

Income in later life

Work history matters

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Incomes in later life and work history

This is a study about the relationships between people's incomes in later life and their employment histories. The research was motivated by a number of developments for older people in overlapping dimensions of their lives – work, income, family – and in particular by the combination of changing retirement patterns and growing inequality in the income of retired groups. Such trends, susceptible to the influence of government policy, include the following:

- Employment rates have been falling, especially for older men. Two fifths of men aged between 55 and 65 were without work in 1997, compared to one fifth in 1979, and older women have not shared in the general rise in female employment (Campbell, 1999).
- The shift from work by older men reflects a mixture of voluntary decisions and constrained choices. Those leaving the labour market have been drawn from both relatively well-off workers who can afford to do so (for example, because of occupational pensions), and also those from the 'bottom' of the labour market. Rates of labour market withdrawal were slower for the first group than the second (McKay and Middleton, 1998; Blundell and Johnson, 1999; Campbell, 1999; Oswald, 1999).
- Although, on average, pensioner incomes have improved relative to the rest of the population, poverty in old age remains a problem. Pensioners with low incomes tend to be women rather than men, to have been retired a long time, and to be single, especially widowed, separated or divorced (Johnson and Stears, 1995; Pension Provision Group, 1998; DSS, 1999).
- Income inequality among pensioners grew substantially during the 1980s following a two-decade decline. The main reasons were the growth in personal pension incomes and high real rates of interest increasing investment incomes – of disproportionate advantage to those who were already relatively well off (Johnson and Stears, 1995). The same polarisation has also been observed for early retired men, with important differences between those receiving much of their income from occupational pensions, and those dependent on health-related benefits or Income Support (Atkinson and Sutherland, 1995).
- There are continuing doubts about the capacity of the state retirement pension to provide adequate living standards in old age. There has been consideration of the extent to which government should increase the basic pension or instead make more use of means testing (as in the pensioner Minimum Income Guarantee). There is ongoing discussion of the form that second-tier pensions should take, and the role of the state. The current government will replace the State Earnings Related Pension Scheme (SERPS) with the new State Second Pension (SSP) from 2002, aiming to target additional resources at carers and those on incomes up to £10,000 per year. Stakeholder pensions were introduced in April 2001, designed to provide a second-tier pension for those on moderate incomes who are unable to join an occupational scheme or for whom personal pensions are not suitable (DSS, 1998; Pension Provision Group, 1998, 1999; 1999 Welfare Reform and Pensions Act; 2000 Child Support, Pensions and Social Security Act).

There are important gender- and family-related aspects of the issues cited above, including differences in poverty rates between older men and women, and differences in lifetime work attachment. For women, dependence on income from partners (or the government) remains

particularly important, and the conjunction of work career patterns and the possibility of divorce (the risk of which continues to rise) increases the chance that women will not secure adequate retirement pension rights. The introduction of pension sharing on divorce reflects this (1999 Welfare Reform and Pensions Act).

The starting point for the current research was the observation that the employment and income patterns cited above refer mostly to average trends over time using cross-sectional data. They do not reveal the potential diversity of changes and transitions over time for different types of individual – to examine these requires longitudinal data. Nor does existing evidence refer explicitly to the links between individuals' labour market histories and incomes. One reason the links were not discussed was, to a large extent, because suitable data were not available at the time – but they are now.

The topics addressed

Against this background, we aim to fill some of the gaps in knowledge about the relationships between older people's income, retirement and work history using British Household Panel Survey (BHPS) data. We address three questions:

1. Have the trends in employment and income cited earlier continued during the 1990s, and to what extent are employment and income for individuals in their 50s similar to those for individuals of pension age?
2. How does income change in the years around retirement?
3. What is the relationship between an individual's income in old age and their employment history during their working life?

Our answers to the first question provide background material for the longitudinal analysis used to address the second and third questions. Much of the statistical underpinning to the situation described earlier was based on data that did not cover all the 1990s. It is therefore of interest to examine whether patterns and trends persisted through the decade. We consider the position of individuals of pension age (men aged 65+ and women aged 60+), and contrast them with individuals aged 50-59 years. With the

secular trend towards retirement at earlier ages, from the age of 50 onwards, it is of interest to know the extent to which outcomes for individuals in their 50s have become more like the outcomes for individuals of pension age.

The stereotype of retirement as an abrupt change accompanied by a switch from reliance on earnings to reliance on pension income has been changing. The use of bridge jobs has been increasingly mentioned. However, a full and proper assessment of the role of bridge jobs in the retirement process requires information about whether bridge job strategies succeed in smoothing the transition in living standards around retirement. We contribute to this topic by examining the extent to which income changes in the years surrounding retirement are gradual or abrupt.

Information about income transitions during the retirement process is scarce (Barker and Hancock, 2000). Instead, existing longitudinal research about the process of labour market withdrawal at older ages has mainly emphasised the diversity of transition patterns across individuals (Tanner, 1997; Campbell, 1999). Webb (1997), using the Retirement Survey, focused on what happened to an individual's personal income sources when he or she retired, rather than the income of the household as a whole (which provides a better measure of an individual's living standards). We exploit the richness of BHPS data, and describe changes in both household and personal incomes.

Regarding the third question, there is widespread interest in the extent to which income differences in old age reflect differences in work patterns throughout working lives. This concern underlies the whole pensions debate mentioned earlier. But there has been relatively little quantitative research explicitly relating post-retirement outcomes to lifetime work history patterns, even though the issues have long been known. See, for example, Atkinson (1973) and Titmuss (1955) who famously described Britain as having 'two nations in old age'. Titmuss distinguished between a relatively well-off group benefiting from occupational pensions and with savings, and a relatively poor group receiving the basic state pension and dependent on means-tested social assistance to maintain income. Accumulation of occupational pension rights and savings is, of course, largely contingent on occupation and earnings during the working life.

Given the growing prevalence of withdrawal from the labour market prior to the state retirement age, a question of particular interest pertaining to this trend is the extent to which early exit is associated with disadvantageous outcomes for income in old age. Put another way, and to use the title of the Joseph Rowntree Foundation initiative, to what extent do transitions after 50 affect the chances of having a relatively low income later in life?

To relate income in old age to work history requires longitudinal data sources with data about incomes and work history. Two data sources are now available: the 1994/95 Family and Working Lives Survey (FWLS) and the BHPS. McKnight (1998), using the FWLS, focused on those still working rather than older people, and did not look at outcomes in terms of income as we wish to do. The study closest to ours is Stewart (2001). He investigated the link between work-life earnings and the poverty and wealth of pension-age male respondents to wave 5 of the BHPS. Stewart derived synthetic work-life earnings profiles by matching in New Earnings Survey data about average earnings among groups defined by age, gender, part-time versus full-time status, and occupational group. In our research – which looks at men and women – we also use the BHPS retrospective work-life histories but characterise individuals' working lives in terms of the time spent in various occupational groups during the working life. We also examine whether early exit from the labour market in the decade after age 50 has an additional effect on incomes in old age. Finally, rather than examining the risks of having a low income relative to the population as a whole at a point in time as Stewart did, we examine the risks of having a low income relative to other older individuals, where income is based on a three-year average in order to smooth out transitory income blips. We use income data from nine waves of the BHPS. Meadows (2001) studied the relationship between early retirement and income in later life using the Family Resources Survey (FRS). Compared to our study, she has larger sample sizes and uses a larger number of income measures. However, the information about work history in the FRS is very limited compared to the BHPS, which constrains any conclusions that may be drawn.

Organisation of the study

Chapter 2 provides background facts about the employment and incomes of older people. We extend the picture about patterns and the trends cited at the beginning of this chapter, considering in particular whether the same description held true for the 1990s. The main focus is on the experience of individuals of pension age but, given the trend towards earlier retirement, from age 50 onwards, we also provide a picture of those aged 50-59.

Chapter 3 addresses the question of how incomes change in the years preceding and following the year an individual retires. The nature of the relationship between an individual's income in old age and his or her employment history during his or her working life is considered in Chapter 4. Chapter 5 contains a summary and conclusions.

The findings are based on analysis of the BHPS. The survey, and our definitions of income and some other variables, are described in Box 1.

An earlier and much longer version of this report, containing many more details of the research, is available from <http://www.iser.essex.ac.uk/staff/ebardasi.php>.

Box 1: The British Household Panel Survey and some key definitions

The research reported here is based on data from interview waves 1-9 of the BHPS, corresponding to survey years 1991-99. The first wave of the BHPS was a nationally representative sample of the population of Great Britain living in private households in 1991. Original sample respondents (including both partners from dissolved partnerships) have been followed and they and their co-residents are interviewed subsequently at approximately one-year intervals. The first wave of interviews took place in the Autumn of 1991, and subsequent interviews were also held in the Autumn, the modal interview months being September and October. For more information about the BHPS sample design, representativeness and methods, see Taylor (2001).

We report information about the income sources received by individuals personally, for example their earnings, their occupational pension or their state retirement pension. But to measure an individual's living standards – referred to in this report as 'income' – we look at the total income of the household to which a person belongs, in other words aggregating all income sources from all household members, and then adjusting the total to account for differences in household size and composition ('equivalising'), and for inflation. This income definition ('equivalised net income, before the deduction of housing costs') is very close to one used in the Department for Work and Pensions' Households Below Average Income reports and in much analysis elsewhere. Income refers to current income rather than annual income, in other words income in the period just prior to the annual interview rather than income

for the whole of the preceding year. Incomes were expressed in pounds per week at January 1998 prices. The equivalence scale used was the 'McClements before housing costs' scale. For more detailed discussion of the income definition, see Bardasi et al (1999, 2001) and Department for Work and Pensions (2001).

Personal characteristics – for example, age, employment status and household type – refer to characteristics measured at the time of the annual BHPS interview. The information about respondents' work histories used in Chapter 4 comes from two types of source. The first type is the retrospective history questions that were asked at wave 2 (1992) and wave 3 (1993). The former focused on spells of employment and unemployment, whereas the latter asked about occupation. In each case the information covered the period from the end of formal education through to the date of the wave 2 or wave 3 interview. The second source of information is the questions asked at each subsequent annual interview, asking about work during the year preceding the interview. In both sources, spells are recorded in monthly units. By splicing the sources of information together, a complete history can be built up for each individual covering the working life up until the year of the (then) current interview. For more information about the construction of the BHPS work history files, see Halpin (1997).

Individuals described as being 'of pension age' are those aged 65+ years (men) or aged 60+ years (women).

The employment and incomes of older people

Our aim in this chapter is to examine in more detail the patterns and trends cited in Chapter 1, with a particular focus on the 1990s. In particular, have these patterns persisted?

Employment and economic activity rates among older people

The first issue that we consider is whether the decline in employment rates among older people, noted by Campbell (1999) and others, continued through the 1990s. We defined individuals as being employed if they were in paid work in the week prior to the interview, or if they were not in paid work but had a job that they were away from (because of illness, holiday and so on).

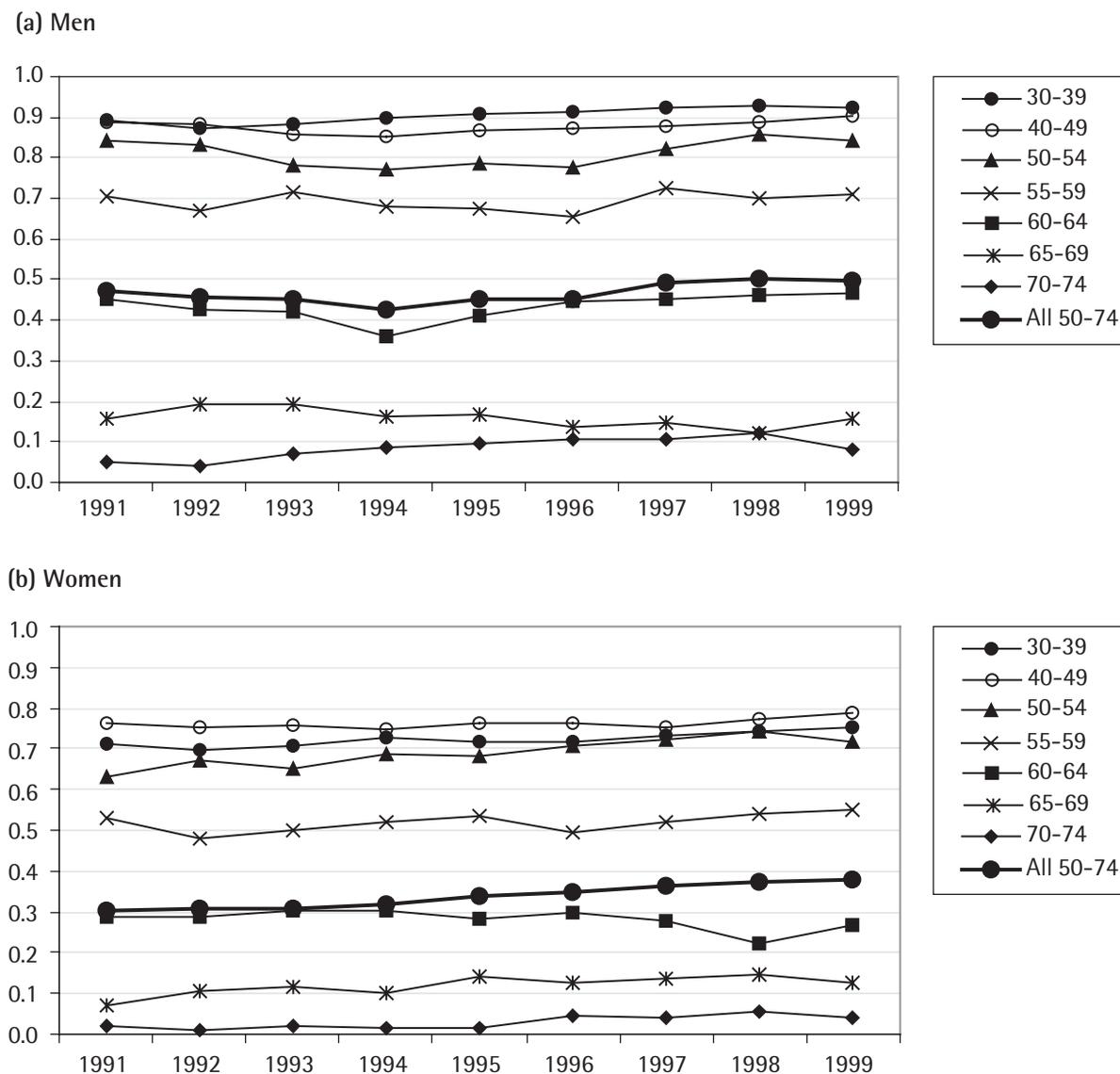
There is no clear evidence from the BHPS that the decline in men's employment rates (mainly during the 1980s) continued through to the end of the 1990s – see Figure 1, which shows trends in employment rates broken down by age group, shown separately for men and women. Looking at men aged 50-74, there appears to have been a dip of a few percentage points during the mid-1990s but, by 1999, the employment rate had returned to about one half. This pattern was mimicked, more or less, among all those aged 50+. Among women aged 50-74, there appears to have been an increase in employment rates over the 1990s, from around 30% in 1991 to around 40% in 1999. Most of this increase was accounted for by the increasing participation rate among women aged 50-54. There appears, however, to have been some decline in the employment rate of women aged 60-64 in the late 1990s. The chart also shows employment rate trends for 30- to 39-year-olds and 40- to 49-year-olds, and these series showed no significant trend over time for men or

women. Overall, and with the exceptions noted, it appears that employment rates did not change dramatically between the start and end of the 1990s for most groups.

We also looked at trends in rates of economic activity over the 1990s. (Individuals who were 'economically active' were those in the labour force: a combination of those in paid work – as in Figure 1 – and those who were unemployed – not currently working but looking for work.) The trends were virtually identical to those shown in Figure 1. Labour market inactivity among older people is commonly used as a measure of retirement from the labour market; indeed, it is the definition that we use in Chapter 3. We can therefore say that there was hardly any increase over the 1990s in the proportions of older men who were retired, and some decrease in the proportions for older women.

Charts such as Figure 1 may not provide the full story about the relationship between age and employment (or economic activity) and its trend over time. When those aged 50-54 in 1991 turned 60, their labour market behaviour may have differed from the labour market behaviour of those who were already over 60 in 1991. An additional perspective may be gained by looking at breakdowns of employment rates by birth cohort and age. (For the breakdowns by cohort, we defined five groups depending on whether an individual's birth year was in the interval 1924-28, 1929-33, 1934-38, 1939-43, or 1944-48. [An interval shorter than five years could not be used in the definition without compromising sample numbers within each cohort.] Over the nine years of the panel, 1991-99, the oldest cohort was aged 65-73 years, the next oldest was aged 60-68, and so on for the other cohorts. The youngest was aged 45-53 years.)

Figure 1: Proportion in employment, by age group (1991-99)



Our analysis indicated that employment rates decline, and at an increasing rate, from around age 50 onwards, only levelling out again at a rate around 10% when individuals reach their mid-60s. This pattern is much the same for both men and women, except that the speed of decline in employment rates around age 60 is higher for men than women. But for both sexes, it is clear that the decline is gradual, rather than a sharp drop around the state retirement pension age. Clear differences between cohorts were hard to distinguish but some patterns stood out. Among men, the cohort born 1929-33 appears to have lower employment rates than the cohorts born before and after it. (The 1929-33 cohort were in their early 60s around the beginning of the 1990s and so the result may reflect the sharp recession at that time.) And for the youngest cohort (born

1944-48), for both men and women, employment rates appear to be higher than for all older cohorts. When we looked at age-cohort breakdowns of economic activity rates, there were much the same patterns as for employment rates.

In summary, three findings stand out. First, the decline in the employment rates of older men during the 1980s did not appear to have continued throughout the 1990s, and older women's employment rates increased somewhat over the period. Our findings, focusing on the 1990s, are not inconsistent with Campbell's (1999), who emphasised declining employment rates, because many of his comparisons were over a longer period (1997 was compared with 1979). Second, differences between cohorts are

difficult to distinguish, with the clearest finding being a higher employment rate for the youngest cohort (born 1944-48) compared to older ones. Third, the results are consistent with earlier work suggesting that labour market withdrawal is a process that starts well before the state retirement pension age for many individuals.

