interestingly the unemployment rate amongst those who retire was also particularly high in the year before retirement (some eight percentage points higher than the preceding year). Also high in that year was the percentage of individuals who reported themselves to be disabled (more than 24 per cent, five percentage points higher than the preceding year). In sum, for men, there is evidence of both a voluntary reduction in hours and of an involuntary change in status towards unemployment and disability that is likely to motivate the decision to retire.

For women, the situation is similar, but there are interesting differences. Three years before retirement only 24 per cent of women

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

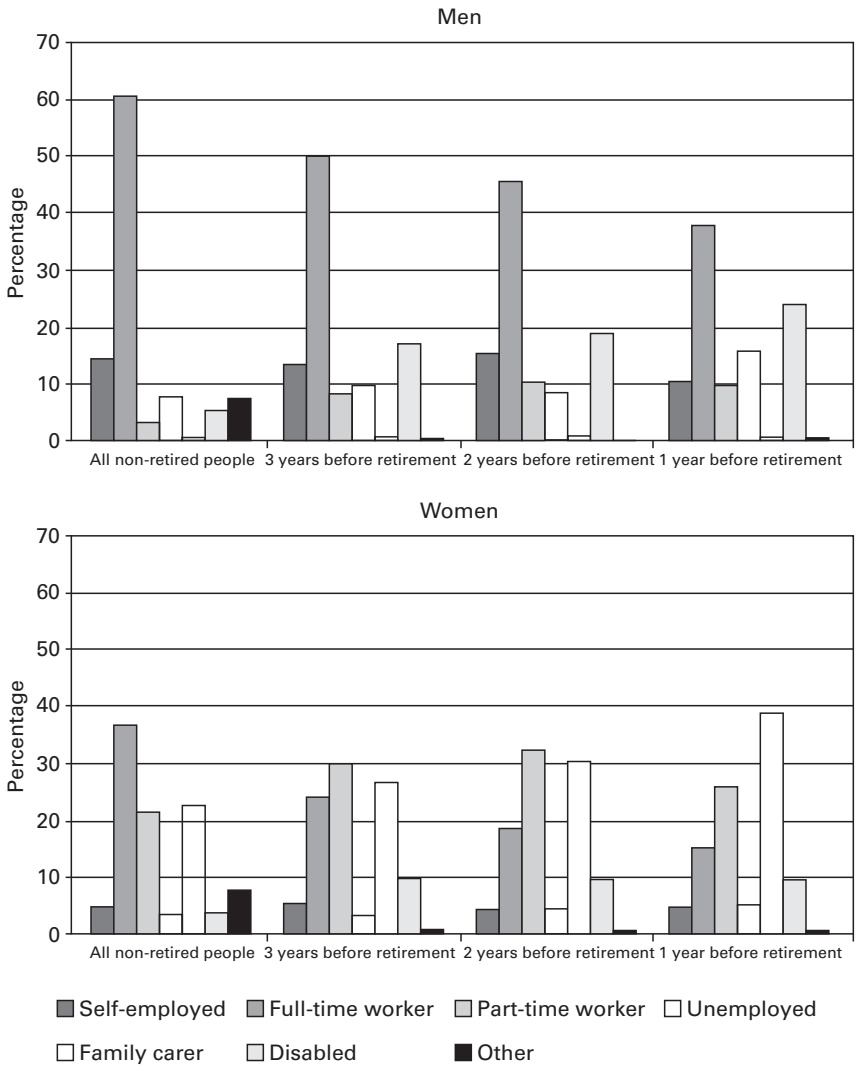

Figure 3. Work status of people who retire in the three years before retirement, compared with work status in the overall population, by gender. For each subgroup ('All non-retired people', '3 years before retirement', '2 years before retirement', '1 year before retirement'), the height of a bar indicates the percentage of the group with the specified work status.

were full time employees, compared with 37 per cent of the non-retired female population. However, the percentage working part time was very high, 30 per cent, indicating that, even for women, a progressive movement into part-time work is likely to have taken place in earlier years (again, if we exclude the existence of cohort effects). However,

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

the incidence of unemployment and disability does not appear to have been particularly higher for women approaching retirement compared to non-retired women, nor did these rates display a clear increase in the years immediately before retirement.

The main pre-retirement status for women is 'family carer'.[13] About 27 per cent of women were out of the labour market as a family carer three years before retirement. By one year before retirement this percentage increased to 39 per cent, about twice as much higher than for the non-retired women. This change in status is likely to be involuntary (women losing their job are probably exiting directly from the labour market before entering retirement). At the same time, the status of 'family carer' does not entitle women to get the same benefits as those received by the unemployed and disabled men, and therefore places them in a weaker financial position immediately before retirement.

