Can the retirement-consumption puzzle be resolved?

Evidence from the British Household Panel Survey

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Abstract

This paper uses data from the British Household Panel Survey to shed further light on the fall in spending at retirement (the "retirement-consumption puzzle"). Comparing food spending for men retiring involuntarily early (through ill health or redundancy) with spending for those who retire voluntarily, it finds a significant fall in spending only for those who retire involuntarily. This is consistent with the observed fall in spending being linked to a negative wealth shock for some retirees. Evidence on psychological and financial well-being also indicates that the retirement experience of involuntary retirees is very different to that of voluntary retirees.

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1.   Introduction

A number of recent studies have looked at what happens to spending at retirement – and why (see Hamermesh, 1984, Banks, Blundell and Tanner, 1998, Bernheim, Skinner and Weinberg, 2001, Ameriks, Caplan and Leahy, 2002, Hurd and Rohwedder, 2003, Miniaci, Monfardini and Weber, 2003, Haider and Stephens, 2004, Aguiar and Hurd, 2004, and Blau, 2004).

Looking at spending at retirement is important for at least two reasons. First, spending in retirement is likely to reflect how well-off people are, and changes in spending before and after retirement (adjusting for work-related spending) are likely to reflect changes in living standards when people stop working. If retired people hold substantial levels of (non-annuitised) wealth which they use to finance consumption, looking directly at spending may provide a better measure of how well-off people are than income replacement rates.

Secondly, there has been an interest in testing the predictions of the life-cycle model of consumption against what actually happens at retirement. The "stripped-down" version of the model predicts that consumption should be smoothed through anticipated changes in income, such as are likely to occur around retirement. Looking at what actually happens to spending will shed light on how people plan financially for retirement, something that is particularly important in the UK given the shift in pension provision from the state and employers to individuals.

In practice, the finding of all the studies is that consumption falls significantly at retirement, even allowing for obvious work-related spending items. This fall is common across a number of countries (US, UK and Italy), across different time periods and across different measures of spending. This fall in spending has become known as the "retirement-consumption puzzle".

What could explain the puzzle? It may mean that people do not optimally plan for retirement in the way the life-cycle model predicts, using instead, for example, simple rules of thumb to determine consumption and saving. But, there are (at least) two possible explanations that are consistent with extended versions of the life-cycle model. One is that the fall in spending is a consequence of households' increased leisure time at retirement – either because consumption and leisure are substitutes in

households' utility functions or, as argued by Aguiar and Hurst (2004), that leisure substitutes for expenditure in households' consumption production functions. A second is that there may be unanticipated shocks to lifetime wealth occurring around the time of retirement that could explain the fall in spending within the context of the life-cycle model, allowing for uncertainty.

Depending on which of these explanations is correct, the observed fall in spending has different implications for the current debate about pension policy in the UK and elsewhere. If it is evidence that people do not tend to plan optimally for retirement, this has implications for whether the UK government's current strategy of "informed choice" to encourage individual pension provision is likely to be successful. But, the leisure-substitution hypothesis would suggest that the observed fall in spending is entirely consistent with an optimal level of retirement saving, both ex ante and ex post. If the fall in spending follows from negative wealth shocks then, ex ante, saving may have been optimal. Blau (2004) argues that if the timing of retirement is uncertain, it may be optimal for spending to fall at retirement since additional saving would reduce lifetime utility still further. But following a wealth shock, individuals may be worse off, particularly where levels of individual wealth are already fairly low and the Government needs to decide whether and how to provide support.

This paper uses information on food spending around retirement from the British Household Panel Survey (BHPS) to shed further light on the retirement-consumption puzzle. The panel data evidence confirms that there is a small fall in mean (and median) spending on food (see Figure 1), consistent with the earlier finding of Banks, Blundell and Tanner (1998), based on pseudo-cohort data from the Family Expenditure Survey.