The incomes of older people

Our particular interest is in the distribution of income among older people, and so in this section we shall only briefly discuss how the incomes of older people compare with the incomes of the population as a whole. (See Box 1, Chapter 1, for the definition of 'income'.)

Older people compared with the population as a whole

We began by looking at trends in real income levels over the 1990s, contrasting the experience of individuals of pension age, those aged 50-59, and all persons in the population. (One quarter of the population have an income less than the lower quartile [which is the 25th percentile], half the population have an income less than the median [the 50th percentile], and three quarters of the population have an income less than the upper quartile [the 75th percentile].) Pensioners remained poorer than the rest of the population. In 1999 the median pensioner income was £218 per week, but among the population as a whole the median was 27% higher, £277 pounds per week. It was higher still among those aged 50-59: the 1999 median was £333 per week.

Although all three groups experienced rising real income levels throughout the 1990s, and throughout the income distribution, income growth was greatest for pensioners. The growth in median income between 1991 and 1999 was 19% for the population as a whole and 20% for those aged 50-59, but 30% for pensioners. The bottom quartile and the upper quartile of the pensioner income distribution also grew at a faster rate (26% and 29% respectively) than the corresponding rates for the 50- to 59-year-olds (19% and 18%) and the population as a whole (21% and 18%). The overall picture for the 1990s, therefore, is of pensioners catching up with the rest of the population.

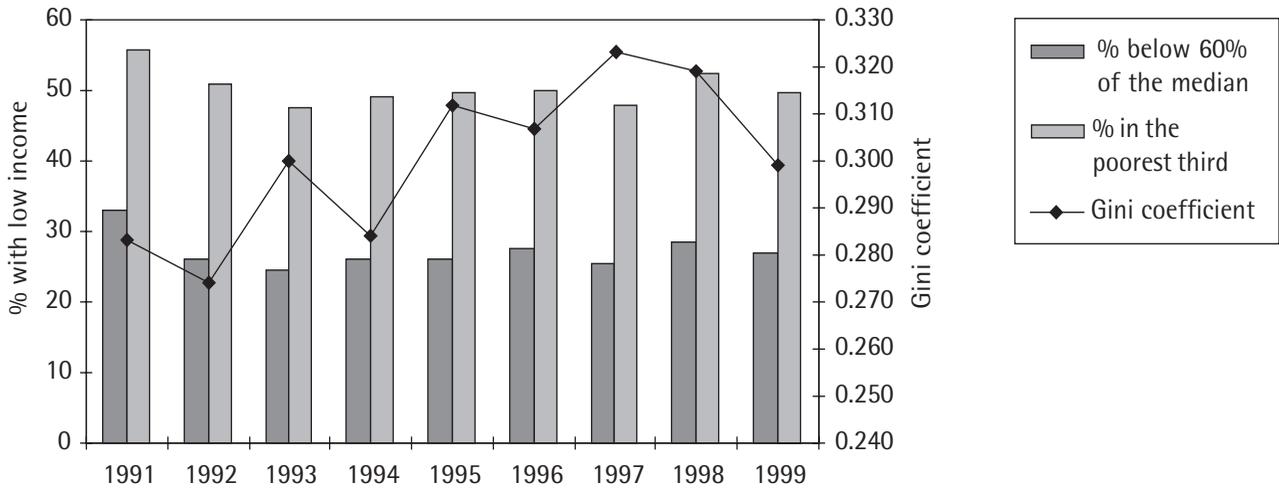
The growth of the upper quartile was much the same as the growth of the lower quartile for both the population as a whole and for 50-59-year-olds, but was greater among pensioners (29% compared with 26%). This suggests that income inequality rose among pensioners but remained much the same among the other two groups. This is confirmed by examination of an alternative index of inequality, the Gini coefficient – see Figure 2. (Higher values of the Gini coefficient imply greater inequality. The index takes values between 0 [when all incomes are equal] and 1 [when inequality is at a maximum].) Estimated values fluctuated between one year and the next for all groups – in part a reflection of sampling variability. However, for both the population as a whole and for 50- to 59-year-olds, the index showed no trend over the 1990s, whereas there was some rise in inequality among pensioners. As a consequence, income inequality among pensioners increased over the decade from being less than that among 50- to 59-year-olds to being slightly greater, and almost reached the same degree of inequality as among the population as a whole.

Figure 2 also shows the prevalence of low income over the 1990s for the three groups. When we took the low-income cut-off to be 60% of median income (among the population as a whole) – a threshold increasingly used in Britain, and also for European cross-national comparisons – we found that low-income rates were essentially stable over the decade as a whole. Nearly 30% of pensioners had a low income (somewhat more in 1991), but only approximately 10% of 50- to 59-year-olds and approximately 20% of the population as a whole. When we used an alternative definition of low income – being in the poorest third of the income distribution for the population as a whole – the prevalence of low income among pensioners was higher, but there was a similar (lack of) trend. With this definition, about one half of all persons of pension age had a low income. The relatively large increase in pensioner low-income rates that arose from switching to the higher threshold occurred because there was a concentration of pensioners in the income range between the low-income cut-offs.

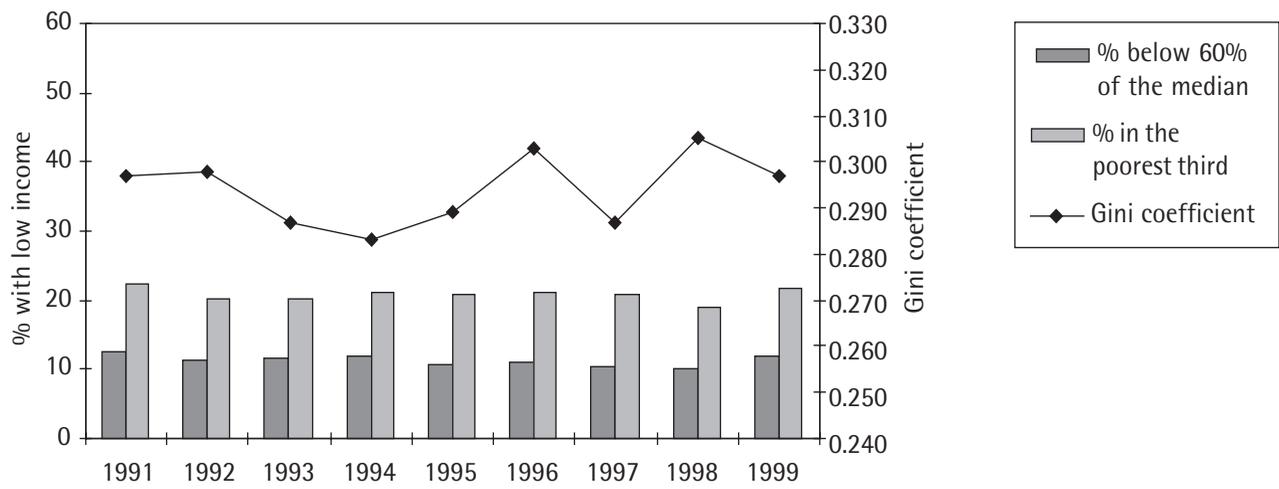
For our final analysis of the income distribution of older people relative to other groups, we examined the composition of the poorest fifth of the income distribution for the population as a whole. Single pensioners or individuals living in

Figure 2: Percentage of individuals with low income (left-hand scale) and Gini coefficient (right-hand scale) (1991-99)

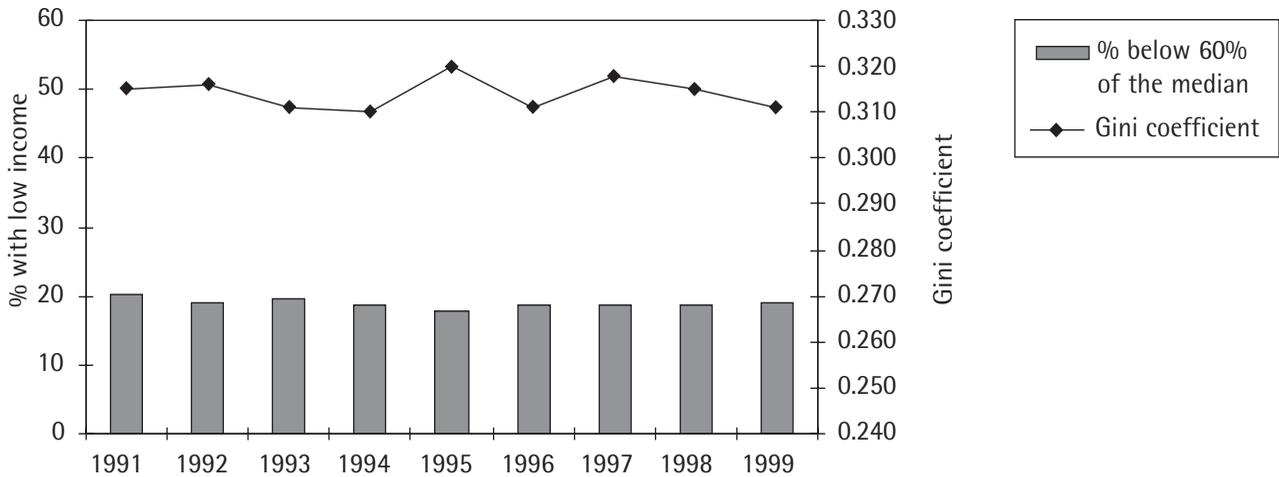
(a) Individuals of pension age (men aged 65+, women aged 60+)



(b) Individuals aged 50-59 years



(c) All individuals



a pensioner couple comprised more than one third of the poorest fifth throughout the 1990s but they only made up about one fifth of the population as a whole. (A pensioner couple contains a family head of pension age plus at least one other individual. These additional family members need not be of pension age [though most are].) Pensioners were therefore over-represented at the bottom of the income distribution. There was little trend in these figures throughout the 1990s. The fraction of the poorest fifth accounted for by single pensioners was remarkably constant, at about one fifth. The small variations that there were, were attributable to changes for individuals from pensioner couple families rather than single pensioners.

Breakdowns by age provided a slightly different perspective. We found that individuals aged 60+ accounted for 29% of the poorest fifth in 1991, but 25% of the poorest fifth in 1999, with a slight decrease in the first part of the decade and then an increase in the intervening years. They made up about 17% of the population throughout the period. Over-representation among the poorest fifth was mostly due to the situation of those aged 70+ rather than those aged 60-69. There were about twice as many individuals aged 70+ in the poorest fifth as there were in the population as a whole. By contrast 60- to 69-year-olds were not over-represented in the poorest fifth. And there were about half as many individuals aged 50-59 in the poorest fifth as would be expected on the basis of their numbers in the population as a whole.

To summarise, we have confirmed that pensioners in the 1990s were generally poorer on average than the population as a whole, and were over-represented at the bottom of the income distribution. This has long been the case. What was interesting about the 1990s, however, was that real income growth among pensioners was greater than for the population as a whole. So there was some improvement in relative income position. Taking 50- to 59-year-olds as a group, they were better off than the population as a whole on average.

The income distribution among persons of pension age

We now turn to an analysis of the income distribution among pensioners and among 50- to

59-year-olds. We first took the distribution of income among all individuals of pension age and looked at the composition of household income in each fifth of the distribution, from poorest to richest. From this breakdown one can see that the principal income sources such as labour earnings, investment or pension income differ for the relatively rich and the relatively poor. (We pooled data for all nine waves of the BHPS [1991-99]. This does not distort the results because there were no great changes in the shape of the pensioner income distribution over the 1990s.)

Average income among the poorest fifth of pensioners was about one quarter the size of the average income among the richest fifth. What drove these differences were differences in labour earnings, personal and occupational pension income and investment income. They were not due to benefit income (which was mainly state retirement pension income).

Only 5% of pensioners in the poorest fifth had labour earnings but more than 40% of the richest fifth. Median net earnings among recipients ranged from £28 per week in the poorest fifth to a figure eight times larger for the richest fifth, £226 per week. Not surprisingly, many more pensioners had occupational or personal pensions as a source of household income than had earnings. Even among the poorest fifth, almost 40% received some pension income. But among the richest fifth, the fraction was twice as high. And among those who did receive some, the median amount was about nine times larger than the median among recipients in the bottom quintile: £189 per week compared to £19 per week. Investment income was even more commonly held than occupational or personal pensions: 60% of the poorest fifth had some and over 90% of the richest fifth. But, once again, there were large differences in the average amount held among those who had any. Absolute differences between the richest and poorest pensioners were less than for the non-benefit income sources, but in relative terms the differentials were even larger. Median investment income for those in the richest fifth of pensioners was £51 per week, 17 times greater than the median for recipients in the poorest fifth (£3 per week).

The difference in relative importance of the various income sources is underlined in Figure 3. This shows, for each quintile group, the share in

total household income of each income source. Benefits made up most of the household income package for the poorest fifth (labelled 'Q1' in the figure), but its share in the total decreased markedly as one moves up the income distribution. What took its place were net labour earnings, investment income, and – most noticeably – personal and occupational pensions.

The overall picture suggested is of an income inequality in old age that reflects differences generated earlier in life. Differences in occupational and personal pensions, for instance, are the most obvious link with current income outcomes and work-life histories, especially past earnings. To the extent that this is so, one might expect that the differentials discussed would already have begun to reveal themselves among individuals aged 50-59. Is this so?

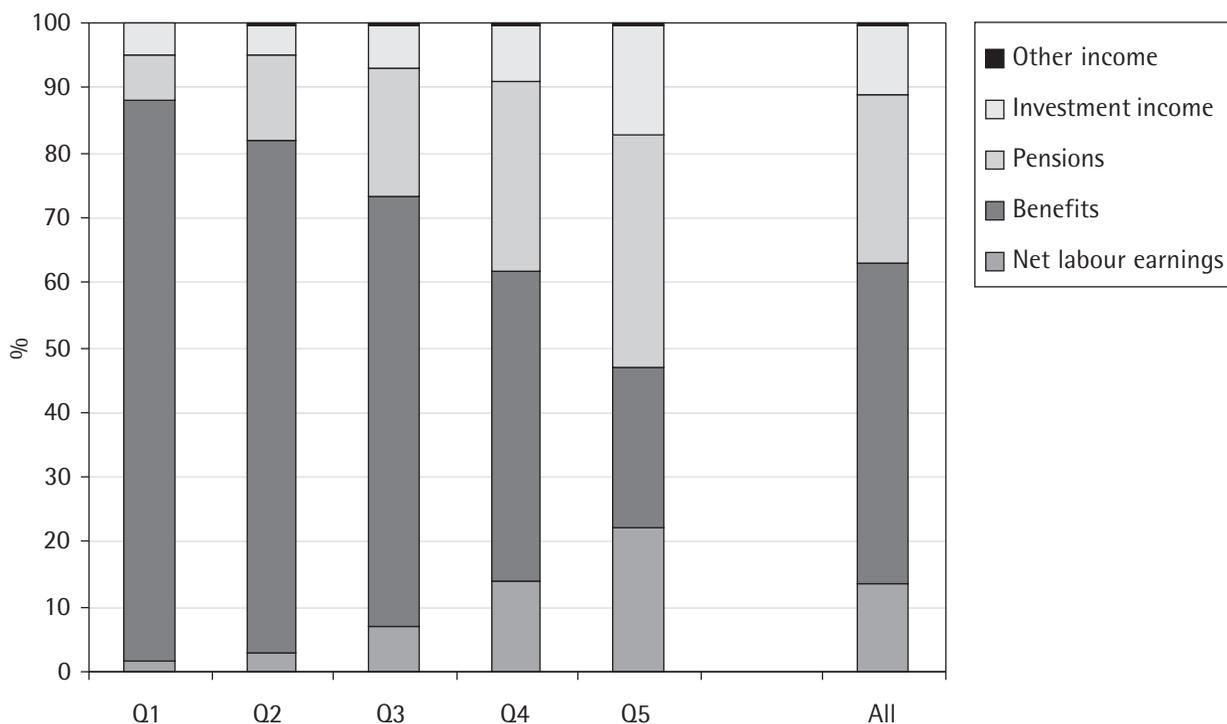
The income distribution among persons aged 50-59

The evidence was consistent with this hypothesis. The greatest differences between income groups were related to differences in labour earnings and benefits rather than other sources – as one might

expect (as most pensions cannot be drawn on at that age). The share of net labour earnings plus benefits in total household income was around 80% for all quintile groups, with only a small increase in share going from the poorest fifth to the richest fifth. However, benefits for those in the poorest fifth made up more than one half of the sum of these two sources, whereas the share of benefit income in the total was negligible for those in the richest fifth. The shares of pension income in total income were also fairly similar across income groups. The share of investment income, however, was markedly higher in the richest fifth compared to the other groups (10% compared to about 5%).

Although differentials in occupational and personal pensions and investment income across income groups were more muted for 50 to 59-year-olds than pensioners, they were already present nonetheless. For example, even though the proportion of individuals with household income from occupational or personal pensions varied relatively little by income group, the differences in amount received among those receiving any were large. The median amount for the poorest fifth was £38 per week, but £147 per week for the richest fifth.

Figure 3: Income sources as a share of household income, persons of pension age, by quintile group



Notes: Q1 is the poorest fifth of the population; Q5 is the richest fifth. 'Benefits' include state retirement pension. 'Pensions' include personal and occupational pensions. Council Tax deductions excluded from calculations. Pooled data, BHPS waves 1-9.