A second hypothesis about what causes a decrease in income prior to retirement posits the 'synchronisation' of the retirement of husbands and wives. Since we summarise each individual's economic wellbeing in terms of the total income of the household to which he or she belongs, individual wellbeing is affected not only by direct changes in each person's own status, but also by what happens to other individuals inside the household. In particular, there are reasons to believe that the retirement decisions of marital partners are linked. This may be because husbands and wives are likely to be approximately the same age (the man is older on average, but the retirement age for men is higher than for women – 65 for men and 60 for women). Or because the decision to retire by one partner may influence the other partner's decision to retire.[14]

Evidence of synchronisation of the retirement decisions of the couple is presented in Figure 4. The top graph is based on a sample of wives of men who retired and shows the proportion of wives in each working status around the retirement year of their husbands. The bottom graph looks instead at the husbands' working status around the retirement year of all married women. Wives retire later than husbands on average. By the time men retired, only 38 per cent of their wives had already retired (top graph, percentage of retired wives at time 0), whereas by the time women retired, 60 per cent of their husbands had already done so (bottom graph, percentage of retired husbands at time 0). This may result not only from the wife being younger than her husband on average, but also from genuine synchronisation of retirement decisions of the two partners. In the two years that precede women's retirement, more than 20 per cent of their husbands entered

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

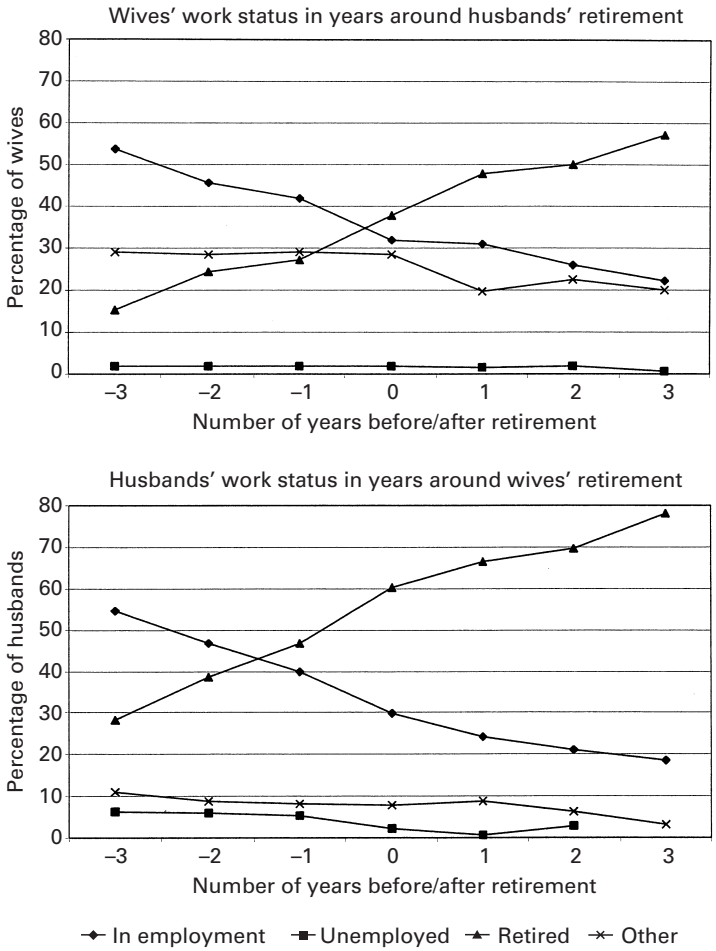

Figure 4. Partner's work status in the years around retirement. The year of retirement is year 0. The sample for the top graph is restricted to all married men who retire at 0. The sample for the bottom graph is restricted to all married women who retire at year 0.

retirement (see bottom graph: the percentage of husbands who are retired goes from less than 40 per cent in the second year preceding retirement to 60 per cent in the retirement year). In general, although it is not possible to distinguish between 'age effects' and true 'co-ordination effects', the figure shows that for both men and women a high degree of synchronisation of retirement exists and that husbands are more likely to retire slightly before their wives.[15] This partially accounts for the observed decrease in women's household earnings that occurs in the years before they retire.

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

4. Changes in low income incidence among people who retire

Decisions about retirement timing and synchronisation by people who retire also affect the evolution of their incomes, and in particular their risk of having a low income. Evidence about changes in the incidence of low income over the years before and after retirement is presented in Figure 5.