Figure 1: Weekly real spending on food, before and after retirement
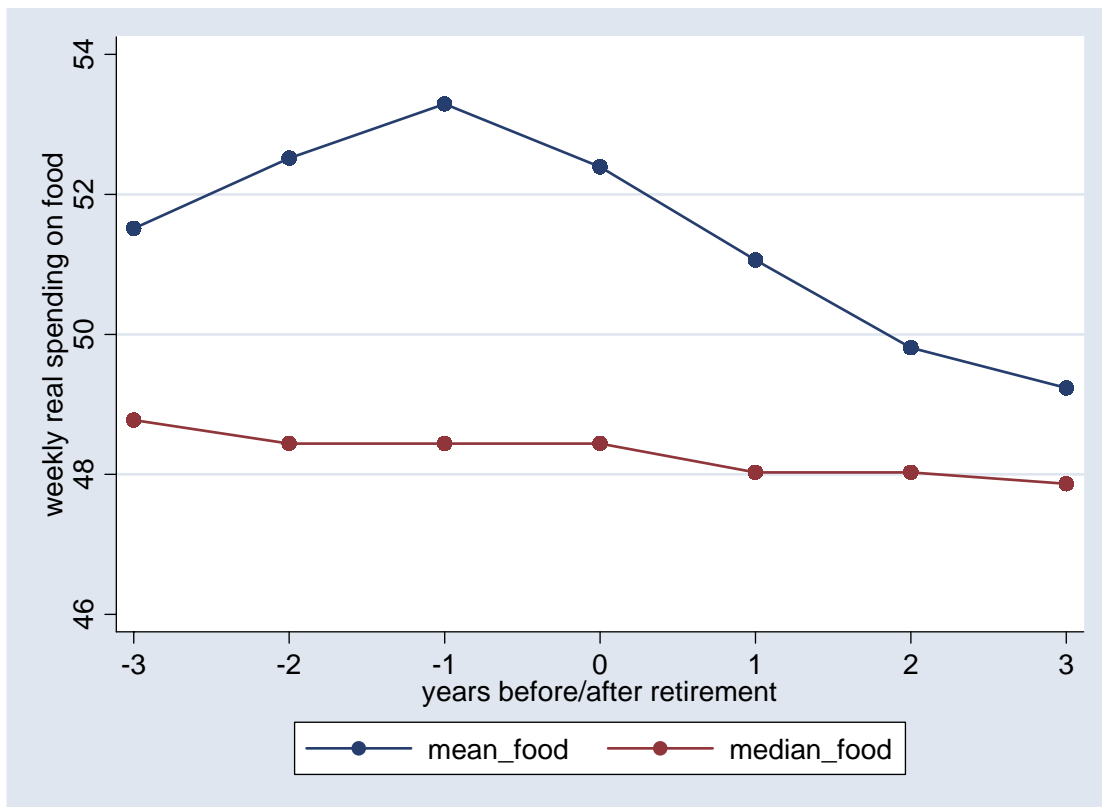
The paper explores whether this retirement-consumption puzzle can be explained by negative wealth shocks that affect some retirees. Previous studies have shown that the experience of retirement in the UK is very varied (see Tanner (1998), Blundell, Meghir and Smith (2002), Marmot et al (2004)) and that, for a significant minority, early retirement (before the state pension age of 65) appears to be involuntary[1] and occurs as a result of ill-health or redundancy.[2] If unanticipated, this is likely to result in a negative shock to wealth because of lost earnings and/or pension wealth accrual.

The paper compares spending for different groups of retirees, defined according to whether retirement is voluntary or involuntarily. The intuition is straightforward: where early retirement is involuntary – occurring because of ill-health or redundancy – retirement is more likely to be associated with lower than anticipated wealth because of lost earnings and/or pension wealth accrual. The negative wealth shock

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[1] In the absence of ill-health or redundancy, the individual would have carried on working for longer.
[2] Of course, redundancy does not necessarily lead to retirement (permanent labour market exit), but the wage cut someone would have to take in getting another job may be enough to make them stop working altogether.

hypothesis would then imply smoothed spending for voluntary retirees, but falling spending for involuntary retirees.

The findings are consistent with this hypothesis. Spending falls among involuntary retirees and does not fall for those who retire voluntarily. By contrast, the alternative possible explanations of non-life cycle behaviour and leisure-substitution would both tend to suggest similar falls in spending among all retirees.

The paper also looks at profiles of (measures of) well-being for the different groups for additional insights into the nature of the retirement-consumption puzzle. A priori, the effect of retirement on well-being is uncertain and hard to assess, so this paper focuses on whether involuntarily early retirement has a different impact on well-being than voluntary retirement. The finding is that, compared to voluntary retirement, involuntary early retirement is associated with falling psychological and financial well-being. This is also consistent with a negative wealth shock that affects one group of retirees.

The plan of the paper is as follows. The next section discusses alternative explanations for the retirement-consumption puzzle. Section 3 presents descriptive evidence on spending at retirement from the BHPS and section 4, the results of fixed effects estimation of the effect of retirement on spending. Section 4 presents preliminary evidence on measures of well-being and section 5 concludes.

2.   The puzzle and possible resolutions

The fact that observed spending falls at retirement is a challenge to the simple, one-consumption-good life cycle model. In its simplest form, with utility dependent only on consumption, no uncertainty and assuming that marginal utility is continuous and declining in consumption, the maximisation of lifetime utility implies that the marginal utility of consumption, and consumption itself, should be smoothed. In this case, falling consumption at retirement would imply irrational behaviour by consumers. This is the conclusion reached by Bernheim, Skinner and Weinberg (2001) who argue that the evidence of a fall in spending at retirement points to people using rules of thumb, rather than forward-looking optimising behaviour, to determine retirement saving.