Summary

We began this chapter by asking two questions – whether trends and patterns identified in earlier research persisted throughout the 1990s, and also whether, with the trend to earlier retirement, the position of 50- to 59-year-olds was increasingly looking like that of individuals of pension age. Our answer to the first question is ‘yes and no’. We have shown that employment rates for older people were much the same at the end of the decade as at the beginning, rather than continuing to fall. Older people continued to be over-represented at the bottom of the income distribution for the population as a whole, but this was combined with some improvements in relative position. For instance, income growth during the 1990s among individuals of pension age was greater than for the population as a whole. But among pensioners themselves, income inequality increased over the period. It remained the case that better-off pensioners were most likely to derive significant income from occupational and personal pensions and investment income, and the worst-off pensioners relied mostly on the state retirement pension and other benefits.

Our answer to the second question is also ‘yes and no’. Despite the trend towards earlier retirement, it cannot yet be said that the income distribution of individuals aged 50-59 resembles the distribution of income among individuals of pension age. This is because the number of people retiring in their 50s is still a relatively small proportion of all 50- to 59-year-olds. Average incomes among 50- to 59-year-olds were much higher than among pensioners, and indeed higher than among the population as a whole. And income inequality was much the same as among the population as a whole, which also meant that it was somewhat less than inequality among pensioners by the end of the 1990s.

What is more correct to say is that there were patterns apparent for the income distribution among 50- to 59-year-olds that foreshadow what we observed for individuals of pension age. The poorest 50- to 59-year-olds derived most of their income from benefits, the richest derived most of theirs from labour earnings and this will mean inequality persisting into old age since occupational and personal pension entitlements are related to earnings-related contributions. In

fact there were already signs of this, in the sense that the average occupational and personal pension income among the richest fifth was already three times the average amount received by the poorest fifth.

3

Income changes around the time of retirement

In this chapter we consider the extent to which an increased risk of low income is associated with retirement from the labour market, and explore the changes in receipt of different income sources (pensions, benefits, and so on). We look at changes in both household income and in incomes received personally by the individuals interviewed. The focus is on income changes in the years immediately preceding and immediately following the onset of retirement. This is a short-term perspective on income changes in later life and may be contrasted with the longer-term perspective taken in the next chapter (where we relate income in later life to whole work histories). Here we are particularly interested in whether income changes in an abrupt fashion around retirement or whether it changes more gradually and smoothly. A standard presumption is that individuals prefer the latter path to the former, other things being equal. (For a full picture about the extent to which individuals manage to maintain living standards in the transition from working to retirement age, we would also like to have had information about changes in consumption, but suitable longitudinal data are not available.)

The analysis was undertaken first using samples of men aged at least 60 years and of women aged at least 55 years. The minimum age restriction was intended to ensure that the withdrawal from the labour market that we observed represented a relatively permanent withdrawal from the labour market. Second, we repeated the analysis using men and women aged 50-59 as the population 'at risk' of retirement. Given the trend towards early retirement from age 50 onwards, it is of interest to examine the consequences for income of retirement during people's 50s, and the extent to which the consequences were similar to those for older people.

We defined an individual to be retired if he or she was not in paid work and was not searching for work. Hence a transition into retirement was observed when an individual moved from being economically active (in paid work or unemployed) to economically inactive. (There are many variations on this definition that could have been used. We experimented with a number of them and they did not change our general conclusions substantively. See, for example, Bardasi et al [2002: forthcoming] who used a definition of retirement based on BHPS respondents' self-reported assessments of their labour market status.) A small number of individuals re-entered the labour market after withdrawal from the labour force, and they were retained in the analysis. The modal ages at which individuals retired were the state retirement pension age (65 for men, 60 for women). There were, however, many transitions into retirement at ages before and after these ages, indicating a heterogeneity in retirement trajectories.

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 the figures that follow – 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, and so on, and the years following the retirement year were labelled 1, 2, 3, and so on.) Having identified all the individuals that retired, we then 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 the data across individuals for each year before and after the retirement year. (An alternative

approach would have been to create a taxonomy of retirement trajectories and to compare the income changes for each trajectory. This is infeasible because the number of different trajectories was too large and so the cell sizes were too small. Tanner [1997] also drew attention to the heterogeneity in retirement trajectories.) Sample sizes were largest for the years closest to the retirement year. We only report results for which calculations were based on at least 50 individuals (30 individuals in the descriptions of personal income changes).

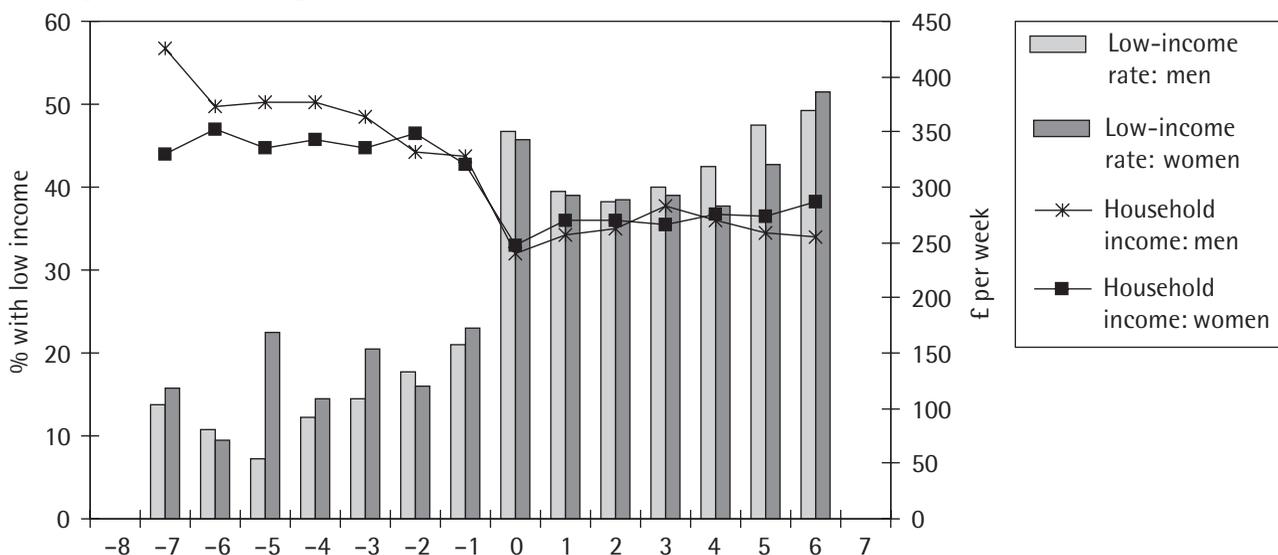
Men aged 60+ and women aged 55+: income changes around retirement

The vast majority of individuals were in paid work (rather than unemployed) in the years immediately preceding labour force exit – around 90% of men and women. A small number of individuals re-entered the labour force subsequently. Among those who were working prior to retirement, the numbers of hours worked showed a small steady decline over the years leading up to retirement. The average number of hours worked for men fell from 36 hours per week seven years prior to retirement to 33 hours in the year prior to retirement and, for women, the decrease was from 27 hours per week to 23 hours.

Changes in household income

The changes in household income that occurred during the process of labour market withdrawal are summarised in Figure 4. We show changes in household income levels, together with changes in the proportion with a low income – defined as having a household income in the poorest third of the income distribution of the population as a whole in the year in question. The figure shows that there was a distinct fall in income levels associated with the transition into retirement: the decrease was on average between £80 and £90 pounds per week for both men and women. Since women's incomes were fairly constant in the years preceding retirement but men's had been declining, retirement was associated with a sharper income fall for women than for men. After retirement there was a slight recovery in household income levels for both sexes, but there remained a substantial gap between pre- and post-retirement incomes. These changes in income levels also changed the position of the retirees in the income distribution of the population as a whole. In the years leading up to retirement, one fifth or fewer were in the poorest third of the overall income distribution of the population as a whole but, after retirement, the proportion jumped to between 40% and 50%.

Figure 4: Average household income and the risk of low income in the years around retirement, by sex (men aged 60+, women aged 55+)



Notes: A low income is an income in the poorest third of the all-persons income distribution in the relevant year. The horizontal axis shows time, measured in years, normalised so that year '0' is the year in which individuals were first observed to be retired (see p 12 for details).

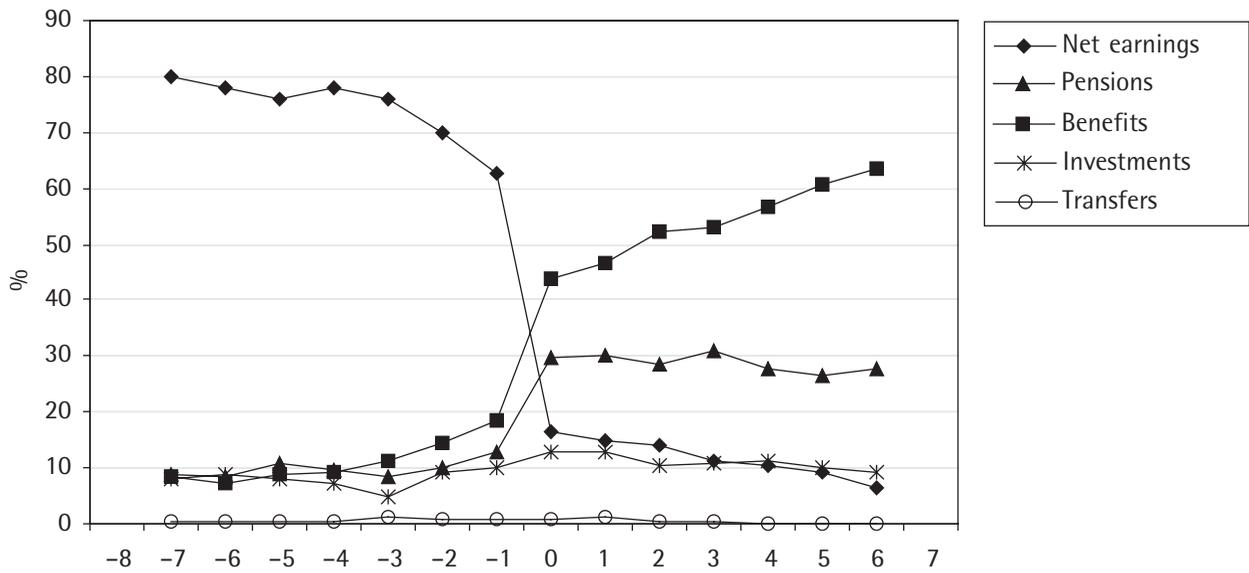
Alongside the changes in income levels, there were changes in the composition of household income, see Figure 5. For both sexes, the retirement process involved a gradual replacement, in the years leading to the retirement year, of labour earnings with income from other sources, with a more marked change in the year of transition itself. Net labour earnings comprised about 60% of household income in the year before retirement, but only

20% in the year after retirement, with a further gradual decline to about 10% after a further five years.

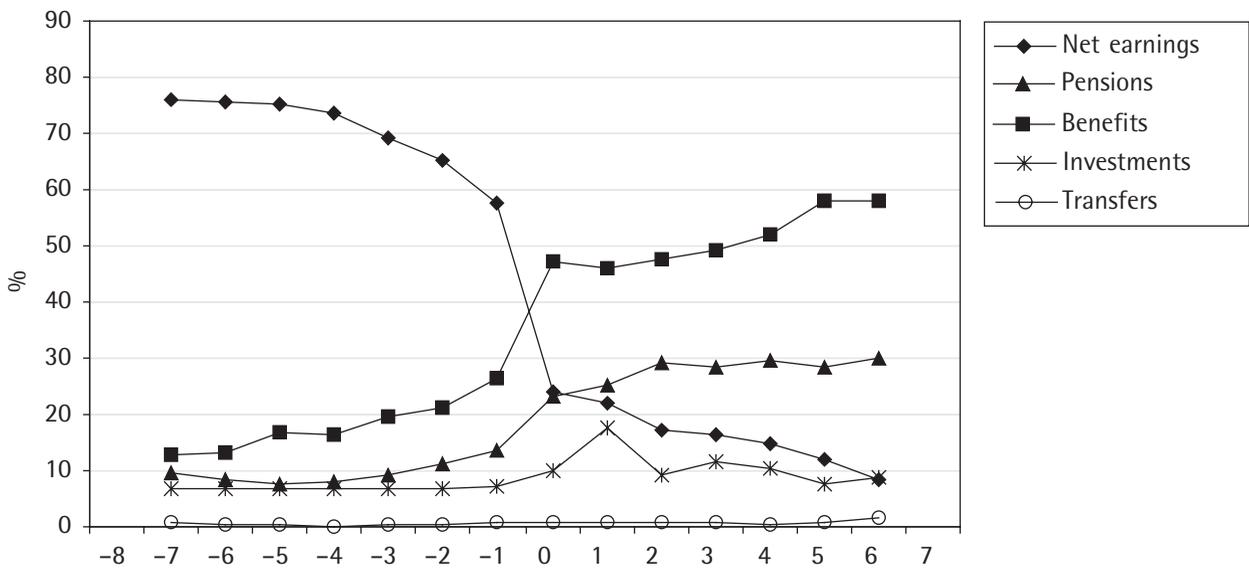
After retirement the income source that increased the most was benefit income – most of which was income from the state retirement pension (to be discussed later) – and this source continued to rise in importance in the years following retirement. For men, benefit income increased

Figure 5: Changes in the composition of household income in the years around retirement, by sex (men aged 60+, women aged 55+)

(a) Men



(b) Women



Notes: The horizontal axis shows time, measured in years, normalised so that year '0' is the year in which individuals were first observed to be retired. 'Benefits' include the state retirement pension. 'Pensions' include personal and occupational pensions. 'Transfers' refer to private transfers. Council Tax deductions are excluded from calculations. Pooled data, BHPS waves 1-9.

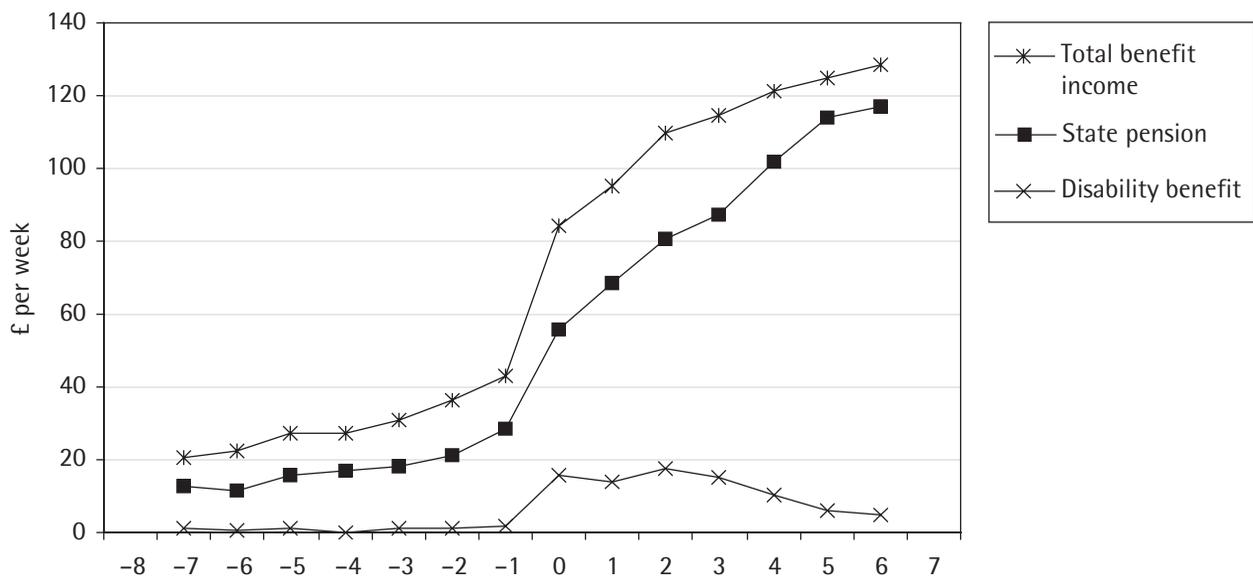
from between 10% and 20% of total income prior to retirement to around 40% in the retirement year and to 60% in the fifth year after retirement. For women, the corresponding changes were from around 20% prior to retirement, to 50% in the retirement year and 60% five years later. Personal and occupational pensions formed a steady 30% of total income in the years following retirement, having increased their share from about one tenth in the preceding years. Incomes from investments and savings changed relatively little in the years around retirement, with a relatively

steady share of around 10% of the household income package. This suggests that there may not be a widespread realisation of existing interest-bearing financial assets around the time of retirement. (Some individuals may have received lump sum payments on retirement, but these lump sums are not measured in the BHPS.) If there were, one might have expected there to be a corresponding decline in investment income.