The top graph shows the percentage of all who retire who were in the poorest third of the income distribution each year, from five years before retirement until five years after retirement (year −5 through year +5). The 'poorest third' is defined with reference to the income distribution for all persons in the relevant year. Five years before retirement, 25 per cent of retirees were in the poorest third of the distribution. This percentage increased substantially over the period between two years before retirement and the year of retirement. In particular, between the year immediately before retirement and the year of retirement the percentage of individuals living in a low income household increased from 31 per cent to 44 per cent. After retirement, the percentage of 'just-retired' people with low income stabilised at this higher level. This result is consistent with the cross-sectional evidence reported in Table 1, namely that, at a point in time, being retired is associated with a higher probability of being in the bottom third of the income distribution. However, the rate of low income incidence five years after retirement, 44 per cent, is still lower than low income incidence among all retired people (without standardisation of the timing of entry into retirement).

The remaining two graphs in Figure 5 provide breakdowns by work status before retirement and sex. We classified individuals into three groups according to their work status in the year prior to retirement: full time employment, part time employment, and 'other', where the latter group includes people who were unemployed, disabled, or family carers.

Among those who were full time workers in the year prior to retirement, only a small percentage had a low income during that period. Retirement for this group represents a discrete change in status and is associated with a large increase in the probability of falling into the bottom third of the distribution in the year of retirement and immediately thereafter. The percentage of full time workers who have low income jumps up by 30 percentage points in the period from one year before retirement and the retirement year, so that in the retirement year low income incidence among full time workers is as high as among part time workers. Before and after retirement, however,

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

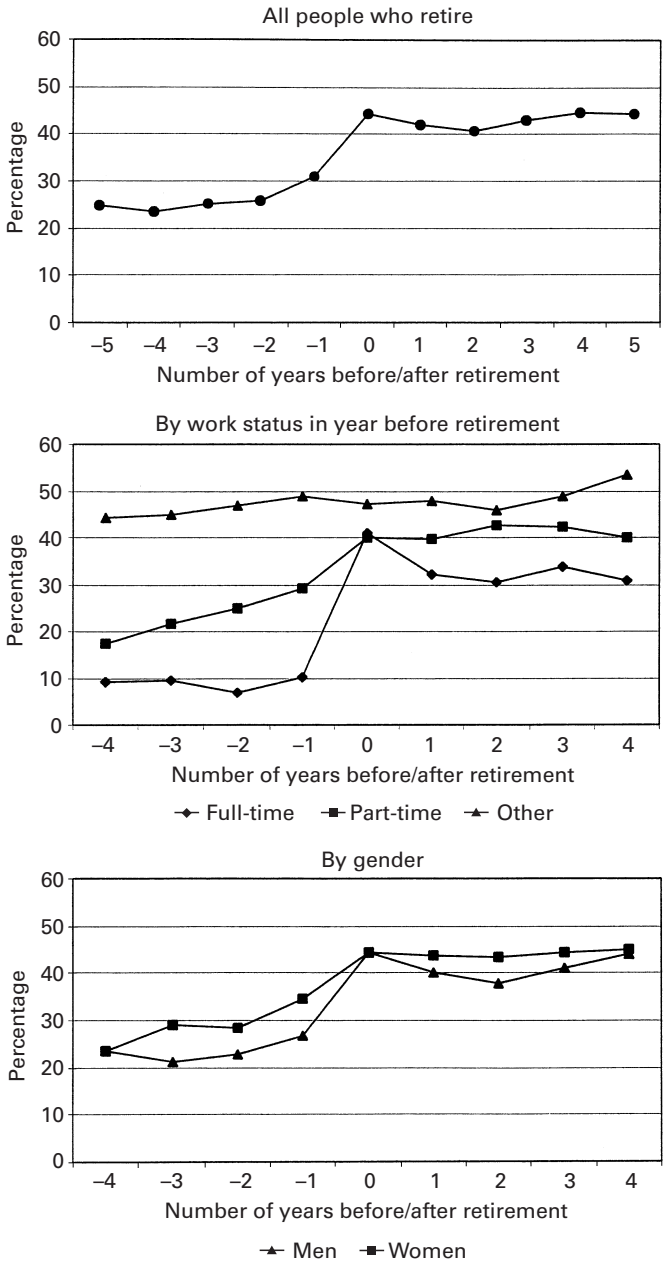

Figure 5. Low income prevalence in the years around retirement – all retirees, and by previous work status and by gender. The year of retirement is year 0. The graphs show the percentage of persons with low income within each group. Low income is defined as being in the poorest third of the income distribution.

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

low income incidence for the formerly full time workers is always lower than for individuals that had been in other work statuses before retirement.

The incomes of those who worked part time in the year prior to retirement deteriorated in a more steady and gradual way, beginning in the years preceding retirement. The 'other' group did not experience an increase in the incidence of low income following retirement. More than 46 per cent of them were already in the bottom third of the distribution before retirement, so it is difficult for retirement to make matters worse.