One possible explanation is that the studies capture a fall in *spending* at retirement, which is not the same as a fall in utility-producing *consumption* at retirement.

Households may stock up on durables immediately prior to retirement and enjoy a higher flow of services from durables after retirement; thus while their observed spending may fall, their overall consumption remains the same. However, Miniaci, Monfardini and Weber (2003) find no evidence of pre-retirement stocking up of durables. Another possible explanation is that there is a necessary level of (non-utility-producing) spending associated with working, for example the cost of buying suits and travelling to work, that stops when people retire. Again, this would imply that, while observed spending falls, (utility-producing) consumption may be smoothed over retirement. This effect will be reinforced to the extent that the spending of the retired on certain items is subsidised (transport and prescription charges in the UK, health in the US). However, Banks, Blundell and Tanner (1998) take out obvious work-related spending items from total spending and look at sub-components of spending and still find evidence of a fall at retirement.

Two possible extensions to the simple life cycle model, however, would be consistent with a fall in spending at retirement.

One possibility is that spending falls as a result of the big increase in leisure on retirement.[3] Spending would fall either, if consumption and leisure are substitutes in a household utility function, or if time is a substitute for spending in a household production function to generate consumption. Aguiar and Hurst (2004) use detailed information on food intake and time use in the US to show that, despite a fall in spending on food, nutritional content and quality are maintained and that more time is spent on shopping and food preparation.

As evidence in support of the leisure-substitution hypothesis, Hurd and Rohwedder (2003) show that most people anticipate that spending will fall at retirement and, if anything, that the anticipated decline is greater than the fall in spending that actually occurred among (a different group of) those who had already retired (20% compared to 12% among married couples, for example). Ameriks, Caplin and Leahy (2002) also find that many people expect to spend less in retirement.

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[3] There is clearly an issue about whether this is optimal from the individual's point of view given diminishing marginal returns to leisure. There are possible reasons why individuals may not want to reduce their hours gradually, including fixed costs associated with working and/or economies of scale in converting time into utility-producing leisure. More likely, they may face constraints in their choice of the number of hours to work as a result of the fixed costs of employment to the employer and, for people with a defined benefit occupational pension in the UK, current legal restrictions on drawing any pension income while still working for the same employer.

However, this evidence, while interesting, is not conclusive about the mechanism that causes actual spending to fall (people may anticipate that spending will fall if they are following a simple rule of thumb, for example). Hurd and Rohwedder's evidence is less convincing for being based on cross-section analysis and there are important differences between sub-groups. For example, anticipated declines in spending at retirement vary little with income, wealth and health status, but the actual falls in spending are far greater for those who, post-retirement, are in the bottom income and wealth quartiles and self-report poor health. Using data from the earlier Retirement History Survey, which does link expected and actual changes in spending for the same people, Haider and Stephens (2003) show there is little correlation between the two – the fall in spending that occurs in retirement is broadly the same whatever people's prior expectations.

A second possible explanation for the fall in spending is that that retirement may be associated with a negative shock to wealth. The UK evidence strongly suggests that this is the case, at least for some. Disney and Tanner (1999) show that more people tend to retire earlier than expected than later, which may result in lost earnings and/or pension wealth. Of course, earlier than expected retirement may follow from a positive wealth shock, but Tanner (1998) and Marmot et al (2004) find many people citing ill health and compulsory early redundancy as the main reason for early retirement. Blau (2004) calibrates a model of retirement showing that uncertainty over the timing of retirement will generate a fall in spending if retirement is a discrete event. Moreover, he shows that it may be optimal for spending to fall rather than individuals increasing their saving. Using IV regression with lagged retirement, Banks, Blundell and Tanner (1998) find that the fall in consumption associated with *anticipated* retirement is far smaller, but not eliminated altogether. For the US, Haider and Stephens (2003) reach a similar conclusion using subjective retirement expectations as the instrument. This paper also explores the negative wealth shock hypothesis but takes a different approach. It compares the spending of voluntary retirees with those who retired involuntarily, who are more likely to have had an adverse shock to their wealth. Differences in spending at retirement for these groups would therefore support the negative wealth shock hypothesis.

3. Spending at retirement in the UK – voluntary and involuntary retirees

The data are drawn from the British Household Panel Survey (BHPS). This is a panel dataset which has been collecting information on the same sample of approximately 10,000 individuals each year since 1991. The BHPS covers all ages and, compared to the US Health and Retirement Survey for example, has a smaller number of individuals in the relevant age range for studying retirement. This paper selects the cohort of men aged 45 – 64 in the first year of the survey, a total sample of around 2,000.