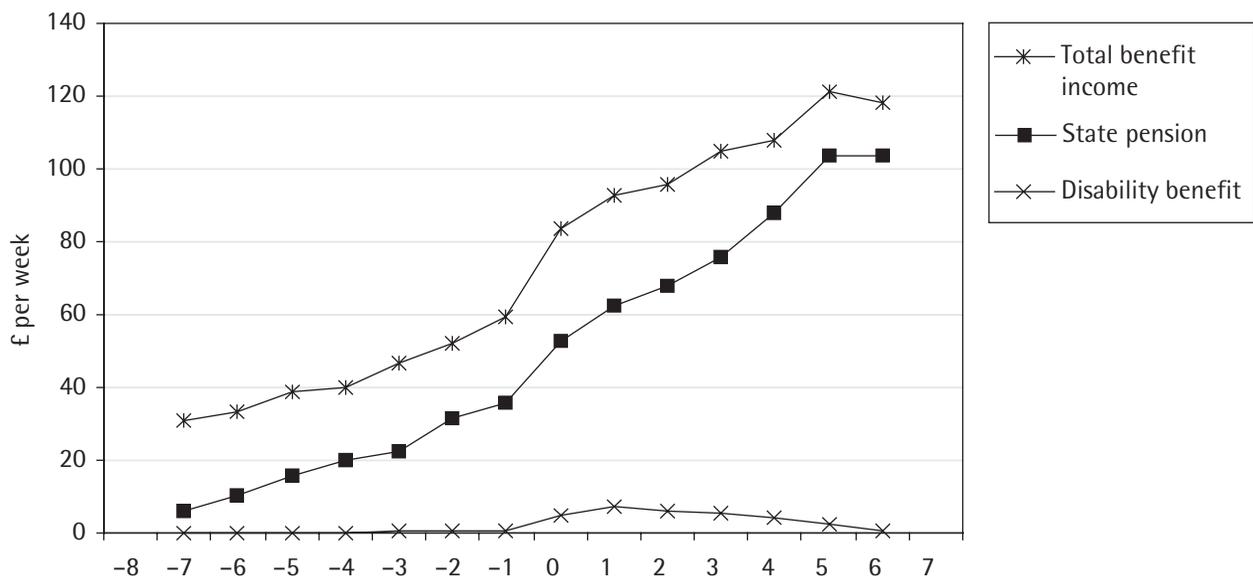
A closer look at the changes in benefit income is provided by Figure 6, which shows the changes

Figure 6: Total household benefit income, state retirement pension income and disability benefit income in the years around retirement, by sex (men aged 60+, women aged 55+)

(a) Men



(b) Women



Note: The horizontal axis shows time, measured in years, normalised so that year '0' is the year in which individuals were first observed to be retired.

in total household benefit income together with changes in income from the state retirement pension and disability benefits. The graph for total benefit income traced a very similar trend to that shown in Figure 5, with any difference arising because we show income levels here rather than income shares. There are two main points when considering the figures. The first is that, for people of this age group, retirement pension income was very much the most important component of benefit income. This may not be surprising. Second, the figures also show that disability benefits made a small but significant contribution to incomes in the years just after retirement, especially for men, though this declined over time. Some readers may have expected the level of disability benefits to be higher in the years prior to retirement, given the well-documented shift from receipt of unemployment benefits to receipt of other benefits among out-of-work individuals in their 50s. That trend was not picked up here, most likely because we defined our samples of persons 'at risk' of making a transition into retirement to be individuals who were economically active. Most individuals receiving disability benefits are counted as economically inactive (Disability Living Allowance is payable to people in work, however). (Note that the figure does not show the patterns of receipt separately for means-tested benefits such as Income Support, Housing Benefit and Council Tax Benefit [they are included in total benefit income, however]. Although these sources appear not to have played a large role for the period of our data [1991-99], this may have changed more recently, after the introduction of the means-tested Minimum Income Guarantee for pensioners.)

Changes in personal incomes

We now shift the focus from changes in household income around retirement to the income received personally by the individual who retired (see Figure 7). The charts are arranged in two columns. The first column shows the proportion of men and women that were receiving a particular income source in each of the years around retirement, whereas the second column shows the average amount that was received by those individuals that were receiving something. In the latter case, the results that could be derived were sometimes constrained by small sample sizes: we have shown results in the

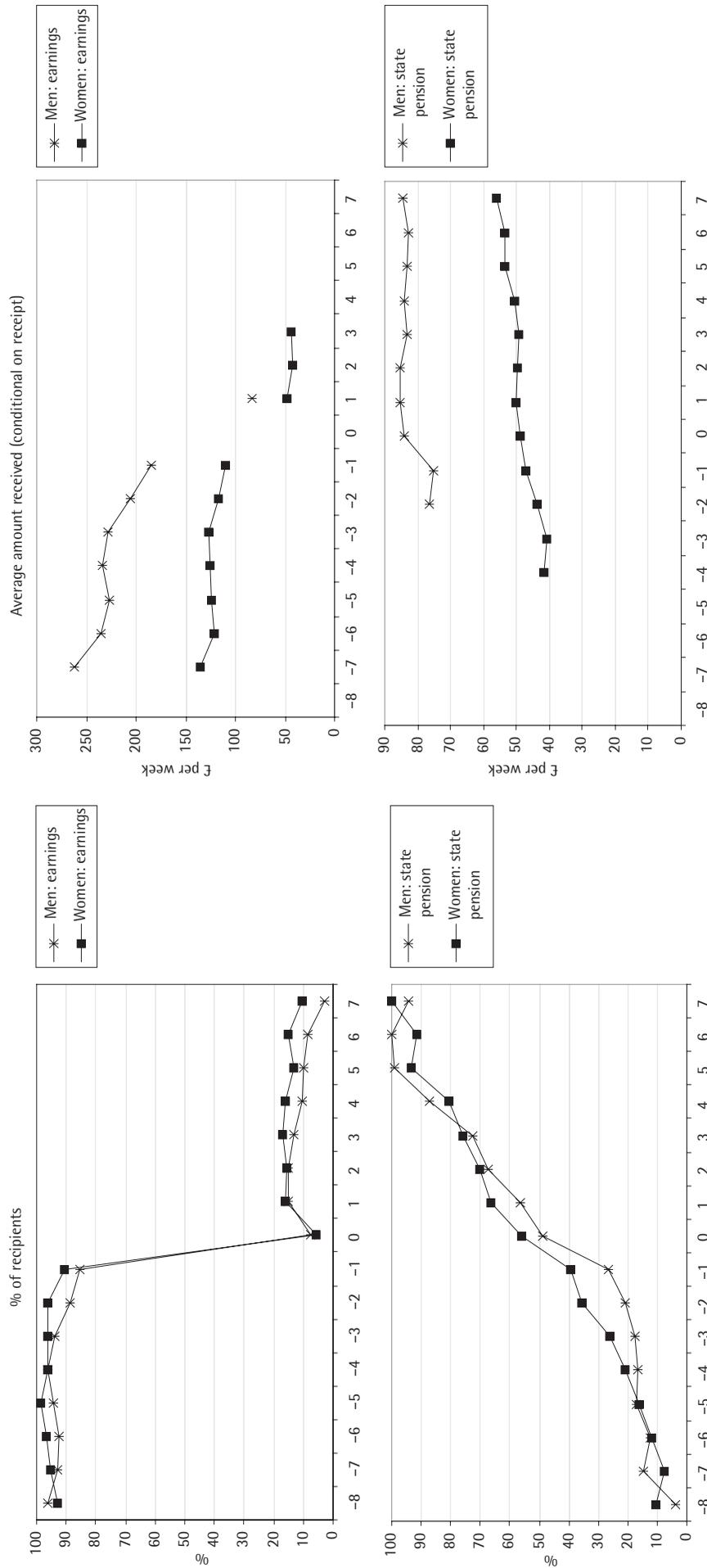
charts only if the relevant cell size was 30 individuals or more.

Prior to retirement, more than 90% of men and women in our sample had labour earnings, but this proportion fell sharply in the retirement year. This is unsurprising given our definition of retirement in terms of labour force participation. (The proportion receiving labour earnings in the retirement year was not zero because retirement was defined using variables measuring economic activity, whereas the proportions reported here are based on receipt of specific income sources.) The slight recovery in the years after retirement was accounted for by the small number of individuals who re-entered the labour market post-retirement. Among those who had labour earnings prior to retirement, the amount received declined as the retirement year approached, particularly for men. This pattern mostly reflected a decline in working hours.

The proportion of men and women receiving the state retirement pension increased continuously over the years prior to and following retirement and was virtually universally received within six or seven years following the retirement year. If everyone retired at the state retirement pension age, then the proportion receiving the pension would have been zero prior to the retirement year and nearly 100% thereafter. Recall, however, that although the modal retirement age was the state retirement pension age, there were many who retired before that age and after that age. The latter group account for the proportion receiving the pension prior to the retirement year, and the rising proportion first receiving it after the retirement year is accounted for by the ageing of those who retired early. The average amounts received varied little in real income terms in the post-retirement years, which is expected: the basic tier of the state retirement pension is flat-rate, and during the 1990s pensions were increased in line with price inflation.

Men received much higher amounts of state retirement pension income than women, on average. There are two explanations for this. The first is that a greater number of men than women received income from SERPS in addition to the basic retirement pension. The second is that a significant number of married women elected to pay National Insurance contributions at a reduced rate (an option that was later abolished) and had lower entitlements.

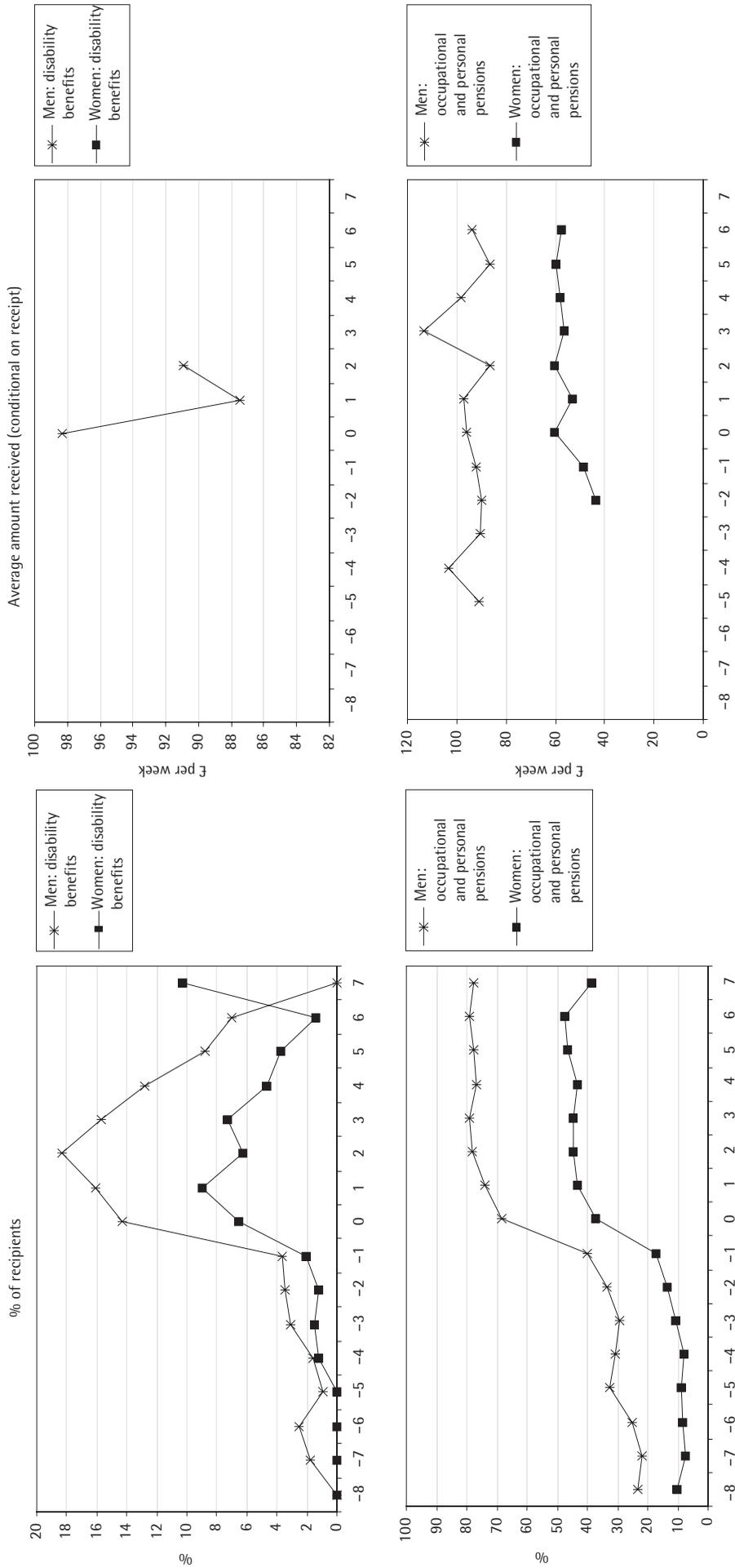
Figure 7: Personal incomes: proportions receiving and amount received in years around retirement, by sex (men aged 60+, women aged 55+)



Note: The horizontal axis shows time, measured in years, normalised so that year '0' is the year in which individuals were first observed to be retired.

contd.../

Figure 7: contd.../



Note: The horizontal axis shows time, measured in years, normalised so that year '0' is the year in which individuals were first observed to be retired.

The proportion of men receiving occupational or personal pension income increased gradually over the eight years prior to retirement from 23% to 40%; for women the corresponding rise was from 10% to 17%. Thus, significant numbers of those soon to retire already had pension income, perhaps from a former job rather than their current one. The onset of retirement was associated with a discrete increase in the receipt of pension income, to 68% of men and 37% of women. Over the subsequent years the proportion receiving pension income continued to increase but at a much slower rate, reaching a receipt rate of just under 80% for men and about 45% for women after five years. The average amount of occupational and personal pension income among those receiving it was around £100 per week for men and £60 per week for women. The proportion of persons receiving disability benefits increased sharply in the years immediately following retirement, especially for men, but then tended to fall off again. The sample numbers involved were relatively small, however, and so no conclusions can be drawn about the amounts received.

Taking the analysis of personal incomes as a whole, perhaps the most striking patterns are the differentials between the sexes. In the years just before retirement, women had lower earnings than men. On average they were less likely than men to receive occupational or personal pension income and, if they did receive it, the amounts were less than what men received (reflecting, no doubt, lower earnings prior to retirement). Women also typically received lower state retirement pensions in their own right.

Men and women aged 50–59: income changes around retirement

We now examine the experience of those who were observed to retire between the ages of 50–59. The same issues arise as for the older sample – to what extent were income changes around retirement gradual or precipitate? Sample sizes were about 30% smaller than for the earlier analysis, and so our description is not as extensive as for the older sample. The modal ages at which individuals were observed to retire were 56 for men and 54 and 55 for women. The modes were much less representative of the distribution than for the older sample, however:

there was a much more even spread of retirement ages right across the age range. For example, around 12% of men retired at age 50 and about 20% of women.

Changes in household income

The picture of how household income changed over the retirement process looked remarkably similar to that for the older sample. Average income in the years leading up to retirement was between £350 and £400 per week, fell markedly with the transition into retirement by almost £100 per week (by slightly more for men than for women), and then recovered somewhat in the five years after retirement. The main difference between the picture for those retiring in their 50s and the older sample was the income level itself post-retirement, which was about £50 per week higher for the former group. These changes meant that the proportion with a low income was under one fifth in the years prior to retirement, but was substantially greater after retirement, and continued to rise from two years after retirement and onwards. Seven years after retirement, just over one half of retired men and women had a household income in the poorest third of the all-persons distribution which, incidentally, was the same proportion that we found for the older sample six years after retirement.

When we examined the changes in household income composition in the years around retirement, there were again some interesting similarities and differences compared to the older sample. Common to both groups was, for the share of labour earnings, a gradual decline in the years preceding retirement, a marked fall in the year of retirement, and a relatively constant share thereafter. Moreover, the shares in total income of personal and occupational pensions, and of benefits, all rose around retirement. The investment income share fluctuated somewhat, but remained around 10% of total income.

The differences between the two groups were the sizes of the changes in the share of different types of income in total income, rather than the directions of change. In particular, for the sample of 50- to 59-year-olds, the earnings share did not fall as much after retirement – it was still about 30% after retirement (rather than about 10%, as for the older group). The most likely explanation for this is that there were other household

members who remained in work (contributing labour earnings to total household income). This was much less likely among the older sample. Bardasi et al (2002: forthcoming), found, for example, for an older sample that “a high degree of synchronisation of retirement exists and men are more likely to retire slightly before their wives” – see also Tanner (1997). In parallel, the share of benefits in total income did not rise to such a high level after retirement for the sample of 50- to 59-year-olds – it was only 30% to 40% of total income rather than nearer 60%. This was partly because the higher household earnings would have reduced the chance of getting means-tested benefits and also because the retiree (or spouse) would not yet have been old enough to be eligible for the state retirement pension.

Changes in personal incomes

Finally, we tracked changes in income received personally by the retiree from labour earnings and personal and occupation pensions. The patterns of labour earnings changes around retirement for 50- to 59-year-olds bore close similarities to those for the older sample. This is unsurprising – again it is mostly a consequence of having defined retirement in terms of labour force participation. What was a little different from the pattern for the older sample was that the proportion with labour earnings appears to have declined slightly in the years prior to retirement rather than being relatively constant. In other words, it was slightly more likely for this younger group that retirement involved a transition from unemployment to economic inactivity rather than from paid work to economic inactivity.

Looking at the personal receipt of occupational or personal pension income, we found that relatively few individuals received any income from these sources prior to retirement (especially women) – which is not surprising given the younger age of the sample compared to the older one considered earlier. With the onset of retirement, about 50% of men received income from an occupational or personal pension, but only 25% of women. The proportions in receipt increased slightly in the years following retirement, but the differential in favour of men continued. The average amount of income received from this source among male recipients was roughly double the average among female recipients, about £140 per week compared to £70 per week. These conditional means were

higher than the corresponding figures for the older sample. The most likely explanation for this result is a ‘selection’ effect. Those observed to retire during their 50s and who received income from these sources were more likely to be those individuals whose pension entitlements were sufficiently high to enable them to afford to (choose to) retire. Among the older sample considered earlier, the number of individuals choosing to retire early on these grounds was likely to form a smaller proportion of the sample, and a higher proportion was likely to be accounted for by individuals with smaller entitlements, thus lowering the average amount received among all recipients.

Summary

We have addressed two questions: how does income change in the years around retirement, and how do the answers differ for individuals approaching or older than the state pension age and for individuals aged 50-59?

For the sample of men aged 60+ and women aged 55+, we found that economic activity rates and work hours declined in the years leading up to retirement and that household income also declined in parallel. There was, however, a marked sharp income fall in the retirement year nonetheless. This description also characterised the experience of those aged 50-59 who retired in their 50s. The main difference between the outcomes for the two samples concerned the relative greater importance of pension income (from the state retirement pension and personal and occupation pensions) for the older sample (labour earnings remained important for the younger group). Post-retirement incomes were also higher for those retiring in their 50s compared to the older group of retirees.

Large differences in outcomes between the sexes were not apparent when we looked at household incomes (and nor would one expect them given the use of a household income definition). Differences between the sexes were very apparent, however, when we looked at incomes received personally by the individual who retired. On average, women fared worse than men. For example, fewer women received occupational or personal pension income, and among those who did receive some, the amounts were smaller.