Contrast now the experience of men and women. For men, there was a sharp increase (of 17 percentage points) in the proportion in the bottom third of the distribution between the year prior to retirement and the year of retirement.[16] For women, on the other hand, the increase was less abrupt (of nine percentage points between the year prior to retirement and the year of retirement) if for no other reason than because women are already poorer than men in the years immediately before retirement. Interestingly, in the year of retirement, low income incidence is the same for the two sexes, but in the years after retirement the percentage of women with low income is three to five percentage points higher than men's, at least until three years after retirement.

The different patterns for men and women are consistent with the findings reported earlier. Since husbands typically retire before wives, the decrease in the household income for women occurs before their own retirement, whereas for men this is less likely to be the case. Moreover, because women are more likely than men to work part time or to be family carers, the retirement of a wife generally has a smaller impact on household income than the retirement of the husband. Another reason why we expect the retirement of a wife to decrease household income less on average than a husband's retirement is the fact that women – even if they work full time – are likely to earn less than men. Finally, we have also seen that immediately before retirement men are more likely than women to move into work statuses (*e.g.* unemployed and disabled instead of family carer), that are more 'rewarding' in terms of benefit eligibility. In sum, men who retire are in general less likely to be poor than women who retire, and retirement has a strong association with a rise in low income propensity.

In addition to work status and sex, there is of course a wide range of personal and household characteristics that are related to the probability of becoming poor following retirement. Table 3 contrasts low income incidence rates, in the years before retirement and in the

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

TABLE 3. *Low income prevalence among persons who retire*

	% with low income in year before retirement	% with low income in retirement year	% not poor in year before retirement who become poor in retirement year	N
All who retire (longitudinal sample)	30	44	28	730
Men	26	43	29	342
Women	34	46	28	388
Retired under retirement age	25	38	25	304
Retired over retirement age	34	48	31	426
Occupational pension	19	35	25	381
No occupational pension	42	54	34	349
Partner not present	43	59	41	180
Partner in employment	10	27	23	229
Partner not in employment	37	48	27	321
Owner occupier	24	37	24	549
Social housing	53	67	55	147
Other (renter, etc.)	38	53	29	34
Self-employed	28	40	26	47
Full time employee	6	41	37	194
Part time employee	24	42	28	133
Other (disabled, UE, fam. care)	47	47	20	342
Disabled	38	44	25	181
Not disabled	28	44	29	549

All variables refer to status in the year before retirement. 'Under retirement age' is below 60 for women and 65 for men. 'Disabled' has been defined as 'having an impairment that limits daily activities'. 'Low income' is defined as the bottom third of the income distribution, where 'income' is current net household income. The second and third columns indicate the percentage of individuals in each group (as defined in the first column) who are in the bottom third of the distribution. The fourth column indicates the percentage of those in each group who are not poor one year before retirement who become poor in the retirement year. For the whole population the inflow into poverty from one year to the next is 10 per cent.

retirement year, across various groups of individuals classified according to a range of attributes that are likely to be associated with different probabilities of becoming poor following retirement.

The numbers reported in Table 3 correspond to the ones reported in the top graph of Figure 5 for the year before retirement (when 30 per cent of all those who retire are poor) and the retirement year (when 44 per cent of all those who retire are poor), except that in Table 3 the sample is restricted to those people who were present both at time -1 and at time 0.[17] The interpretation of the estimates is exactly the same as in Figure 5, *i.e.* these are percentages of individuals of each respective group that are in the bottom third of the annual net household income distribution for the whole population in the year before and the year of retirement. The third column of Table 3 shows the 'flow' into low

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

income, where this is defined as the percentage of individuals who were not in the poorest third the year before retirement and who were in the poorest third at time 0.

The analysis reported in Table 3 is restricted to what happened from one year before retirement to the retirement year. We are aware – and evidence in Figures 1 to 5 shows – that income changes occur over a period around retirement that is longer than one year. However, for the purposes of the multivariate analysis (reported below), we need to define the period over which people are at risk of becoming poor following retirement, and the most appropriate interval was that from time −1 (one year before retirement) to time 0 (the retirement year). This choice allows us to use a larger sample and, in any case, the results do not change substantially if we analyse the changes between *e.g.* time −1 and time +1 (since we defined income as current income, the biggest change occurs between time −1 and time 0).

In Table 3 we compare individuals classified by characteristics such as age, membership of an occupational pension scheme, partnership status and whether the partner is in employment or not, disability status, and housing tenure.