The BHPS has a number of strengths:

- after running for more than ten years, the dataset contains a reasonable number of retirements – more than 500 men retire over the entire period – and is increasingly being used to study retirement;[4]

- nearly half the sample has been in the survey for the entire period, giving ten waves of information to use in the analysis.[5] This is particularly important for determining involuntary and voluntary retirees, a process which relies on information on employment before and after retirement; and

- the BHPS contains a wide number of variables, including information on spending, well-being, income and health. As discussed further below, the variables are often not as detailed as we would like (the information on spending, for example is very limited compared to the Family Expenditure Survey). However, given that the main purpose of this paper is to compare behaviour across different groups, this is arguably less of a problem than it otherwise would be.

Voluntary/ involuntary retirement

Previous studies of retirement in the UK have highlighted the very different retirement experiences that people have (see Tanner (1998) and Marmot et al (2004)). There is considerable variation in the timing of retirement, and in particular whether people retire before, at or after the state pension ages (currently 65 for men and 60 for women).

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[4] See for example Bardasi, Rigg and Jenkins (2000) for an analysis of retirement and poverty using the BHPS and Disney, Emerson and Wakefield (2003) for an analysis of ill-health and labour market exits.
[5] Wave 11 available, but not used because of no information on income.

There is also variation in the reasons why people retire. When asked to give the main reason why they left work before the state pension age (or the normal retirement age in their job) people give reasons that broadly reflect involuntary retirement ('ill-health' or 'compulsory redundancy') or voluntary retirement ('to enjoy life while young and fit' or 'redundancy/retirement with reasonable financial terms'). On the basis of the reasons given, it is reasonable to assume that those who retire involuntarily are more likely to experience a negative wealth shock because of unanticipated lost earnings and/or pension wealth accrual than those for whom retirement is voluntary.

In turn, these retirement experiences tend to be reflected in different pathways into retirement. Figure 2 illustrates self-reported employment states prior to a self-reported state of retirement for men using data from the BHPS. As the figure shows, more than one-third of all men are not working in the period prior to their self-reported retirement, but classify themselves as being sick or unemployed.

Figure 2: Employment status prior to self-reported retirement

In this paper, retirement is defined as the point of permanent departure from employment. But, how individuals classify themselves when they leave work is used to determine whether retirement is voluntary or involuntary. This is based on previous studies (Tanner, 1998, and Marmot et al, 2004), which have shown that people for whom retirement is involuntary are more likely to self-report themselves as "unemployed", "out of work" or "sick" before they report themselves as retired. By

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contrast, those for whom retirement is voluntary are more likely to leave work and immediately self-report themselves as retired.

Four groups are defined as follows (summarised in Table 1)[6]:

- Group 1 – men who leave work before the state pension age (65) and immediately self-report themselves as being retired. For this group, retirement is assumed to be voluntary.

- Group 2 – men who leave work at the state pension age and immediately self-report themselves as being retired. For this group, retirement is assumed to be voluntary. However, it is possible that some people in this group may have wanted to work longer, but been forced out because of age discrimination.

- Group 3 – men who leave work after the state pension age and immediately self-report themselves as being retired. For this group, retirement is assumed to be voluntary.

- Group 4 – men who leave employment before the state pension age and report themselves as being unemployed or sick before later self-reporting themselves as retired. For this group, retirement is assumed to be involuntary.

Table 1: Summary definition of groups

	Age of retirement	Self-reported employment status after leaving work	Retirement voluntary or involuntary?	N
Group 1	< 65	Retired	Voluntary	149
Group 2	At 65	Retired	Voluntary	52
Group 3	> 65	Retired	Voluntary	66
Group 4	< 65	Unemployed/ sick	Involuntary	117

Not all retirements can be allocated to one of the four groups. Typically this is because there are too few observations before or after retirement to be able to make an assignment (eg some retire right at the beginning or end of the survey period, some retire from unemployment without being observed to work). However, while the

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[6] In all cases, individuals are additionally required to be observed working for at least two periods prior to retirement and are not observed to re-enter employment after retirement.

fairly tight criteria for allocating individuals to the different groups may reduce sample size, the advantage is that membership of the groups should be more homogeneous, making any differences in behaviour more pronounced.

The characteristics of the groups are fairly distinct, as shown in the table below.

Table 2: Characteristics of the four groups

	Profess'al occupation	Manual occupation	Occup'al pension	Public sector	No educ quals
Group 1 Retire < 65, Vol	0.36	0.40	0.87	0.33	0.26
Group 2 Retire at 65, Vol	0.18	0.78	0.50	0.06	0.45
Group 3 Retire > 65, Vol	0.20	0.55	0.17	0.18	0.33
Group 4 Retire < 65, Invol	0.16	0.68	0.50	0.17	0.50

- Men in group 1 are predominantly non-manual workers (and include a large number of people in professional/ managerial occupations) with an occupational pension. They are the most likely to work in the public sector and have the highest average level of educational qualifications.