We have only looked at the years around retirement in this chapter – a relatively short-term perspective. In the next chapter we take a longer-term view, relating outcomes in old age for men and women to differences in the whole of their working lives.

4

Low income in later life: work history matters

In this chapter we examine the relationship between income for individuals aged 60+ and work history. We are particularly interested in unpacking the ‘two nations in old age’ description of income differences cited in Chapter 1, and relating these income differences to differences in patterns of work history.

Among the questions we address are the following. Are differences in patterns of work history associated with differences in the risk of low income in later life, especially once one controls for other individual and household characteristics such as educational qualifications, household type and marital status? Which dimension of work history is the most relevant in explaining why some individuals are poorer than others in old age? Is it the length of the working life, or the particular occupational group(s) the individual worked in? To what extent is it harmful to exit early from the labour market (prior to the state retirement pension age)? Also, does having worked part-time or as self-employed increase the chances of having a low relative income in later life? The answers to these questions are likely to differ for men and women. Several studies, including ours, have shown that in old age women are poorer than men. Also, women’s work histories differ from men’s, along with a range of other personal and household characteristics (for example, educational qualifications). It is therefore interesting to investigate the extent to which sex differences in the risk of low income arise because of differences between the sexes in characteristics, or because of differences between the sexes in the association between a low income and a given characteristic.

The personal characteristics that we focus on – in addition to work history – are sex, educational

qualifications, household type and marital status. First, we discuss the association between the risk of low income in later life and each of these characteristics taken separately. This entails ‘bivariate’ analysis – looking at individual variables in relation to the probability of having a low income. Second, we look at all variables simultaneously, employing ‘multivariate’ regression analysis. This method enables us to identify the association between the risk of low income in later life and each characteristic, while controlling for the impact of other characteristics. Before proceeding to the analysis, however, we need to explain more precisely what we mean by low income in later life.

Low income in later life: the measures and definitions used

We investigate why it is that some older individuals have lower incomes than other older people; we are not concerned to address the more general issue of the low income of older people relative to the population as a whole (which was documented in Chapter 2). That is, we examine the risk of low income, where ‘low’ means low relative to other older people. To do this we needed to identify ‘older people’, and to define a low-income threshold.

Because we wished to relate later-life incomes to earlier work history, we had to choose a dividing line between ‘old age’ and ‘work life’. Our preferred choice was to analyse incomes for persons aged 60 or older, and to define the working life as the period spanned by the ages 20-59 years. This option also allowed us to consider the impact on income of an early exit from the labour market. Given the growing

prevalence of retirement from the age of 50 onwards, we defined early exit in terms of labour market participation between the ages of 50 and 59: working fewer than five years in one's 50s was counted as an early exit. (An alternative would have been to use the year of retirement as the cut-off between work life and old age. We rejected this option for three reasons. First, for many people retirement is a process taking several years rather than a discrete change. Second, the choice of when to retire is likely to depend on income prospects during old age – see, for example, Meghir and Whitehouse, 1997. Third, even if a clear-cut retirement year could be identified, it would be very difficult to disentangle the relationship between working life patterns and incomes in retirement, separately from work-life effects on retirement.)

The measure of income that we focused on was the 'smoothed' income of each of the individuals aged 60+ in our sample. By 'income', we mean the income of the household to which the individual belongs, with total household income suitably adjusted for differences in household size and composition (see Box 1 in Chapter 1 for details). Our goal was to get a picture of the 'permanent' or longer-run income of each individual. It is well known that incomes fluctuate quite a lot from one year to the next for all individuals, and older people are no exception (Jarvis and Jenkins, 1998; Zaidi et al, 2001). Part of this is simply transitory variability and, for our sample in particular, part may also be due to factors associated with the retirement process (for example, delays associated with payment of annuities, conversion of other assets to income, and so on). Averaging each individual's income over several years is likely to smooth these influences out and provide a better picture of his or her permanent income. Hence, rather than analysing income in a single year after age 60, we looked at income averaged over three consecutive years.

We counted an individual as having a low income if his or her smoothed income was in the poorest third of the smoothed income distribution among all persons aged 60+. Because we wished to investigate how older individuals fared relative to other older people, we chose a low-income cut-off defined in terms of the distribution of income among older people rather than among the population as a whole. The 'poorest third' threshold was chosen in order to focus on low-

income risk while still maintaining cell sizes for analysis. Note too, for comparison, that almost one third of pensioners have an income below 60% of the all-persons median income (Figure 2). (We experimented with a number of alternative definitions [including some based on the all-persons income distribution], but the conclusions derived did not differ substantively from those presented here.)

Low income in later life: who was most at risk?

Sex, educational qualifications, household type and marital status were all characteristics that helped distinguish whether an individual was more at risk of having a low relative income – see Table 1. Among women, for example, the low-income rate was 39%, as compared with 27% among men. Also, greater low-income rates were associated – for both men and women – with lower educational qualifications and older age. Household type and marital status were also related to low-income rates in old age – individuals living alone had higher risks than individuals living as part of a couple. We examine these factors in more detail in turn.

Low-income risks are higher for women than men

There are a number of explanations of why women are poorer than men in later life. Women live longer than men, and so the average age of women aged 60+ is greater than the average age of men aged 60+, and older individuals tend to be poorer than younger ones. Women's greater longevity also means that a higher proportion of women than of men are single and widowed (44% compared with 14%, see Table 1). On the other hand, because men tend to marry women younger than themselves, they are more likely than women to live as a part of a couple in which the spouse is employed: 15% of men have this living arrangement but only 6% of women. Table 1 shows also that women aged 60+ have lower educational qualifications than men aged 60+, and this is likely to place them in low-skilled (and therefore low-paying) occupations more often than men.

Table 1: Low-income rates (%), by sex and personal characteristics

	Men aged 60+		Women aged 60+	
	% with low income*	% in group	% with low income*	% in group
<i>All</i>	27	100	39	100
<i>Age group</i>				
61-64	20	20	24	16
65-69	20	26	32	22
70-74	29	24	44	24
75-79	37	16	46	17
80+	34	15	48	21
<i>Highest educational qualification</i>				
None	33	50	46	68
Vocational qualification	37	14	29	9
O level	25	11	30	10
A level	16	4	24	2
Degree or other higher educational qualification	9	21	18	11
<i>Household type/marital status</i>				
Single and widowed	33	14	52	44
Single and divorced	31	5	55	5
Single and never married	30	5	41	6
Couple, partner employed	7	15	7	6
Couple, partner not employed	30	61	30	38

* An individual had low relative income if his or her income was in the poorest third of the smoothed income distribution among all persons aged 60+.

Other explanations of the disadvantage of women relative to men relate more directly to differences in work history between the sexes. Women have lower labour market attachment than men. They are more likely to experience interrupted working careers due to marriage and, in particular, family responsibilities. Related to this, women are more likely than men to work in low-paying occupations, as well as in part-time jobs. An additional factor is discrimination in the labour market. With our data we are unable to pin this aspect down. What we were able to do in the multivariate analysis was address a closely-related issue: whether a man and a woman with the same characteristics had the same risk of having a low income in later life.

Low-income risks are higher for those with lower educational qualifications

Individuals with better educational qualifications were more likely to have greater working life earnings, and hence higher income in old age.

For both men and women, the risk of a low income fell the higher the educational qualifications: see Table 1 (second panel). For example, only 9% of men and 18% of women with a qualification higher than A level had a low income, compared with 37% of men with a vocational qualification and 46% of women with no educational qualifications. Education and occupation were quite highly correlated, and so it was difficult to identify their separate associations with low income.

Low-income risks are higher for older individuals

Income tends to decline with age after age 60. Differences by age in low-income incidence were particularly pronounced among women. Among women aged 61-64 years, 24% had a low income, but this proportion was twice as high among women aged 80+. Older women were also more likely to be widowed, but they were also more likely to rely on the basic state pension for

income rather than other sources, such as occupational pensions which were likely to be more generous.

Household type and marital status

An individual's income depends on who he or she lives with (recall that we use a household income measure). How low-income risks differed by household type and marital status is shown in Table 1 (bottom panel).

Individuals living alone had the greatest low-income rates, and for both sexes: around one third of men and just over one half of women. The 'benefit' of living with a non-employed partner, in terms of having a smaller risk of low income, was apparent only for women, however. Put another way, women with partners had smaller low-income rates than single women, regardless of whether that partner was employed or not. By contrast, men with partners were only likely to have low-income rates below those of single men if their partner was employed. One explanation for this result could be that men were more likely to bring income other than labour earnings into the household.

Differences in low-income rates by household type were especially pronounced among women. Women without a partner who were widowed and divorced – about half of all women in the sample – fared particularly badly. More than half of them had a low income compared with only 7% of women living in couples where the partner was employed.

Work history and low-income rates

Work history matters for income in later life most obviously because it is during the working life that entitlements to state, occupational, and personal pensions are built up, together with the accumulation of other financial assets. Work history is, however, a broad term and encompasses many dimensions. Three aspects are likely to be particularly relevant for differences in income in later life:

1. The total amount of the individual's life spent in work and out of work.

2. The continuity or otherwise of the individual's labour force participation.
3. The occupation and type of job that the individual had, in particular the earnings in each job.

We discuss these aspects in turn.

Time spent in employment

We expected that the longer an individual has been in work, and more continuously, the more likely that they were entitled to a pension as well as to have accumulated greater contributions and therefore to receive a higher pension. Moreover, workers are more likely to accumulate savings than non-workers, and this will also increase income in old age.

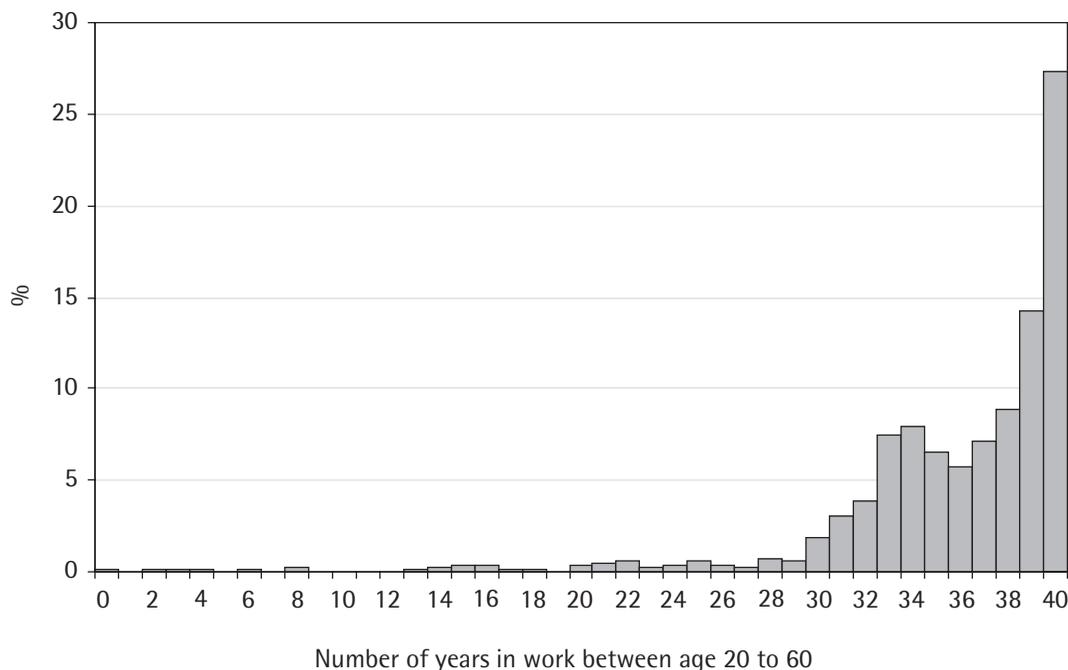
The frequency distribution of the number of years spent in work between the ages of 20 and 60 for men and for women is shown in Figure 8. Men had a very strong attachment to the labour market on average: about one half worked for at least 38 years out of 40 (between ages 20 and 60), and 70% for at least 35 years. By contrast, women's work attachment was much more heterogeneous. Only 10% worked for at least 38 years, 7% never worked, and 37% worked but for less than 20 years.

To what extent were differences in the prevalence of low relative income related to the total numbers of years worked? Table 2 sheds light on this. (The different bands used to group the number of years worked reflect the sex differences in the distribution that were shown in Figure 8.) Looking first at all men and all women (Table 2, row 1), it is clear that those individuals with the lowest labour market attachment during the working life had the highest rates of low relative income in later life. But a higher number of years in work was not always associated with a smaller low-income rate. Low-income rates for men and women who worked at least 38 years out of 40 were higher than for those who worked 35-37 years.

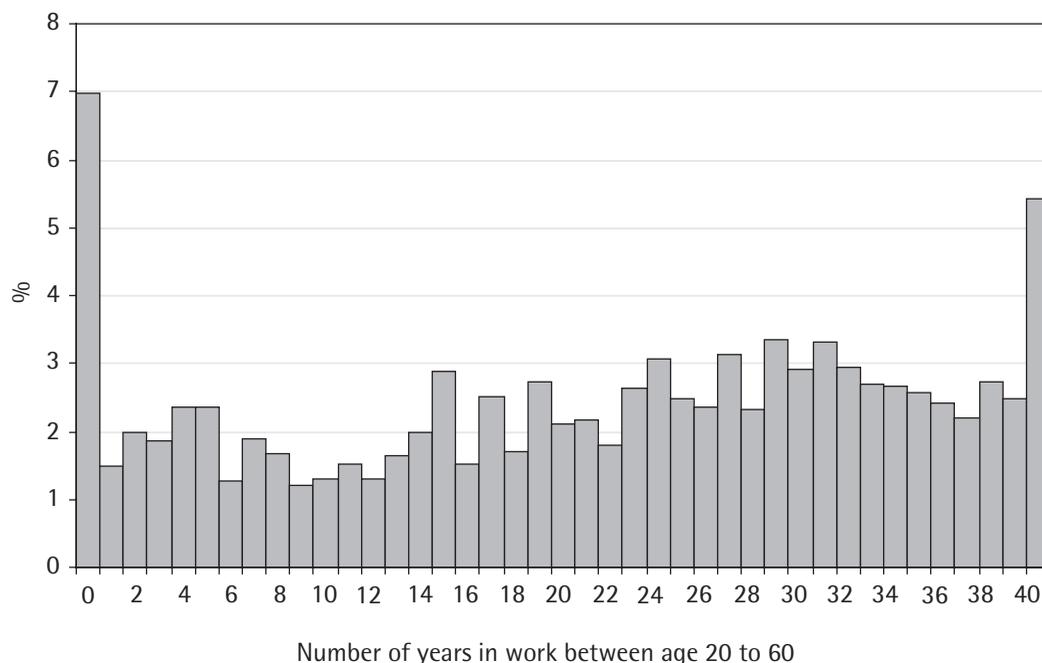
One explanation for this apparently anomalous result is that a significant proportion of the individuals who retired early did so because they could afford to, for example because they had good private and occupational pension entitlements or other assets. Among those who

Figure 8: Frequency distribution of the number of years in work between the ages of 20 and 60 (%)

(a) Men aged 60+



(b) Women aged 60+



worked almost all the 40 years, there may therefore have been an over-representation of individuals who had to do so in order to maintain their (already low) income.

We next investigated whether these relationships were also apparent among groups classified in terms of their education qualifications, age, and household type (see the lower panels of Table 2).

For men, the association between low income and number of years in work within each group was generally the same as the pattern noted earlier. By contrast, for women, there was a greater variety of patterns. For women in the highest educational qualification group, spending more of one's working-age life in employment was clearly associated with a decrease in the risk of low income, but was not so at lower

Table 2: Low-income rates (%), by sex, personal characteristics and number of years in work

	Men aged 60+					Women aged 60+				
	% with low income*, by number of years in work					% with low income*, by number of years in work				
	0-34	35-37	38-40	Average number of years in work	0	1-19	20-34	35-37	38-40	Average number of years in work
<i>All</i>	34	21	25	36.0	45	42	37	35	39	22.2
<i>Age group</i>										
61-64	33	14	17	36.5	64	24	23	9	31	24.6
65-69	33	13	19	37.0	40	39	28	26	33	24.0
70-74	28	28	29	36.0	41	47	41	52	36	22.2
75-79	39	30	37	34.4	47	44	46	54	48	20.0
80+	33	27	36	37.1	43	48	54	45	43	19.8
<i>Highest educational qualification</i>										
None	38	31	29	36.2	46	47	44	51	45	21.3
Vocational qualification	51	23	36	37.1		32	31	0	34	22.1
O level	37	16	20	35.9		47	22	22	34	25.0
A level	16	20	14	34.8		28	6			18.0
Degree or other higher educational qualification	14	5	7	36.2		19	19	14	4	25.7
<i>Household type/marital status</i>										
Single and widowed	39	22	33	36.0	45	53	52	51	49	20.8
Single and divorced	45	26	22	34.9	72	65	44	52	69	23.0
Single and never married	24	38	30	35.9	42	55	25	32	45	32.1
Couple, partner employed	8	4	9	37.5	9	15	5	2	2	26.0
Couple, partner not employed	36	23	29	36.2	44	34	27	30	21	21.4

* An individual had low relative income if his or her household income was in the bottom third of the smoothed income distribution among all persons aged 60+.
Note: Cells are left blank when the number of observations was fewer than 30.

educational levels. Similarly, there was a strong negative association between low-income risk and number of years worked for women in the youngest age group (61-64 years), but there was no such relationship for older women. Among women who lived with a partner, a longer working life was also associated with a smaller risk of low income. For women who were single and divorced or never married, a U-shaped relationship between the risk of low income and number of years worked is clearly apparent: the risk was higher at both extremes. By contrast, widowed women had high rates of low income regardless of how long they had worked.