The association between age at the time of retirement and the probability of becoming poor following retirement is unclear. Because our sample of people who retire is already restricted to those aged 50–69 years, the most interesting distinction is between those who retire early, *i.e.* before the age of entitlement to the state retirement pension (60 for women and 65 for men), and those who retire at this age or later. Earlier research has shown that those who retire significantly before state pension age are more unlikely to have an occupational pension scheme. However, persons with an occupational pension scheme tend to retire a little before the official retirement age (Oswald 1999). Moreover, early retirement does not necessarily indicate that retirement was a voluntary choice. On the contrary, individuals who experience periods of unemployment or disability may retire 'involuntarily' before retirement pension age. From Table 3, it appears that those who retired early were substantially less likely to be in the poorest third of the distribution before and after retirement. (Observe however that the increase in the percentage with low income between the two time periods is not much different for the early and non-early retired.)

Current or past membership of an occupational pension scheme is associated with a considerable reduction in the probability of having a low income, both before and after retirement.[18] This variable is an indicator of the 'quality' of the pre-retirement job. Jobs that offer an occupational pension scheme are usually good-quality jobs. Also

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

an occupational pension generally guarantees a higher income after retirement than reliance on the state retirement pension alone.

Not surprisingly, the presence of an employed partner is associated with a considerable decrease in the percentage of retirees in the poorest third of the income distribution. And the absence of a partner is associated with dramatically higher chances of being poor. Those people with a partner not in employment have an in-between low income incidence. (The non-working partner may be retired or entitled to benefits.) Individuals living in owner-occupied housing have lower rates of low-income incidence than do people in rented accommodation, especially compared with people living in social housing. This latter group is more likely than any other group to be in the bottom part of the distribution, before and after retirement. Disabled people – those who report having an impairment that limits their daily activities – are more likely to be in the poorest third of the income distribution than the non-disabled before retirement, but there are no differences after retirement.

5. The probability of becoming poor on retirement: multivariate analysis

We estimated multivariate probit models in order to examine the effects of each individual and household characteristic on the probability of becoming poor (being in the poorest third of the distribution) in the retirement year (year 0) conditional on not being poor in the previous year (-1), holding all the other explanatory variables constant. We estimated the models separately for men and women. The results are presented in Table 4.[19] The table reports the estimated marginal effects of each regressor variable, defined as percentage point change in the poverty entry probability associated with a change of the relevant binary explanatory variable from 0 to 1, holding all other explanatory variables at their sample mean. Positive marginal effects imply a positive association between the presence of a characteristic (for example, living in social housing) and increases in the probability of moving into low income; negative marginal effects imply a negative association. In Table 4, standard errors and level of statistical significance are also reported for each estimated coefficient, as well as the average value of each variable, used to compute the predicted probability of moving into low income and the marginal effects. For the estimation of the model, all the explanatory variables are evaluated at year prior to retirement.

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

TABLE 4. *The probability of low income entry among people who retire (probit regression)*

Explanatory variables (all are categorical)	Men			Women		
	Marginal effect	Standard error	Sample proportion	Marginal effect	Standard error	Sample proportion
Partner not employed	0.08	0.07	0.41	0.02	0.07	0.38
No partner	0.00	0.09	0.17	0.26	0.10**	0.24
Disabled	0.03	0.09	0.24	−0.06	0.08	0.20
Renter of social housing	0.36	0.11**	0.14	0.28	0.11**	0.14
Other (renter, etc.)	−0.11	0.12	0.05	0.19	0.19	0.04
Early retired	0.12	0.13	0.61	0.07	0.09	0.30
Occupational pension	−0.14	0.11	0.80	−0.19	0.07**	0.42
Early retired with occupational pension	−0.19	0.16	0.54	−0.15	0.09	0.15
Self-employed	0.34	0.16**	0.09	−0.14	0.11	0.05
Full time employee	0.30	0.09**	0.50	0.40	0.11**	0.23
Part time employee	0.06	0.14	0.12	0.26	0.09**	0.28
Vocational education	−0.01	0.09	0.15	0.06	0.11	0.11
O level	−0.15	0.08	0.12	−0.16	0.06*	0.12
A level	−0.19	0.08*	0.08	0.10	0.18	0.04
Higher education	0.06	0.09	0.21	0.02	0.09	0.18
Degree	−0.17	0.08	0.07	−0.22	0.05*	0.04
South-East	0.28	0.16**	0.24	0.24	0.15*	0.21
South-West	0.17	0.19	0.10	0.34	0.17**	0.12
East & West Midlands	0.35	0.16**	0.19	0.02	0.14	0.14
North-West, Yorkshire, North-East	0.16	0.15	0.25	0.22	0.14*	0.24
Wales	0.08	0.20	0.07	0.45	0.18**	0.08
Scotland	0.23	0.21	0.07	0.30	0.17*	0.11
N (individuals)		242			249	
Log-likelihood		−119.05			−111.69	
Pseudo-R^2		0.18			0.24	
Observed probability		0.29			0.28	
Predicted probability at means		0.25			0.22	

The marginal effect is computed at the mean of regressors. For dummy variables it is given for a discrete change from 0 to 1. *: statistically significant at the 10 per cent level. **: statistically significant at the 5 per cent level. 'Low income' is defined as the bottom third of the income distribution, where 'income' is current net household income. The reference categories are: partner employed, owner-occupier, non-working (disabled, unemployed, family carer), has no educational qualifications, lives in London.