- Men in group 2 are predominantly manual workers, overwhelmingly in the private sector, with the lowest average level of educational qualifications. Around half have an occupational pension.

- Men in group 3 tend to be in manual occupations, with the overwhelming majority not having an occupational pension.

- Men in group 4 (for whom retirement is assumed to be largely involuntary) tend to fall somewhere in between these three groups. The proportion in manual jobs is not as low as in group 1, but not as high as in group 2. Similarly the proportion with an occupational pension is not as high as group 1, but not as low as group 3. The level of educational qualifications is average, and they are neither under- nor over-represented in the public sector.

In the analysis below, we look at whether these differences in characteristics might account for any differences in spending between the groups.

An alternative way to determine whether individuals' retirement was voluntary or involuntary would be to use their own self-reporting of the reason for retiring. This information is collected in the BHPS, but only in wave 11, which would tend to reduce sample size. Moreover, the reasons given may be subject to recall error (since the questions are asked several years after retirement) and/or post-hoc rationalisation. However, the information can be used to check the validity of assigning individuals into groups on the basis of employment status. The results show that individuals in group 4 (involuntary early retirees) are three times more likely than those in group 1 (voluntary early retirees) to report early retirement because of ill-health (30% compared to 10%). Those in group 1 are nearly five times more likely than those in group 4 to report that they retired early to "enjoy life while young and fit" (28% compared to 6%) and twice as likely to report that they were "offered reasonable financial terms" (38% compared to 19%).

Measures of spending in the BHPS

The BHPS collects only limited information on non-durable spending and this paper therefore focuses on food spending.[7] Clearly it would be preferable to have a fuller measure of household spending, but as a necessary good with a small income elasticity, food provides quite a strong test of consumption smoothing; if households do not smooth spending on food, they are unlikely to smooth other forms of spending (although if food spending is smoothed, it can not be rejected that total spending falls).

Households are asked "approximately how much does your household usually spend each week in total on food and groceries." In the first wave, they are asked to give a continuous answer; in subsequent waves, they are asked to say in which band (out of 12) their weekly food spending lies. They are told to include all food, bread, milk, soft drinks etc, but asked to exclude pet food, alcohol, cigarettes and meals out. Take-aways eaten in the home are, however, included.

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[7] Information on spending on fuel is also present in most, but not all waves.

To obtain a weekly spending figure, each individual is assigned the mid-point of their reported band each year, adjusted for inflation in food prices.[8] Comparisons with the more detailed spending information in the Family Expenditure Survey shows that mean food spending in the BHPS is slightly higher than in the FES.[9] In part this may reflect the fact that there are fewer observations in the lowest bands in the BHPS (respondents may ignore atypical weeks when they spend very little). Alternatively, respondents may include other grocery items that they regularly buy at the supermarket such as washing powder, toilet roll etc. When these items are included in the FES spending figures, the two sets of numbers are very similar.

Income, spending and retirement

Table 3 summarizes mean income and food spending for each of the groups before and after retirement, while Figures 3 and 4 show the paths of the variables in each of the three years before, and the three years after, retirement. In the figures, year 0 represents the first year in which the individual is not working.

As would be expected from the characteristics of the four groups, they have very different levels of income before and after retirement. Individuals in group 1 have the highest average income pre- and post-retirement, individuals in group 2, the lowest. For all four groups, Figure 3 shows a clear one-off change in income at retirement. Average post-retirement income appears to be broadly the same proportion of average pre-retirement income for groups 1, 2 and 3 (74%, 71% and 72% respectively). For group 4, the proportion is slightly higher (86%).

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[8] For wave 1, the continuous answers are first banded, and then the midpoints are assigned.
[9] To calculate the FES figures, the continuous weekly spending figures are converted into bands and then mid-points as in the BHPS.

Table 3: Mean income and spending

	Before retirement	After retirement
Equivalised real weekly income		
ALL	£388	£250
Group 1	£454	£301
Group 2	£292	£199
Group 3	£387	£255
Group 4	£303	£230
Real weekly food spending		
ALL	£56	£50
Group 1	£58	£57
Group 2	£53	£44
Group 3	£46	£45
Group 4	£55	£50
Note to table: Group 1 – retired before 65, voluntary Group 2 – retired at 65, voluntary Group 3 – retired after 65, voluntary Group 4 – retired before 65, involuntary		

The groups also have quite different profiles for food spending around retirement. The mean spending figures in Table 3, and the profiles in figure 4, show that groups 1 and 3 broadly maintain their level of spending on food before and after retirement, albeit at very different levels. By contrast, among the group who retire involuntarily, spending on food falls following retirement. But spending also appears to fall – and falls even further – among group 2, who retire at the state pension age.