Table 2 also shows that women had much lower labour market attachment than men, regardless of which subgroup one looks at (compare the average number of years worked between the sexes in each row of the table). For all women and all men, the averages were 22 and 36 years respectively. The nearest case that there is to an exception concerns single never-married women, for whom the average number of years in work was similar to single never-married men (32 years compared to 36 years). But even for this group of women, the low income rate was much higher than for the corresponding group of men (41% compared to 30% – see Table 1), and so too are the low-income rates among the subgroups classified by number of years worked (with the exception of those who worked 35-37 years).

Continuity of employment and early exit from the labour market

It is not only the overall proportion of the working life spent in employment that is likely to matter for low-income risk, but also the stability of the work history. Periods spent in unemployment and out of the labour market involve loss of earnings and are likely to create career discontinuities and skill depreciation and

these, in turn, are likely to have adverse effects on subsequent employment and also the accumulation of savings and pension entitlements.

Early exit from the labour market – retirement prior to the conventional retirement age – may be harmful if it is involuntary. A notable example is the case of individuals, typically with lower occupational qualifications, who become disabled or unemployed (Campbell, 1999). Even where the early exit is chosen voluntarily, it may still have damaging effects on income in later life. Individuals may choose to retire early because they believe they have adequate occupational and personal pensions, but their expectations may not match subsequent reality.

We focus on the decade between age 50 and age 60 on the grounds that the prevalence of early retirement increases notably from age 50 onwards. Figure 9 shows the frequency distribution of the number of years in work between ages 50 and 60 for men and women. About two thirds of men were in work throughout the whole decade, while the remaining third were not working for some proportion of their 50s. The distribution for women is bimodal, with 30% who were never in work and another 30% who were always in work during their 50s, and the remaining 40% had intermediate durations.

To examine the relationship between early retirement and low income risk, we defined ‘early exit’ to mean having worked less than five years between the ages of 50 and 60 (see Table 3). About 10% of men and 40% of women worked less than five years during their 50s. Individuals that exited early were more likely to have a low income in old age. For example, the low income rate among men who exited early was 36%, but 26% for those who did not exit early. For women the same differential existed, but was somewhat smaller. The corresponding proportions were 42% and 36%.

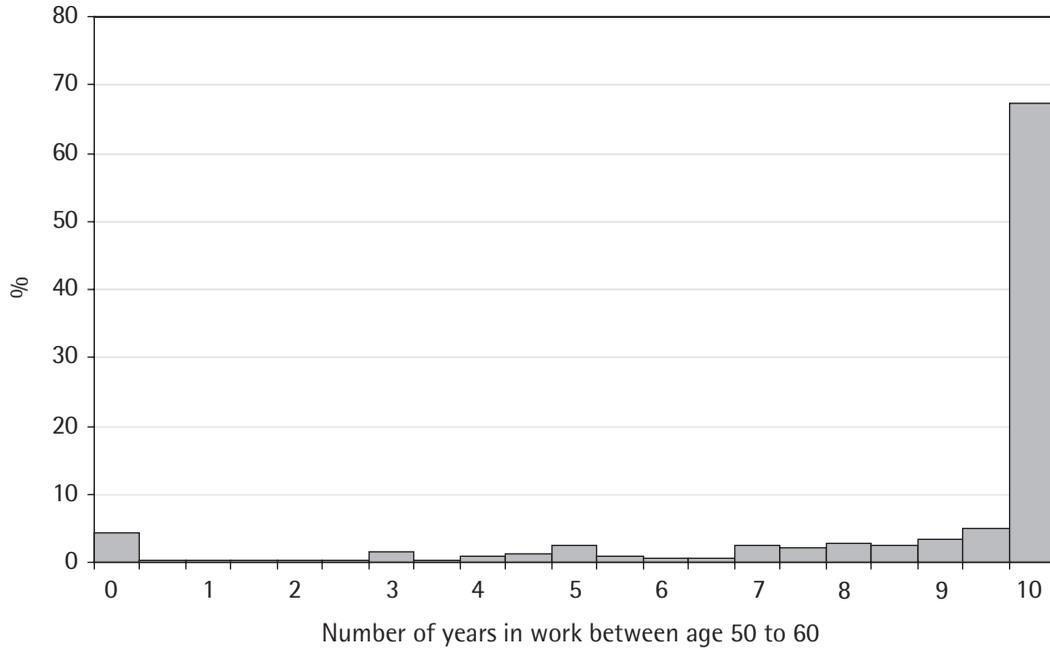
Table 3: Low-income rates (%), by sex and whether left labour market early*

	% with early exit from labour market	% with low income	
		Early exit individuals	Non-early exit individuals
Men aged 60+	9.9	35.6	25.7
Women aged 60+	41.2	42.3	35.8

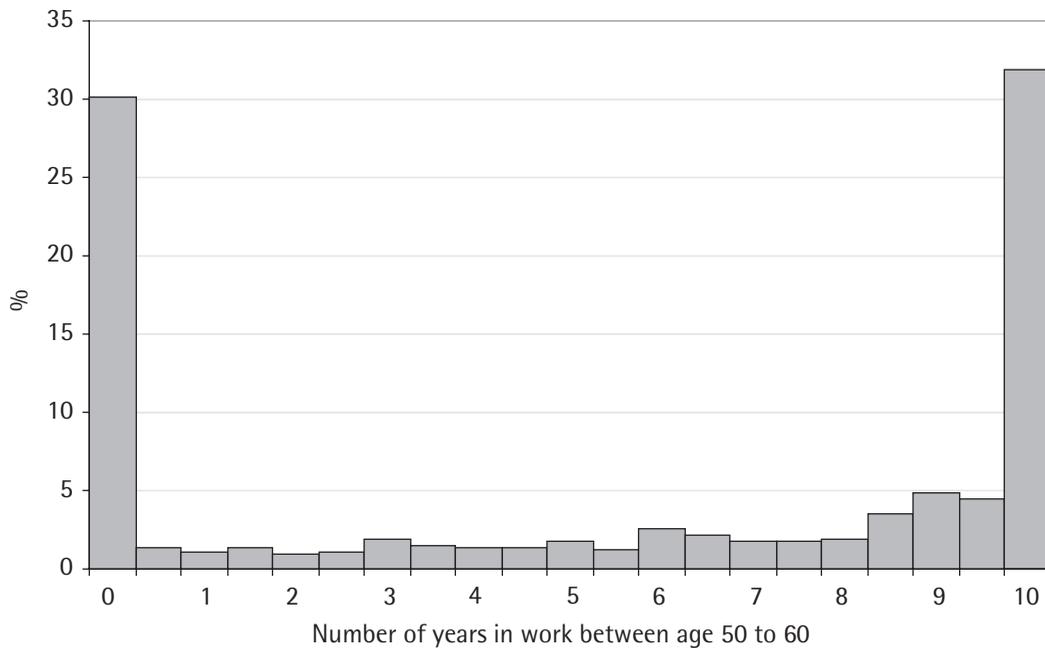
* ‘Early exit’ is defined as having worked fewer than five years between the ages of 50 and 60.

Figure 9: Frequency distribution of the number of years in work between the ages of 50 and 60 (%)

(a) Men aged 60+



(b) Women aged 60+



Occupation and type of contract

We distinguished two dimensions of the type of job: the type of contract (whether an individual was self-employed or worked as a full-time or part-time employee) and occupational group. The type of contract may affect income in old age because National Insurance contribution rules differ for self-employed workers and employees. Moreover, their saving patterns are likely to differ. Working part-time instead of full-time (particularly

common among women) can lead to low income later in life because, for example, if earnings are below the Lower Earnings Limit, there is no liability for contributions. Hence, women working part-time are less likely to accrue pension entitlements in their own name.

Occupation is likely to have an important association with income in later life, not only because the availability of occupational pension schemes depends on the occupation in which an

individual works, but also because occupation is likely to be a proxy for other characteristics that are related to income in old age. Most importantly, differences in occupation correspond to differences in earnings levels and earnings growth. This has an impact on the accrual of pension rights and, of course, higher earnings also facilitate greater accumulation of assets in other forms, such as housing or financial assets, that can provide income in old age. (On the basis of such arguments, Stewart [2001] used the BHPS occupation histories to help construct synthetic earnings profiles and it was lifetime earnings that he used as an explanatory variable in his low income regressions [rather than a variable more directly based on occupation]. That option was not open to us – we did not have access to New Earnings Survey data in the proprietary electronic form that he had – and so we used the occupational data directly.)

We used nine occupational categories to classify persons by occupation at each stage of their working life. The occupational groups are described in Box 2.

We also distinguished groups of persons for whom information about occupation was missing,

and those who were unemployed or economically inactive.

Ideally we would have used a finer occupational classification but small cell sizes prevented this. This means that we could not identify heterogeneity in experience within each major occupational group.

The order in which the occupational groups are listed corresponds broadly to their ranking by average earnings, from highest to lowest. See Table 4, based on data for 1999. For both men and women, average weekly earnings in managerial and professional occupations (and also for women in technical occupations) were more than twice as large as average earnings for those working in 'other unskilled' occupations.

Echoing our earlier remarks about differences between the sexes, the right hand columns of Table 4 also show clearly that women earn much less than men on average, in each and every occupation. Of course the figures in the table do not take differences in hours and in personal characteristics into account, but they are nonetheless an important pointer to a source of later disadvantage. Moreover, the proportion of

Box 2: Occupational groups used in the analysis

The nine groups are the so-called 'major groups' in the 'SOC90' classification scheme:

Managers and administrators (eg executive officers, administrators)

Professional (eg engineers, architects, legal, banking, and financial professionals)

Associate professional and technical (eg computer/analyst programmers, associate professionals)

Clerical and secretarial (eg administrative officers, clerks, secretaries)

Craft and related (eg electrical and electronic trades, woodworking trades, textiles trades, food preparation trades)

Personal and protective services (eg health, childcare, domestic staff and related occupations, personal and protective services occupations)

Sales (eg brokers, sales representatives, sales assistants)

Plant and machine operatives (eg process operatives in manufacturing industries, assemblers and lineworkers, transport and machinery operatives)

Other occupations (mostly unskilled)

Table 4: Average weekly earnings by occupation, all workers 1999*

Occupational group	Average earnings (£ per week)		Index of relative earnings by occupational group (other unskilled = 100)		Index of relative earnings by sex (women = 100)	
	Men	Women	Men	Women	Men	Women
Managers and administrators	375	247	204	235	152	100
Professional	381	310	207	295	123	100
Associate professional and technical	341	242	185	230	141	100
Clerical and secretarial	229	173	124	165	132	100
Craft and related	256	130	139	124	197	100
Personal and protective services	236	137	128	130	172	100
Sales	240	118	130	112	203	100
Plant/machine operatives	240	145	130	138	166	100
Other unskilled	184	105	100	100	175	100
All occupations	285	183			156	100

* Current net average earnings were computed, by occupation, for all BHPS respondents who were working at the 1999 interview.

women who worked in managerial and professional occupations – those occupational groups most advantageous for later-life income prospects – was substantially smaller than the proportion of men who worked in those occupational groups.

Low-income risk: occupational group and occupational stability matter

How were differences in occupational group during the work life associated with differences in low-income risk in later life? To explore this, for each occupational group and separately for men and women, we calculated how many of the individuals who were working in that occupation at the ages of 20, 25, 30, 35, 40, 45, 50, 55 and 60 had a low income at age 60+. The series of low-income rates by age derived for each occupational group can be interpreted as the risk of low income in old age for a (hypothetical) individual who spent all their working life in that occupational group. The estimates are shown in Figure 10. Low-income rates for those who were out of work are also presented.

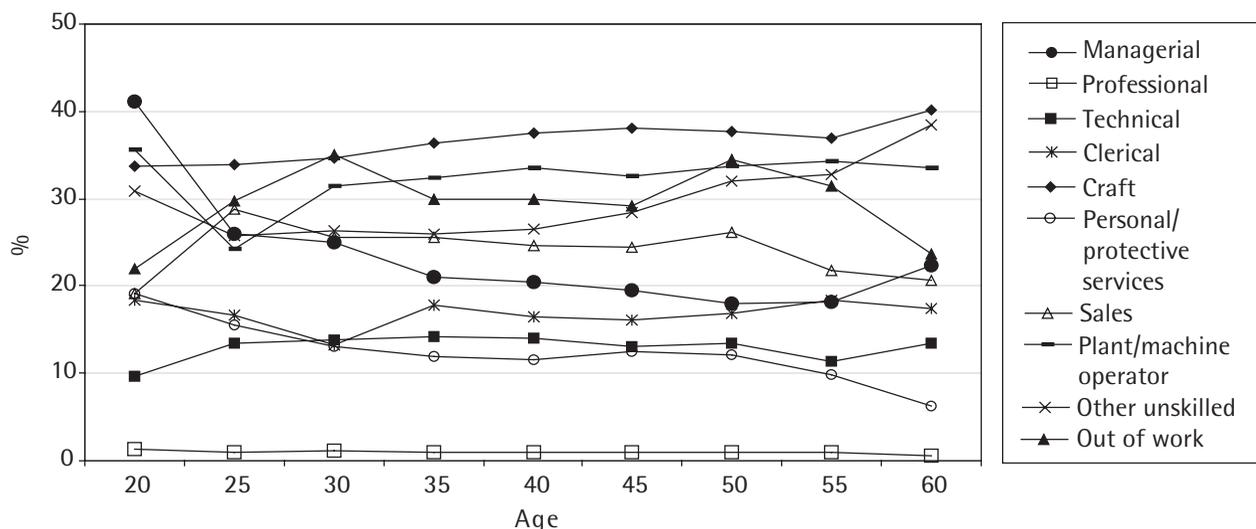
For both men and women, being in a higher-earning white collar occupation was associated

with a small risk of having a low income, whereas the opposite was true for lower-earning, blue collar occupational groups. Professional and technical occupations for both sexes, clerical occupations for women and personal and protective services for men were the occupational groups associated with the lowest low-income risks. Occupation-specific risks of having a low relative income were stable for men aged between 30 and 50. This was most likely due to the low occupational mobility of men (to be discussed later).

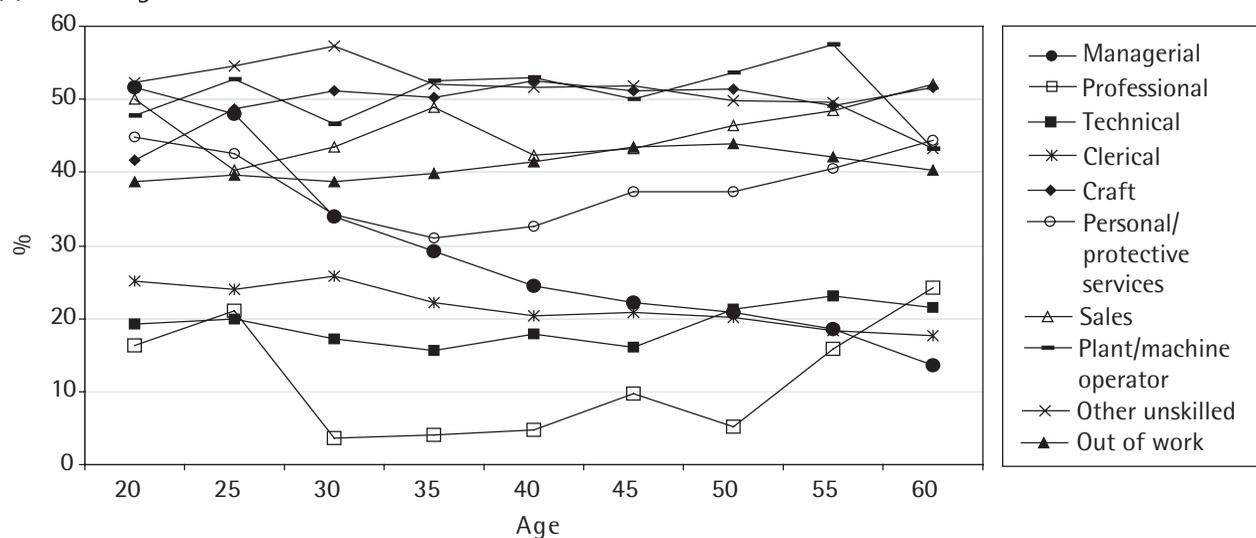
The rankings of the occupational groups according to risk of low relative income changed most notably in the age range 20-30 and 50-60. This was probably related to processes that selected individuals into the different occupations (or into and out of the labour market). For example, among men out of the labour force, the percentage of low-income individuals was lowest at age 20 when most of the potentially high-earning individuals were most likely still studying, and at 60 when many individuals who could afford to leave the labour market had done so. The percentage of low-income men associated with the 'other unskilled occupations' category increased continuously from age 25 to age 60 (by almost 15 percentage points overall). It is as if

Figure 10: Low-income rates (%), by occupational group and age

(a) Men aged 60+



(b) Women aged 60+



Note: Individuals currently aged 60+ were classified according to occupational group at different ages during their working life. The charts show the percentage of individuals in each age-occupation group with low income when aged 60+.

there was an adverse selection process within this group over time – men with the lowest risk of low income later in life moved to a higher status occupation over time, leaving behind in this category relatively high numbers of men with a high risk of low income later in life.

For women, Figure 10 suggests that some distinctions could be made between occupational groups with a high or low risk of low relative income, but patterns were less clear cut than for men. One important reason for this is that women changed occupational group more often than men, and also more often moved into and out of the labour market altogether. We conclude

this from analysis of individuals’ occupational mobility between age 30 and age 40, between ages 40 and 50, and between ages 30 and 50, also taking account of transitions into and out of work.

Men were characterised by a high degree of occupational stability and transitions into and out of work were relatively rare. Clerical, professional, managerial and craft occupations were those which displayed the greatest stability. For example, of those men in one of these occupational groups at age 30, more than 85% were in the same group at age 40, and only a slightly lower percentage at age 50. Occupational mobility among men was greatest for those in

low-skilled occupations, for example only around 70% of those in sales at age 30 were also in sales at age 40. To some extent these results reflect long-term upward mobility. Low-skilled workers were the most likely to exit employment altogether. About 7% of men working as plant/machine operators, and more than 10% of men working in other unskilled occupations at age 40 were not in work 10 years later.