The explanatory variables in the models are the characteristics which were presented in Table 3, plus categorical variables summarising an individual's highest educational qualification (which may also be a proxy for previous occupation and skill level), and the geographical region within which the individual lives.

The set of statistically significant associations differs somewhat for men and women. Moreover, in the model for men, fewer variables are statistically significant than in the women's. As the bivariate analysis reported in Figure 5 has shown, the transition from full time work into retirement is associated, for both men and women, with a large and statistically significant increase in the probability of becoming poor following retirement (respectively 30 and 40 percentage points larger than for those who were not employed). This is because people not in employment were much more likely to be poor already; conversely, full time employees are experiencing an abrupt decrease in income when they retire. Women working full time and, to a smaller extent, part time are also more likely to move into low income at retirement than women not in employment. Self-employment is associated – in the case of men – with the largest increase in the probability of becoming poor at retirement.

In the previous section we argued that early retirement can be more or less associated with a transition into low income depending on whether the individual is retiring voluntarily or not, and whether he or she is covered by an occupational pension scheme. In order to account for these various situations, we included among the explanatory variables a dummy for early retirement, another for being a member of an occupational pension scheme, and an interaction between the two. We expected, in fact, that those who retire earlier than the state pension age and are entitled to an occupational pension scheme have a lower risk of becoming poor than other early retirees, and possibly also than the 'regular' retirees. All the estimated coefficients have the expected sign, even if most of them are not statistically significant. For both men and women, early retirement is associated with an increase in the probability of moving into low income (with respect to retirement at or above state retirement age) unless the individual is entitled to an occupational pension, which actually decreases the probability (with respect to both early retirees without an occupational pension and 'regular' retirees). However, the coefficients are not statistically significant. Conversely, being entitled to an occupational pension, irrespective of the age of retirement, decreases substantially the probability of a transition into low income at retirement for women (by 19 percentage points), while this effect is not

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

statistically significant for men. One needs to remember, however, that occupational pension membership is much less common for women than for men.

Household arrangements are important for women, but not for men. Women without a partner are about 26 percentage points more likely than women with a partner of becoming poor following retirement. Interestingly, the working status of the partner is immaterial for women. This applies whether he is in employment or not; his presence makes transition into retirement less risky for the woman, as against the situation in which she is living alone (typically because she is divorced or widowed). Despite not earning a wage, a man who is not in employment is likely to be entitled to benefits or to receive a pension greater than his wife's.

Living in social housing is associated, for both sexes, with a large increase in the probability of becoming poor following retirement (some 36 and 28 percentage points higher than owner-occupiers, for men and women respectively). This is not surprising, given that social housing is likely to be a general proxy for a weak household income potential. Having educational qualifications to A-level standard is associated with a reduction in the probability of becoming poor (though statistically significant only at the 10 per cent level) relative to individuals with no qualifications.

There are statistically significant differences in the chances of becoming poor on retirement which are related to the region in which individuals live. Compared to men who live in London, those living in the South-East and in the East and West Midlands have higher probabilities of becoming poor. For women geographical differences are larger. Everywhere except in the East and West Midlands women have higher chances of moving into low income than women living in London. This probability is particularly high in Wales and in the South-West (45 and 34 percentage points higher than in London).

6. Summary and conclusions

The existence of high poverty rates among older people has been widely documented in the British literature, but mainly on the basis of cross-sectional data sources. By contrast, income dynamics around the time of retirement have received little attention. This paper has gone some way towards filling this shortfall.

We have shown that, on average, retirement is strongly associated with a decline in individuals' economic wellbeing, as measured by

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

household income. This was observed not only for the year of retirement, but also in the years around retirement, in particular the years before. Retirement may therefore be described more appropriately as a 'process' rather than a discrete change in status at one point in time. The increased risk of low income incidence associated with retirement differs between men and women, and varies according to the working status of the individual before retirement. Different paths into retirement produce different outcomes in terms of household income. We have seen, for example, that retirement represents a marked change in status and in income for full time workers (even though this group experiences a smaller low-income risk than other groups, both before and after retirement).

Changes in work status in the years before retirement are a common experience for many individuals. Moves from full time to part time work or from full time to unemployment or disability prior to retirement are associated with subsequent income changes. Low income incidence among those who are unemployed or disabled immediately before retirement is higher than among part time and especially full time workers.