However, these figures are not conclusive – firstly because they fail to control for other factors (age and household size, for example, are related to spending and varies systematically across the groups) and secondly, because of compositional changes (i.e. the sample one year after retirement is not necessarily the same as the sample two years after retirement and so on). In the next section, fixed effects estimation is

therefore used to estimate the impact of retirement on food spending for the different groups.

Figure 3: Average weekly real income (£), by group

Graphs by group
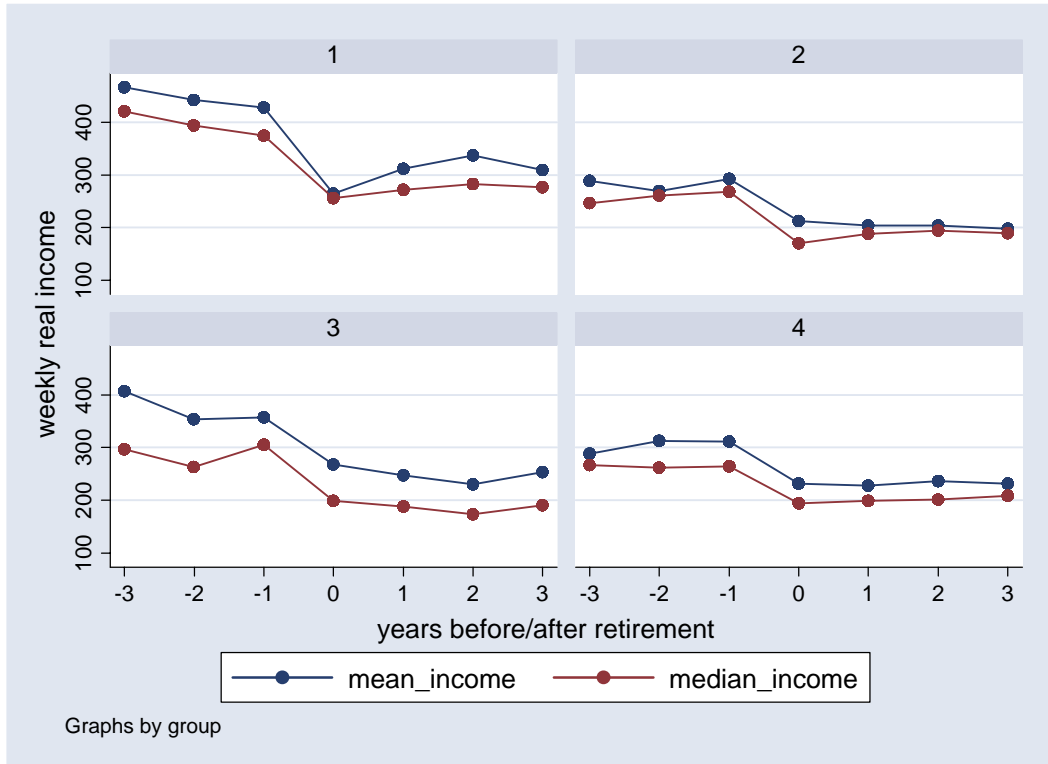
Figure 4: Average weekly real spending on food (£), by group