For women, occupational stability was much lower than for men, especially between ages 30 and 40, largely because entries to and exits from the labour market were very high. More than 60% of the women in our sample were not working at age 30. One third of them entered (or re-entered) the labour market by the age of 40; at the same time, 26% of those who worked at age 30 were not working at age 40. Because attachment to the labour market was relatively low for women, occupational stability was low as well. Among women who were in work at both age 30 and age 40, occupational stability was as high as for men. However, this was a small group, comprising about 28% of all women (the corresponding figure for men is 92%). Flows into and out of the labour market were much smaller between ages 40 to 50 and, as a consequence, occupational stability during this period was higher as well.

To summarise, for men, occupational group early in life was closely related to the evolution of their subsequent working career. Men's attachment to the labour market was high, and there was a high degree of occupational stability. Their occupation at age 30 was closely associated with their income when they were aged 60+. For women this was not the case. Women had more varied working patterns, and the prevalence of transitions into and out of the labour market was much higher. Only for a small subset with high labour market attachment was occupational stability as high as for men; only for a small minority of women was their occupational group at age 30 the one in which they remained for most of their working life.

Employment and occupational stability foster the accumulation of pension rights and also savings, and women's higher labour market and occupational instability partly explains why women are poorer than men. Only 18% of women worked in the same occupational group for 30 years out of 40, while the corresponding

figure for men was 63%. There were also substantial differences among women in the proportion receiving an occupational or personal pension at age 60+, depending on occupational stability: 44% of those in the same occupational group for 30 years out of 40 were in receipt, but only 27% of those working fewer than 30 years in the same occupational group were in receipt. (The same differential did not exist for men: around two thirds were in receipt.) The average amount of pension received by those who received an occupational or personal pension was also higher for occupationally stable individuals. Among women spending 30 out of 40 years in the same occupational group, the average amount received was £61 per week, compared to £43 per week for those with fewer than 30 years in the same occupational group. The corresponding amounts among men were £95 per week and £89 per week; in other words, occupational stability mattered less for men.

Occupational and personal pension receipt varied considerably across occupational groups, even focusing on individuals who had worked at least 30 years in the same occupational group between ages 20 and 60. For both men and women, working in professional, clerical, and technical occupations guaranteed the highest coverage. The proportion of women receiving an occupational or personal pension was always lower than the proportion of men, notably in clerical occupations (60% versus 86%). On the other hand, individuals who worked in craft occupations were less likely to be recipients; 58% of men and only 18% of women received an occupational or personal pension at age 60+.

The amounts of occupational and personal pension income received by recipients also varied considerably by occupational group, thus underlining that the occupation in which the individual spends their working life is strongly related to later-life income. The highest average pensions were received by those who worked in professional, clerical, and technical occupations, and also by men (but not women) who worked in personal and protective services or management for at least 30 years. Observe, however, that the proportion of former managers receiving these pensions was relatively low, for both men and women, partly because of the high proportion of self-employed individuals in this occupational group.

Women who remained in the same occupational group for at least 30 years received much lower pensions than men, and this was true for every occupational group. For example, among former managers the average amount was £158 per week for men, but £29 per week for women; for those in professional occupations, the corresponding amounts were £172 per week and £109 per week, and for clerical occupations, £143 per week and £66 per week. To some extent these differentials are due to the high proportion of women who worked part-time and their concentration in some occupational groups in particular. While the proportion of time spent in part-time work by men was always negligible, among the group of women with at least 30 years in employment the average time worked part-time ranged from four years (managers and professionals) up to 10 years (sales), 14 years (other unskilled occupations), and over 16 years (personal and protective services). Only 25% of women who spent 30 years in personal and protective services occupations always worked full-time, while among managers – the occupational group with the highest proportion of those who always worked full-time – this percentage was less than 65%.

To summarise, not only is the total time spent in work important for accumulation of savings and pension rights, but so too is the occupation in which that time is spent. Women experience a number of disadvantages relative to men. They spend less total time in paid work, their occupational stability is less, and they spend a much larger proportion of their working lives working part-time. As a consequence, they are less likely to receive occupational and personal pensions and, when they do receive them, the amount received is lower.

Early exit from the labour market and occupational and personal pension income

We showed earlier that individuals with low labour market participation in their 50s were more likely to live in low-income households, but pointed out that the group of people withdrawing early from the labour market was heterogeneous. The decision to exit early from the labour market could have been motivated by an expectation of good occupational and personal pension entitlements or it could have been involuntary, for example due to job loss.

In order to get some additional insights into these issues, we compared personal receipt of occupational and personal pension income between individuals with different labour market attachment in their 50s. The proportion receiving some occupational and personal pension income among those who were employed less than five years in their 50s was lower than for individuals who worked longer (for men the proportions were 49% and 70%; for women, 13% and 37%). This differential was also apparent among the subset of individuals who had spent at least 30 years out of 40 in the same occupation. That early exiters were less likely to receive occupational or personal pensions is consistent with the idea that some of this group left early involuntarily.

Low income in later life: the association with work history, controlling for other factors

We have seen that a number of different factors are associated with differences in the risk of having a low income. Several of these factors are related to each other. For example, there are large differences between the sexes in occupational characteristics. An individual's occupation and lifetime occupational trajectory depends on educational qualifications, current household type is related to previous work history (for example, single never-married women have higher labour market attachment), and the impact of early exit from the labour market on income is likely to depend on former occupation. In consequence, the association, for example, between education and later-life income is partly accounted for by the effect of education on occupation, even though there might be a separate educational effect regardless of income. Multivariate regression analysis allows us to examine the separate impact of each factor while controlling for the impact of other factors. The variable to be explained is the probability of having a low income in later life (defined earlier). In recognition of the substantial differences between the sexes, we looked separately at the situation for men and for women – each was analysed using a different model. Otherwise the variables tested, in terms of their ability to explain low income independently of each other, were the factors discussed so far, namely age,

educational qualifications, household type and marital status, occupational group and early exit, together with a number of other control variables. The additional variables were as follows. (1) The year of the interview to control for potential macro-economic and other secular influences on incomes. Associations between low income and age and interview year may also reflect systematic differences by birth cohort. Younger cohorts are better off in old age than older cohorts on average. (2) The number of children born to the respondent (women only). (3) The employment status and disability status of the respondent's partner (where the latter was defined as having a self-reported health condition that limited normal daily activities with respect to other people of the same age). We did not include measures of the respondent's own current employment status and disability status. They were likely to be determined jointly with other variables in the model, and including them would have led to the econometric problem of 'endogeneity'.

The ways in which we measured the multiple dimensions of occupation and work history in this analysis need to be mentioned – see Box 3.

Box 3: Measuring occupation-specific work histories

We created a set of explanatory variables that summarised the proportion of the working life between ages 20 and 60 that each individual spent in each of the nine occupational groups listed earlier, or in an unknown occupation, or unemployed (the reference category was the proportion of time economically inactive). To measure the impact of the type of employment contract, we created variables summarising the proportion of the working life between ages 20 and 60 that each individual spent in self-employment or in part-time work (the reference category was the proportion of time spent in full-time work). Reflecting our earlier arguments that the impact on income of early exit from the labour market was related to occupation, we allowed the time spent in each occupational group to have a different impact on the probability of having a low income depending on whether the individual worked less than five years between the ages of 50 and 60.

We describe the results of our multivariate analysis in terms of differences in predicted low-income probabilities for persons with different combinations of characteristics. (The full set of regression estimates is presented in the Appendix, together with a note on how to interpret them and reference to other models that we also fitted.) As a point of reference, note that the predicted probability of low income was 22% for the average man, and 37% for the average woman. (The average person is one whose characteristics are described by the sample average values of each explanatory variable.) The issue is: does having characteristics different from the average ones change the chances of low income in later life? We discuss men first and then women.

In the case of both men and women, we can express this by starting with the case of an imaginary individual (a 'reference person'), with characteristics that make low income relatively unlikely, and then look at the effect of changing each of these characteristics in turn on the predicted chance of having low income. For both men and women, this reference person was aged 65 years, had a non-employed partner, was not disabled, had not been unemployed between the ages of 20 and 60, had an educational qualification higher than A level, and had spent 40 years in a clerical occupation. For women, in addition, the reference person had two children. The reference man had a 2.9% chance of low income and, for the reference woman, the chance was 4.0%. See the first row of Table 5.

Men: early labour market exit may increase the risk of low income – the effect depends on occupation

Older men had a higher risk of having a low income than did younger men. For someone with all the characteristics of the imaginary reference man described above, except that he was aged 70 rather than 65, the probability increased from 2.9% to 4.7%. If he were aged 80, the predicted probability of low income was 7.5%.

Having better educational qualifications substantially reduced the risk of low income in old age. If the reference man had A levels rather than a higher educational qualification, the probability of low income rose from 2.9% to 6.3%,

Table 5: Predicted probabilities (%) of having a low income, by household type and highest educational qualification

Individual's characteristics	Predicted probability (%)	
	Man	Woman
Age 65, with partner not in employment and not disabled, never unemployed, had two children (if woman), had educational qualification higher than A level, and worked 40 years in clerical occupation	2.9	4.0
As for reference person, except that age was:		
61	1.6	2.3
70	4.7	6.0
75	6.4	7.2
80	7.5	7.2
As for reference person, except that highest educational qualification was:		
A level	6.3	5.8
O level	9.7	7.6
vocational education	14.2	7.7
no educational qualifications	14.0	9.7
As for reference person, except that household type and marital status was:		
with partner in employment	0.2	0.4
single and widowed	1.5	8.1
single and divorced	2.1	12.1
single and never married	1.7	8.3

to 9.7% if he had O levels, and around 14% if he had vocational qualifications or no qualification.

Living arrangements and marital status also had a statistically significant association with the risk of low relative income. Men living with an employed partner had the lowest risk. Indeed, if our reference man had had a working rather than non-working partner, the predicted probability of low income would only have been 0.2% rather than 2.9%. Men without a partner – either widowed or divorced or never married – had a predicted probability between these two extremes.

Let us turn now to the variables of principal interest, namely the work history variables. It turned out that the proportion of the working-age life spent in self-employment had no statistically significant association with the probability of low income. Nor did the proportion of the working-age life spent in part-time work (though the size of the estimated coefficient was large), though men spent little time in part-time work on average.

The results revealed a mixed picture about time-in-occupation effects in the sense that there were

statistically significant associations for only few occupational groups. (This is notwithstanding the fact that the associations between each variable and low income were all negative as expected, in other words the more time spent working in a given occupational group, the lower the risk of low relative income.) Conversely, the greater the proportion of the working life that a man was unemployed, the higher the risk of low income. The occupational groups that were most clearly associated with a smaller risk of low income were the professional and personal and protective services groups, with the time-in-occupation effect the largest for professional occupations. This is consistent with our demonstration (Figure 10) that the percentage of people working in these occupations at almost every age who were going to have low income in old age was particularly low. Moreover, the amounts of occupational and personal pensions received by those who were in these two occupational groups were high, especially for professionals.

What was the impact of early labour market exit for men? It is striking that, for four occupational groups, the positive effect on low-income risk of working longer in a given group was completely offset if the man left the labour market early. The

occupational groups were clerical, craft, personal and protective services, and sales. For example, we estimated that, other things being equal, a one percentage point increase in the proportion of time spent in a personal and protective services

occupation was associated with a reduction of 0.4 percentage points in the probability of low income for men who worked at least five years during their 50s, but an increase of around 0.3 percentage points for men who also worked

Table 6: Predicted probabilities (%) of having a low income, by years of employment and whether had early exit* from labour force

Individual's characteristics	Predicted probability (%) of low income when aged 60+					
	Number of years in employment between ages 20 and 60					
	15	20	25	30	35	40
<i>Man:</i>						
Age 65, with partner not in employment and not disabled, never unemployed						
History 1: in personal and protective services occupation, had vocational qualification						
No early exit			12.0	8.9	6.5	4.6
Early exit	52.6	57.6	62.5	67.2		
History 2: in clerical occupation, had educational qualification above A level						
No early exit			5.3	4.4	3.5	2.9
Early exit	12.2	12.1	11.9	11.8		
History 3: in managerial occupation, had educational qualification above A level, self-employed						
No early exit			12.1	12.0	11.9	11.8
Early exit	(23.8) [†]	(28.4)	(33.5)	(38.9)		
History 4: in craft occupation, had vocational qualification						
No early exit			40.2	40.7	41.2	41.7
Early exit	51.8	56.6	61.3	65.8		
<i>Woman:</i>						
Age 65, with partner not in employment and not disabled, never unemployed						
History 1: in personal and protective services occupation, had vocational qualification						
No early exit			24.5	23.2	22.0	20.8
Early exit	(23.8)	(21.6)	(19.5)	(17.5)		
History 2: in clerical occupation, had educational qualification above A level						
No early exit			8.0	6.4	5.1	4.0
Early exit	(14.5)	(12.9)	(11.3)	(9.9)		
History 3: in managerial occupation, had educational qualification above A level, self-employed						
No early exit			7.9	6.4	5.0	3.9
Early exit	(22.1)	(22.6)	(23.2)	(23.7)		
History 4: in craft occupation, had vocational qualification						
No early exit			29.9	29.7	29.5	29.3
Early exit	(29.1)	(28.5)	(27.8)	(27.2)		

* 'Early exit' means working fewer than five years between the ages of 50 and 60. † Predicted probabilities shown in parentheses for early exiters were not statistically significantly different from those for non-early exiters.

fewer than five years during their 50s. A one percentage point increase in the proportion of time spent in a sales occupation was associated with a 1.5 percentage point increase in the probability of low income for men who also worked fewer than five years during their 50s.

To gauge the size of the effects further, and see how they varied by occupational group, predicted probabilities are presented in Table 6. (We took our reference person again, but now focused on the impact of differences in the total time spent in each of the occupations cited and whether he exited early.) Men working in personal and protective services, clerical, and managerial occupations who worked more than five years during their 50s had a probability of having a low income when over 60 that was relatively low and declined the longer the individual stayed in work in total. By contrast, working in a craft occupation (without early exit) was associated with a much higher risk of low income in old age, regardless of how long the individual worked in total.

Early exit, however, dramatically increased the probability of low income, in particular in personal and protective services, clerical, and craft occupations, and also in sales occupations (not shown in Table 6). The early exit effect was also apparent for managerial occupations but in this case was not statistically significant. For example, working 30 years in a craft occupation was associated with a probability of low income of 41% if the individual worked throughout his 50s, but 66% if the individual worked fewer than five years in his 50s. The early exit effect was even larger for personal and protective services occupations. Working 30 years in these occupations was associated with a probability of low income of 9% if the individual worked throughout his 50s, but 67% if the individual worked fewer than five years in his 50s. This large effect is likely to reflect two influences. An early exit may have been harmful because it hindered the accumulation of savings and pension contributions and thence entitlements. It may also be that the individuals who stopped working early were those with a lower earning potential, in other words those who were earning less or had lost their job. Because we are not able to identify the reasons why some men left the labour market early, we cannot disentangle the two effects. Notwithstanding this, it is clear that, for some occupational groups, early exit definitely

increased the chance of having low income in later life, whereas for other occupational groups – typically the higher-skilled ones – this was less the case. It would be interesting to investigate how early exit effects varied within the broad occupational groups that we used, but small sample sizes in our data set prevented this.

Women: household type and marital status are important

The regression results for women were remarkably similar to those for men in the sense that most of the same variables had statistically significant associations with low-income risk. But some notable differences emerged as well. As for men, the factors associated with a smaller probability of having a low income included being relatively young, and having educational qualifications higher than A level. On the other hand, marital status and living arrangements mattered much more than for men. The predicted probabilities for women are shown in Table 5. We begin with the same reference set of characteristics as we did for men, except that for women, they imply a predicted probability of low income of 4.0% (rather than 2.9%).

Women without a partner had a very much higher risk of low income than the reference woman. For example, for single never-married women and widows, the predicted low-income probability was 8.1%, whereas for divorced women, it was even higher, 12.1%. (The size of the household context effect is underlined by the fact that these probabilities were computed assuming the woman had worked all 40 years of her working life.) It is only if the woman were living with a partner in paid work that the probability of low income was much reduced (from 4% to 0.4%).

The proportion of the working life that a woman spent in self-employment was not associated with a greater risk of low income (the same result as we found for men). Nor was the proportion of time spent in part-time work. This was a surprising result, given that contribution rules for part-time employees were expected to have adverse effects on their pension entitlement rights, particularly since most of our sample were not likely to be much affected by the 1978 Home Responsibilities Protection Act which mandated pension contribution credits for individuals with caring responsibilities (Ginn and Arber, 1998).

The greater the proportion of the working life that a woman spent in managerial, professional, technical and clerical occupations, the smaller the risk of low income. These occupational groups are much the same ones as were also most important for men, and again the size of the association was largest for professional occupations. One difference from the results for men was that the time a woman spent in a personal and protective services occupation did not have a statistically significant association with later-life low income risk. (This is likely to be because, in this occupational group, men were much more likely to be employed in public sector jobs, and these jobs were more likely to have good pension provision.) One similarity with the results for men is that spending more time in a given occupational group did not necessarily reduce low-income risks. Look, for instance, in Table 6 at the small variation in predicted probabilities with years in employment, particularly for those in a craft occupation.

Perhaps the greatest difference between the results for men and women was that early exit by a woman was not associated with sizeable differences in the probability of low income. Indeed, none of the interaction effects intended to capture the impact of low labour market attachment between ages 50 and 60 were statistically significant (see Table 8 in the Appendix). Our explanation for the lack of association with early exit is that low or intermittent labour market attachment was common throughout the women's working lives (not just in their 50s), whereas for men its prevalence was relatively high only between ages 50 and 60. Also, for women, it may be that having a partner with a good work history (and gaining access to pension entitlements and other financial assets by that route) is more important for later-life income than what she did during her own working life.