Moreover, outcomes for women and men differ because of differences in pre-retirement work experience and work status changes. Our multivariate analysis has shown that, for men, having worked full time and as self-employed has a strong association with higher probabilities of entering the poorest third of the income distribution on retirement (indicating an abrupt change in current income for these two categories of workers). For women, full time and – to a lesser extent – part time work are also associated with higher probabilities of a large income decrease due to retirement. For women, however, a broader set of variables appears to be significantly associated with the probability of having low income on retirement. In particular, not having a partner increases the risk of becoming poor, as well as not being entitled to an occupational pension.

This paper has shown that analysis of the 'paths' or 'routes' into retirement is informative in understanding movements into low income following retirement. However we have only examined this over a few years prior to retirement (utilising BHPS panel data). One promising direction for research is to use the BHPS retrospective work and job history to extend our observation window on individuals' working lives back over much longer periods. For some early results, see Bardasi and Jenkins (2002).

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

Acknowledgements

ISER receives core funding support from the ESRC and the University of Essex. This research has also received support from the US National Institute on Ageing (subcontract from Cornell University under grant no. PO1 AG9743–08).

NOTES

1 The achieved wave-1 sample comprises about 5,500 households, reflecting a response rate of about 65 per cent of effective sample size. At wave 1, over 90 per cent of eligible adults, approximately 10,000 individuals, provided full interviews. The wave on wave response rate was about 88 per cent for wave 1 to wave 2, over 90 per cent thereafter, and 95 per cent or more in the last couple of waves. For a detailed discussion of BHPS methodology, representativeness, and weighting and imputation procedures, see Taylor (1994) and Taylor (2001).

2 We use BHPS variable wJBSTAT which classifies individuals' self-reported job status into the following categories: employed, self-employed, unemployed, family carer, retired, long-term sick or disabled, on maternity leave, full time student, on a government training scheme, or 'other'.

3 At each interview, individuals are asked to indicate the 'last payment' received for each income source they are currently receiving; for example the amount of salary, pension, benefit of any type, etc. at last payment, as well as the period this amount covers.

4 For further details about the derivation of BHPS net household income variables, see Bardasi *et al*. (1999) and Bardasi *et al*. (2001).

5 Over the period 1991–99 it happens that the bottom fifth of the income distribution includes people whose household income is lower than, roughly, 60 per cent of the current median, one measure of poverty commonly used in Britain.

6 The decrease in the percentage of retired people – as well as not retired and workers – below two-thirds of the 1991 median is expected as a result of the growth of real income over time. When adopting this fixed low income threshold, the percentage of retired who are poor decreases slightly faster than for the other groups.

7 Because of sample size limitations we were only able to divide the sample into four cohorts, those born before 1915, between 1915 and 1924, between 1925 and 1934, and those born after 1934.

8 The decrease over time in low income rates for the oldest cohort can be partly explained by decreasing mortality rates as income increases (see Johnson and Stears 1998). However, if we limit our analysis to women who are always present in the panel during the period 1991–1999, we still observe a decrease in low income rates for the oldest cohort, even if the small sample sizes do not allow us to draw clear-cut conclusions. We do not have enough observations in our sample to follow the evolution of low income rates over the 1990s for the oldest cohort of men.

9 Earnings are net of National Insurance contributions and income taxes. Patterns are very similar if gross earnings and net taxes (income taxes *minus* National Insurance contributions) are separately considered.

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

10 Occupational and private pensions are recorded under 'pension income', while National Insurance pensions are included among 'benefit income'.
11 Of those individuals who make a transition into retirement, only 364 men and 415 women have a non-missing income in the year of retirement and 348 men and 401 women in the year before. In the other years, in addition to the problem of missing values for income, some individuals may not be observed.
12 A stable real income corresponds to a decline in income relative to the population as a whole, because the real incomes of the working population continue to grow as national income grows.
13 A 'family carer' in the BHPS is defined as somebody who is 'looking after family or home'. This is also a self-reported status.
14 Tanner (1997) finds some evidence supporting the joint retirement behaviour of the two partners.
15 The robustness of the results presented in both Figure 3 and Figure 4 has been assessed using only a sample of individuals always present in all years (from -3 to 0 in case of Figure 3 and from -3 to $+3$ in case of Figure 4). Given that no substantial differences arise when restricting the sample in such a way, the results based on the broader sample have been presented.
16 This is consistent with Webb's (1997) finding of a discrete change in male earnings in the run-up to retirement.
17 This restriction, needed to undertake the multivariate analysis (reported below), does not seem to affect the results in any way. There are similar results compared to Table 3 computed using the whole sample of people who retire. Compare for example the percentages 27 and 35 at time -1 and 44 and 44 at time 0 for men and women respectively reported in Figure 5 with the analogous figures of 26 and 34 one year before retirement and 43 and 46 in retirement year reported in Table 3.
18 The occupational pension variable has been derived from responses to two questions. Workers are asked if they have contributed to an occupational pension scheme. This information is available for every individual who worked at least once while observed in the panel. Moreover, once the individual has retired, the source of his or her pension is recorded. Hence individuals who declare that they are receiving an occupational pension must have been members of an occupational pension scheme. The only case in which an individual may erroneously not be detected as a member of an occupational pension scheme is when she or he was never observed as working during the period covered by the panel and does not receive the occupational pension immediately after retirement.
19 The same specification as presented in Table 4 was also estimated for the pooled sample of men and women. We rejected this in favour of the model stratifying by sex using a standard likelihood ratio test.