Graphs by group
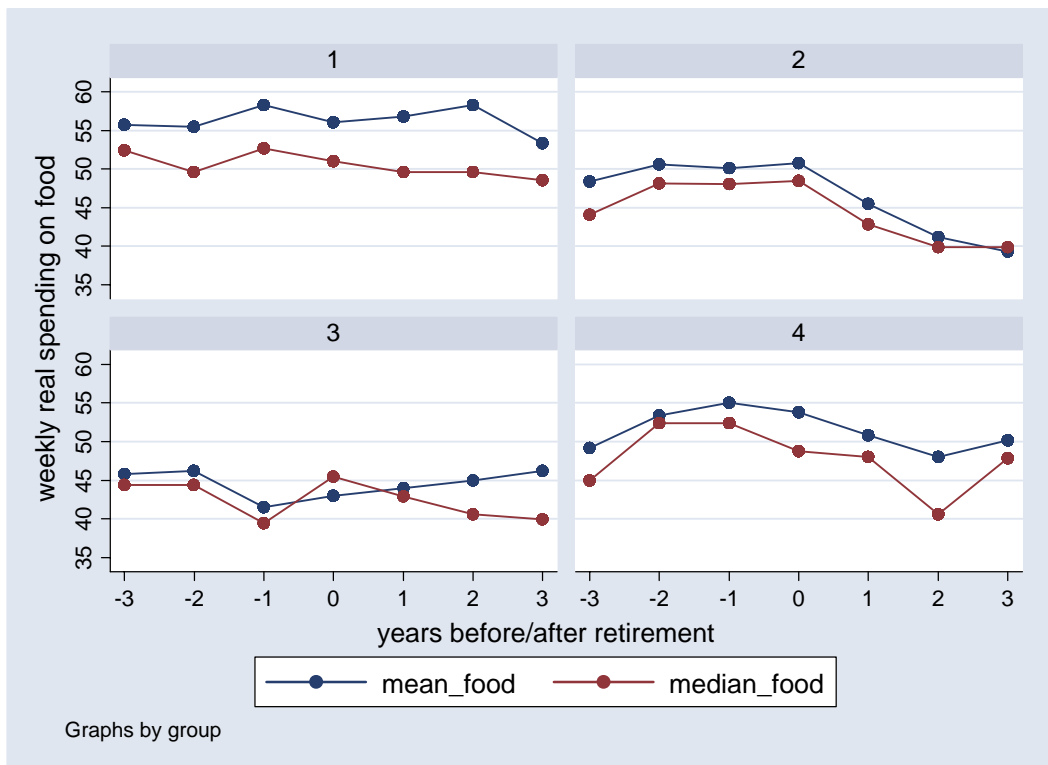
4. Estimation

The estimation approach is derived from a marginal-utility-of-wealth-constant consumption demand function, or Frisch function (see Browning, Deaton and Irish (1985) and Blundell and Macurdy (1999))

Consumers are assumed to choose consumption and leisure according to the value function:

$$V(A_t, t) = \max\{U(C_t, L_t, X_t) + \delta E[V(A_{t+1}, t+1)]\}$$

subject to the following budget constraint:

$$A_{t+1} = (1+r)(A_t + B_t + W_t H_t - C_t)$$

where δ is the consumer's discount rate, A_t is total wealth, C_t is consumption, L_t is leisure, X_t is a vector of demographics, r is the (constant) interest rate, B_t is unearned income, W_t is the wage rate and H_t is number of hours worked.

This yields the following first-order-condition for the marginal utility of consumption and the marginal utility of wealth, λt $(= \partial V / \partial A_t)$:

$$U_C(C_t, L_t X_t) = \lambda_t$$

$$\lambda_t = \delta E_t [\lambda_{t+1}(1+r)]$$

implying a consumption demand function of the form, $C_t = C(\lambda_t, W_t, X_t)$.

This allows consumption demand to be expressed as a function of an individual's current characteristics (including wages) and a single statistic – the marginal utility of wealth – capturing all other (expected) future information that determines the level of consumption today.

With uncertainty, shocks will be reflected in changes in the marginal utility of wealth from one period to the next. It is possible to express the stochastic process for the marginal utility of wealth as follows:

$$\ln \lambda_t = b_t^* + \ln \lambda_{t-1} + \varepsilon_t^* = \sum_{j=1}^{t} b_j^* + \ln \lambda_0 + \sum_{j=0}^{t} \varepsilon_j^*$$

(where b_t^* depends on the discount factor, the interest rate and the moments of the forecast error ε_t^*).

With this specification, the marginal utility of wealth can be captured by an individual fixed effect, λ_0, plus a function of age plus a random error term, reflecting expectational error in the current period. Thus the level of consumption demand can be modelled as a function of the individual's current characteristics (including wages), age and a fixed effect.

In this paper, log spending on food is modelled as a function of time-varying characteristics, X_1, including health and marital status, fixed characteristics, X_2, including education, occupation and pension status and age (A). The error term has two components reflecting unobserved fixed characteristics that may affect the marginal utility of wealth and time-varying shocks. Wages are not included directly, but are assumed to be determined by the characteristics X_1, X_2 and age.

$$\ln C_{it} = \sum_{g=1}^{4} \alpha_g G_i R_{it} + \beta_1' X_{1it} + \beta_2' X_{2i} + \gamma_1 A_{it} + \delta_1 T + \sum_{g=1}^{4} \pi_g G_i + \omega_i + u_{it}$$

G is an identifier denoting which group the individual belongs to (and hence whether retirement is voluntary or involuntary), while variable R denotes retirement (defined as permanent exit from employment). The key parameters of interest are the coefficients on the set of group-retirement interaction terms (i.e. $\sum_{g=1}^{4} \alpha_g$).

If the fall in spending at retirement is linked to a negative wealth shock from involuntary retirement, then there should be a significant difference between the coefficients for groups $1 - 3$ (for whom retirement is voluntary) and group 4 (for whom retirement is involuntary). For group 4, we would expect involuntary retirement to be associated with a significant fall in spending.