The differences between the sexes again

The analysis so far has emphasised that the factors most associated with the chance of having a low income in later life differ between men and women. For example, in the discussion of the multivariate analysis, for men we drew attention to the deleterious effects of working fewer than five years in one's 50s. For women we highlighted the adverse effects of living without a

partner. A more general question is: to what extent do the overall differences in low income probabilities between older men and women reflect the fact that women have different characteristics than men – for example, less of the working life spent in paid employment, more likely to be living without a partner, less likely to have better educational qualifications, and so on. Or does the differential reflect the fact that among women and men with the same characteristics, the strength of the association with low income differs by sex?

Both effects are likely to play a role. For example, with respect to the differences-in-characteristics explanation, the proportion with educational qualifications above A level was 22% for men, but only 12% for women (see Tables 7 and 8 in the Appendix). And the average proportion of the working life spent in professional occupations was 4% for men but only 2% for women. With respect to the differences-in-association explanation, observe for example that having educational qualifications above A level rather than no educational qualifications reduced the low-income probability for men by 20 percentage points, but that for women by rather less, 16 percentage points. Similarly, the protective effect on income of working longer in a professional occupation was greater for men than women (Tables 7 and 8).

To distinguish more formally the relative importance of differences in characteristics versus differences in association, and taking into account all the explanatory variables, we applied the decomposition method of Gomulka and Stern (1990). The method only provides a range of estimates of relative importance (depending on the different weighting schemes used), but regardless of which was used we concluded that the majority of the difference in low-income risk between the sexes was due to differences in characteristics. The overall difference in average predicted probabilities between the sexes was 12.4 percentage points. Applying one version of the Gomulka-Stern method, about 23% of this differential was accounted for by differences in association size, but 77% by differences in characteristics.

Summary

In this chapter we have analysed the relationship between low income in later life and work history, together with a number of other important characteristics: sex, age, educational qualifications, household type and marital status. Taking each factor separately, we found higher risks of having a low income in later life for women compared to men, for older individuals compared to younger ones, for individuals with fewer educational qualifications, for those who worked in lower-earning occupational groups, and those who spent less time in paid work during their 50s. Most of these associations remained when we considered the impact of each factor separately while controlling for impact of other factors. There were notable differences between the sexes in the nature of the associations, however.

For both men and women, a small risk of a low income was associated with having spent more years working in occupational groups with higher earnings and more likely to offer occupational pensions. But women benefited from having spent more of their working life in managerial, professional, technical, and clerical occupations, whereas for men the relevant occupational groups were the professional and personal and protective services ones.

The impact of labour market withdrawal between ages 50 and 60 also differed between the sexes. For example, for men (but not women) employed in some low-skilled occupational groups, early exit from the labour market was associated with a marked increase in the probability of having a low income. Selection effects may account for some of this result. That is, men who spent more of their working life in low-skilled occupations were perhaps those who could not move up the occupational ladder and were eventually squeezed out of the labour market before pension age. Nevertheless, the size of the difference seems to suggest that early withdrawal from the labour market could itself raise the chance of having low income in later life for men from some occupations. By contrast, for women, low labour market participation between ages 50 and 60 did not seem as relevant. Their working lives in general, not just in that decade, were characterised by more movements into and out of

the labour market, and greater occupational mobility, than for men.

There were also notable associations between low-income risk and marital status and household type. This was particularly relevant for women rather than men: women living without a partner were much more likely to have a greater probability of low income, other things being equal. Further investigation of the effects of living arrangements was constrained because data about the histories of the former partners of currently divorced, separated and widowed women were not available.

Summary and policy relevance

In Chapter 1, we stated that we aimed to address three questions:

Have the trends in employment and income cited earlier continued during the 1990s, and to what extent are employment and income for individuals in their 50s similar to those for individuals of pension age?

How does income change in the years around retirement?

What is the relationship between an individual's income in old age and their employment history during their working life?

We argued in Chapter 2 that, taking the 1990s as a whole, trends in employment for older workers over the decade were not a continuation of the earlier ones: the decline had levelled out. Although older people continued to be over-represented at the bottom of the income distribution for the population as a whole, this was combined with greater income growth during the 1990s among individuals of pension age than for the population as a whole. But among pensioners themselves, income inequality increased over the period, and it remained the case that better-off pensioners were most likely to derive significant income from occupational and personal pensions and investment income, and the worst-off pensioners relied mostly on the state retirement pension and other benefits. Despite the trend towards earlier retirement, it cannot yet be said that the income distribution of individuals aged 50-59 resembles the distribution of income among individuals of pension age. This is because the number of people in their 50s who are retired is still relatively small. However, the sources of household income differ between

richer and poorer 50- to 59-year-olds in ways that foreshadow what we found for those of pension age.

Income changes around retirement were analysed in Chapter 3. For men aged 60+ and women aged 55+, we found that economic activity rates and work hours declined in the years leading up to retirement and that household income also declined in parallel. There was, however, a marked income fall in the retirement year nonetheless. This description also characterised the experience of those who retired in their 50s. Thus, despite the greater prevalence of bridge job strategies that several commentators have pointed to, it remains the case that, on average, in the years surrounding retirement income falls sharply rather than gradually. Large differences between the sexes were not apparent when we looked at changes in household incomes, but they were when we examined the changes around retirement in the incomes received personally by the individual who retired. On average, fewer women received occupational or personal pension income than men, and among those who did receive some, the amounts were smaller.

Chapter 4 took a longer-term perspective, examining in particular the association between the probability of having a relatively low income when aged 60+ and patterns of work history, in conjunction with a number of other factors. Those at higher risk of low income in later life were women rather than men, older individuals rather than younger ones, individuals with relatively few educational qualifications, those who worked in lower earning occupational groups, and those who spent less of their 50s in paid work. These associations were identified first by looking at whether people with each

characteristic had a low income in later life (bivariate analysis). Most of the associations remained when we controlled for the interplay of the characteristics by calculating the separate impact of each factor through multivariate analysis. It was notable that spending a greater proportion of the working life in a specific occupational group was not necessarily associated with a smaller low-income risk. There were also notable differences between the sexes in the nature of the associations, however. We drew attention, for example, to the fact that, for men in particular, early exit from the labour market could be associated with a marked increase in the probability of having a low income in later life. Particularly relevant for women were household type and marital status, with women living without a partner much more likely to have a greater probability of low income, other things being equal.

Our findings have some relevance for the formulation of policy. For example, our findings suggest, first, that measures to address the issue of early withdrawal from the labour market are most relevant for men rather than women (for whom issues of participation over the whole working life are more relevant).

But, second, and importantly, our findings indicate that whether early exit from the labour market raises the risk of low income in later life was contingent on the occupational group(s) in which an individual worked. Occupational differences in entitlements to occupational and personal pensions are likely to explain part of this result. With BHPS data it is difficult to say more. First, sample size considerations meant that we were unable to investigate early exit effects within occupational groups. Given the occupational heterogeneity within these broad categories, early exit effects are likely to vary more than we found. If policy initiatives are to be formulated to address any adverse consequences of early exit, more disaggregated information is required in order to target them. Second, we were unable to distinguish between voluntary and involuntary choices to retire early, or whether workers' expectations when they retired about later-life income were accurate or not. See Campbell (1999) for further discussion of the complexities of the story and their policy implications.

The finding in Chapter 3 that large differences between the sexes were apparent if one looked at personal rather than household income changes, raises some issues about policy strategies for the protection of living standards in old age. One strategy, and one which long described British policy, is a reliance on a 'male breadwinner' model according to which wives (and children) were assumed to benefit from the income brought in by husbands, both during the working life and in retirement via his pension(s). This model has proved increasingly inadequate given changing assumptions about women's roles, a greater incidence of family dissolution and new family structures, and the greater longevity of women relative to men. These have (partly) motivated a number of recent policy initiatives that have aimed to raise individuals' personal incomes, especially women's, both during the working life and after it (via pension entitlements). A prime example of this is the pension-sharing provisions made under the Welfare Reform and Pensions Act that came into force on 1 December 2000. The new law entitles one partner to claim a share of their spouse's pension when filing for divorce.

By confirming the links between income in later life and work-life history (Chapter 4), our results underline the relevance of recent initiatives to enable more individuals to make better provision for their old age through the accumulation of assets in the form of pension rights (for example, stakeholder pensions) and saving more generally. (For useful overviews, see Pension Provision Group, 1998, 1999.) The results of Chapter 4 also draw attention to some of the dilemmas that confront policy. Although labour force participation patterns of women have moved closer to those of men over time, there remain large differences between them and these are likely to persist for a long while. There has been greater incidence of family dissolution and new family structures: increasingly many individuals live in old age with no spouse or without their first spouse. Hence some move towards policy strategies that aim to raise individuals' personal incomes, especially women's, is inevitable. But of course there remains the problem of how to design schemes that provide non-trivial pension entitlements while taking account of intermittent participation in the labour market (for example, because of time spent caring for children) and enabling the low paid to participate. As an illustration of the dilemmas, the State Earnings Related Pension Scheme (SERPS) made relatively

generous provision for pension right accumulation for women through the use of a best-20-years of earnings rule and generous survivor benefits, but SERPS is being phased out largely on the grounds of cost, and alternatives such as the State Second Pension (SSP) are likely to be less generous to women.

Part of the policy tension arises because of different emphases put on different income distribution goals. Measures aiming to increase saving for old age through occupational or personal schemes may raise individuals' retirement incomes in absolute terms, and hence reduce the incidence of low income in old age. But at the same time they may also perpetuate working life differences, to the extent that entitlements are more or less directly related to contributions (funded by earnings and so on). Thus, income inequality in old age need not be reduced. By contrast, a substantial increase in the flat-rate basic retirement pension would both raise incomes and reduce income inequality in old age – but would also be very costly. To the extent that there are constraints on reducing income inequalities in old age through changes in the basic state retirement pension (and associated measures directed at pensioners such as the Minimum Income Guarantee), then the issue of reducing income inequalities in later life may really be an issue of reducing inequalities earlier in life in both the labour market and in the burden of family responsibilities.

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Appendix: Multivariate analysis of the probability of low income in later life

In Chapter 4, we used multivariate regression analysis to unravel the relationship between the probability that an individual aged 60+ had low income and a number of explanatory variables including several dimensions of their work history. The particular technique used was probit regression, and we fitted separate models for men and women. The model estimates are summarised in Table 7 (men) and Table 8 (women). The first column of numbers in each table lists the explanatory variables, the second and third columns show the ‘marginal effect’ (to be discussed later) and a measure of the statistical significance of the estimate of the marginal effect. The final column shows the average values of the explanatory variables among the estimation sample.

The ‘marginal effect’ for a given explanatory variable summarises the impact on the probability of having a low income of a small change in that variable, holding all the other explanatory variables constant. Positive marginal effects imply a positive association between increases in an explanatory variable and increases in the probability of low income; negative marginal effects imply a negative association. More precisely, the marginal effect is the change in the probability of low income associated with a one-unit increase in the relevant explanatory variable, holding all other explanatory variables at their sample mean values. For binary explanatory variables (for example, those indicating possession of a particular educational qualification), the marginal effect is the change in the probability of low income associated with having rather than not having the qualification, other things being equal. We judged marginal effects to be ‘large’ if the estimate of the effect was large in magnitude and was also statistically

significant (in other words the ratio of the marginal effect to its standard error was sufficiently large).

The estimates can also be used to predict the probability of low income for individuals with different combinations of characteristics, and we used this format in Chapter 4 in order to illustrate the implications of the estimates.

We also estimated a number of variants of the model reported here in order to check robustness and to explore some issues in greater depth. Perhaps the most important check was to investigate whether the estimates might be misleading because some individuals were still in paid employment after age 60 (in our sample, 15% of men and 8% of women were). When we raised the age cut-off for inclusion in the estimation samples to 75 years (an age at which very few worked), and repeated the modelling, we found that the conclusions to be drawn were not substantially affected.

Table 7: Probit regression model of probability of having a low income: men aged 60+

Regressor	Marginal effect [†]	Standard error	Mean of regressor
Age	0.070	0.031**	71.1
Age squared	0.000	0.000**	5101
Vocational education	0.002	0.038	0.139
O level	-0.061	0.037	0.114
A level	-0.112	0.045**	0.045
Educational qualification higher than A level	-0.197	0.028**	0.215
Single and widowed	0.224	0.064**	0.148
Single and divorced	0.281	0.082**	0.051
Single and never married	0.252	0.095**	0.051
Couple, partner not employed	0.250	0.031**	0.604
Partner disabled	-0.022	0.029	0.169
Proportion of age 20-60 as self-employed	0.097	0.061	0.085
Proportion of age 20-60 as part-timer	0.692	0.445	0.003
Proportion of age 20-60 in unknown occupation	-0.147	0.135	0.053
Proportion of age 20-60 as manager	-0.108	0.134	0.079
Proportion of age 20-60 as professional	-0.518	0.190**	0.042
Proportion of age 20-60 in technical occupation	-0.171	0.144	0.052
Proportion of age 20-60 in clerical occupation	-0.223	0.136	0.099
Proportion of age 20-60 in craft occupation	0.031	0.122	0.282
Proportion of age 20-60 in personal and protective services	-0.404	0.160**	0.032
Proportion of age 20-60 in sales	-0.052	0.149	0.026
Proportion of age 20-60 as plant/machine operator	-0.013	0.125	0.138
Proportion of age 20-60 in other unskilled occupation	-0.057	0.126	0.104
Proportion of age 20-60 in unemployment	0.991	0.443**	0.008
<i>Interactions between low labour market participation when aged 50-59 and:</i>			
Proportion of age 20-60 as manager	0.350	0.559	0.001
Proportion of age 20-60 as professional	†	†	†
Proportion of age 20-60 in technical occupation	-0.185	0.426	0.002
Proportion of age 20-60 in clerical occupation	0.207	0.118*	0.008
Proportion of age 20-60 in craft occupation	0.253	0.134*	0.017
Proportion of age 20-60 in personal and protective services	0.704	0.312**	0.002
Proportion of age 20-60 in sales	1.491	0.242**	0.000
Proportion of age 20-60 as plant/machine operator	-0.039	0.136	0.016
Proportion of age 20-60 in other unskilled occupation	-0.210	0.276	0.009
Observed probability		0.271	
Predicted probability at mean of regressors		0.218	
Number of observations		4003	
Log-likelihood		-1964.27	
Pseudo R ²		0.160	

Notes:

[†]Each marginal effect was computed at the mean of regressors. For each dummy variable it was computed for a discrete change from 0 to 1.

[†] Could not be estimated because of insufficient sample variation (all men in the sample with early exit and who spent no time in a professional occupation also had low income).

* Statistically significant at the 10% level.

** Statistically significant at the 5% level.

'Low income' was defined as having an income in the poorest third of the income distribution of those aged 60+, where 'income' was smoothed over 3 years.

The reference categories were: living in couple with partner employed and not disabled, no educational qualifications, proportion of age 20-60 out of the labour market.

Regression also included wave dummy variables. Robust standard errors are presented (accounting for repeated observations on some individuals).

Table 8: Probit regression model of probability of having a low income: women aged 60+

Regressor	Marginal effect [†]	Standard error	Mean of regressor
Age	0.118	0.031**	72.1
Age squared	-0.001	0.000**	5249.3
Vocational education	-0.049	0.050	0.100
O level	-0.049	0.046	0.110
A level	-0.098	0.093	0.023
Educational qualification higher than A level	-0.160	0.053**	0.120
Single and widowed	0.453	0.061**	0.434
Single and divorced	0.515	0.053**	0.049
Single and never married	0.462	0.067**	0.066
Couple, partner not employed	0.333	0.065**	0.385
Partner disabled	0.009	0.038	0.120
Number of children had in life	-0.009	0.009	1.972
Proportion of age 20-60 as self-employed	0.102	0.130	0.026
Proportion of age 20-60 as part-timer	0.064	0.071	0.178
Proportion of age 20-60 in unknown occupation	-0.045	0.118	0.029
Proportion of age 20-60 as manager	-0.454	0.162**	0.022
Proportion of age 20-60 as professional	-0.476	0.179**	0.018
Proportion of age 20-60 in technical occupation	-0.263	0.116**	0.041
Proportion of age 20-60 in clerical occupation	-0.351	0.079**	0.145
Proportion of age 20-60 in craft occupation	-0.019	0.098	0.047
Proportion of age 20-60 in personal and protective services	-0.118	0.099	0.058
Proportion of age 20-60 in sales	0.076	0.095	0.062
Proportion of age 20-60 as plant/machine operator	0.062	0.095	0.047
Proportion of age 20-60 in other unskilled occupation	0.003	0.083	0.087
Proportion of age 20-60 in unemployment	0.291	0.299	0.007
<i>Interactions between low labour market participation when aged 50-59 and:</i>			
Proportion of age 20-60 as manager	0.408	0.373	0.004
Proportion of age 20-60 as professional	-0.189	0.390	0.005
Proportion of age 20-60 in technical occupation	-0.368	0.274	0.005
Proportion of age 20-60 in clerical occupation	0.117	0.139	0.031
Proportion of age 20-60 in craft occupation	-0.037	0.198	0.011
Proportion of age 20-60 in personal and protective services	-0.101	0.209	0.014
Proportion of age 20-60 in sales	-0.084	0.173	0.016
Proportion of age 20-60 as plant/machine operator	0.047	0.215	0.009
Proportion of age 20-60 in other unskilled occupation	0.250	0.178	0.016
Observed probability		0.395	
Predicted probability at mean of regressors		0.369	
Number of observations		5414	
Log-likelihood		-3172.04	
Pseudo R ²		0.127	

Notes:

[†] Each marginal effect was computed at the mean of regressors. For each dummy variable it was computed for a discrete change from 0 to 1.

** Statistically significant at the 5% level.

'Low income' was defined as having an income in the poorest third of the income distribution of those aged 60+, where 'income' was smoothed over 3 years.

The reference categories were: living in couple with partner employed and not disabled, no educational qualifications, proportion of age 20-60 out of the labour market.

Regression also included wave dummy variables. Robust standard errors are presented (accounting for repeated observations on some individuals).