References

Bardasi, E. and Jenkins, S. P. 2002. *Income in Later Life: Work History Matters*. The Policy Press (for the Joseph Rowntree Foundation), Bristol, forthcoming.

Bardasi, E., Jenkins, S. P. and Rigg, J. A. 1999. Documentation for derived current and annual net household income variables, BHPS waves 1–7. ISER Working Paper 1999–25. University of Essex, Colchester.

Bardasi, E., Jenkins, S. P. and Rigg, J. A. 2001. Documentation for derived current and annual net household income variables, BHPS Waves 1–9. Unpublished paper. Institute for Social and Economic Research, University of Essex, Colchester. (Data available from the UK Data Archive, University of Essex.)

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press

Campbell, N. 1999. The decline of employment among older people in Britain. CASE Paper 19. Centre for Analysis of Social Exclusion, London.
Department for Work and Pensions 2001. *Households Below Average Income, 1994/5–1999/00*. The Stationery Office, London.
Disney, R., Grundy, E. and Johnson, P. (eds) 1997. *The Dynamics of Retirement*. Department of Social Security Research Report 72. The Stationery Office, London.
Ginn, J. and Arber, S. 1996. Patterns of employment, gender and pensions: the effect of work history on older women's non-state pensions. *Work, Employment and Society*, **10**, 3, 469–90.
Goodman, A. and Webb, S. 1994. For richer, for poorer: the changing distribution of income in the UK, 1961–91. *Fiscal Studies*, **15**, 4, 29–62.
Johnson, P. and Stears, G. 1995. Pensioner income inequality. *Fiscal Studies*, **16**, 4, 69–93.
Johnson, P. and Stears, G. 1998. Why are older pensioners poorer? *Oxford Bulletin of Economics and Statistics*, **60**, 3, 271–90.
Johnson, P., Stears, G. and Webb, S. 1998. The dynamics of incomes and occupational pensions after retirement. *Fiscal Studies*, **19**, 197–215.
Meghir, C. and Whitehouse, E. 1997. Labour market transitions and retirement of men in the UK. *Journal of Econometrics*, **79**, 327–54.
Oswald, C. 1999. Patterns of labour market exit in Germany and the UK. Working Paper No. 12. ESRC Research Centre on Micro-Social Change, University of Essex, Colchester.
Quinn, J. 2000. New paths to retirement. In Hammond, B., Mitchell, O. and Rappaport, A. (eds), *Forecasting Retirement Needs and Retirement Wealth*. University of Pennsylvania Press, Philadelphia, PA.
Social Security Committee. 2000. *Seventh Report* (*Pensioner Poverty*), HC606. The Stationery Office, London.
Tanner, S. 1997. The dynamics of retirement behaviour. In Disney, R., Grundy, E. and Johnson, P. (eds) *The Dynamics of Retirement*. Department of Social Security Research Report 72. The Stationery Office, London.
Taylor, A. 1994. Appendix: sample characteristics, attrition and weighting. In Buck, N., Gershuny, J., Rose, D. and Scott, J. (eds) *Changing Households: the British Household Panel Survey 1990–1992*. ESRC Research Centre on Micro-Social Change. University of Essex, Colchester.
Taylor, M. F. with Brice, J., Buck, N. and Prentice-Lane, E. 2001. *British Household Panel Survey User Manual Volume A: Introduction, Technical Report and Appendices*. Institute for Social and Economic Research, University of Essex, Colchester.
Webb, S. 1997. Income dynamics: evidence from the Retirement Survey. In Disney, R., Grundy, E. and Johnson, P. (eds) *The Dynamics of Retirement*. Department of Social Security Research Report 72. The Stationery Office, London.
Zaidi, A., Rake, K. and Falkingham, J. 2001. Income mobility in later life. SAGE Discussion Paper No. 3. The London School of Economics, London.

Accepted 1 February 2002

Address for correspondence:
Elena Bardasi, Institute for Social and Economic Research,
University of Essex, Colchester CO4 3SQ, UK
e-mail: ebardasi@essex.ac.uk

https://doi.org/10.1017/S0144686X02008632 Published online by Cambridge University Press