Assignment of individuals to the different groups is akin to an instrumental variables approach. It has already been shown that group membership is related to voluntary/ involuntary retirement, and it is assumed that this is correlated with a negative wealth shock. The assumption of instrumental exogeneity is satisfied if there is no direct correlation between an individuals' self-reported employment state and their level of spending. This may not be the case if ill-health, which is linked to involuntary retirement, also has a direct effect on spending. This is controlled for explicitly. It is assumed that other factors that may result in involuntary retirements do not have a direct effect on spending other than through their effect on being retired.

Results

Table 4 reports the results from the fixed effects estimation. In all cases, retirement is included as a state variable (ie R = 1 if the individual is retired). Because the BHPS asks about "usual spending on food", it is likely that any reported change in food will be gradual and will be more likely to be picked up by the state variable than by a transition variable.[10]

The results in columns (1) and (2) show that, for the sample as a whole, there is a small, insignificant fall in spending after retirement.

Table 4: Regression results – voluntary and involuntary retirement

Dependent variable = (log) weekly real spending on food

	(1)	(2)	(3)	(4)	(5)
Retired	-0.0124	-0.0142	0.0044	0.0069	0.0054
	(0.0109)	(0.0150)	(0.0168)	(0.0177)	(0.0204)
Retired < 65, Involuntary (Group 4)			-0.0555*	-0.0458	-0.0561*
			(0.0229)	(0.0261)	(0.0249)
Retired at 65, Voluntary (Group 2)				-0.0277	0.0062
				(0.0351)	(0.0376)
Retired > 65, Voluntary (Group 3)				-0.0062	-0.0083
				(0.0314)	(0.0352)
Control variables	No	Yes	Yes	No	Yes
N	3450	3450	3450	3450	3450

Notes to table
Controls = household size, whether the respondent is divorced/widowed/separated, whether the spouse is working, whether the respondent has health problems, number of health problems, registered as disabled, age dummies
Standard errors included in parenthesis, * denotes statistically significant at the 5% level

Column (3) shows the effect of adding a dummy for involuntary retirement (group 4). The coefficient on retirement, capturing the change in spending associated with retirement for groups 1 – 3, is insignificant, but for group 4, the coefficient is negative and significant. In other words, involuntary retirement is associated with a fall in food spending (around 5%) and this is significantly different to what happens to spending when retirement is voluntary.

Columns (4) and (5) show a similar differential effect of involuntary and voluntary retirement when separate retirement interaction terms are included for groups 2 and 3. The coefficient on the retirement dummy (capturing the change in spending after

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[10] There is no significant change in reported usual food spending when retirement is included as a transition variable for any of the groups.

retirement for group 1) is insignificant, as are the coefficients on the interaction terms for groups 2 and 3. For group 4, however, the interaction term is negative and significant when a full set of control variables are included.

Controlling for health is particularly important since ill-health is a cause of involuntary early retirement and may have a separate direct effect on spending. The BHPS contains a large number of variables measuring individuals' health, but only a limited number of health variables in all ten waves (see Disney, Emerson and Wakefield (2003) for a more detailed analysis of health and labour market exit using the BHPS data). In this paper, the main health variable is the number of health problems reported by the individual in each year (out of a maximum of 13, including arms, legs and hands; sight; hearing; skin conditions/ allergy; chest/ breathing; heart/ blood pressure; stomach/ digestion; diabetes; anxiety/ depression; alcohol & drugs; epilepsy; migraine and other). Two controls are included – whether the individual reports any health problems, and the number of health problems reported. Whether the individual is registered as disabled is also included.

The findings from the estimation for group 2 are quite different to the profiles shown in figure 4. The estimation results show that spending is not significantly lower after retirement than before; the figure shows a fall in spending. Excluding the control variables, the estimation results in column (4) do show a small, but insignificant, fall in spending for group 2, but this disappears when the control variables are added in column (5). By contrast, there is a larger fall in spending for group 4 with and without the control variables. These results suggest that some of the apparent fall in spending for group 2 after retirement is attributable to compositional change and some to other factors which are controlled for in the regression.

Table 5 compares what happens to food spending when people retire involuntarily early with what happens during temporary spells of unemployment (not more than one year[11]). Such temporary spells are also likely to result in lost earnings and, possibly pension wealth, and, as can be seen from the table, are associated with a fall in spending. However, the fall in spending that occurs during a temporary spell out of work is smaller than the fall in spending following involuntary retirement and is more closely related to the contemporaneous fall in income. These results suggest that

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[11] Someone is defined as being temporarily out of work if they are unemployed, but working in the previous and subsequent waves of the survey.

involuntary early retirement, which may involve leaving work several years before anticipated, is likely to be associated with a larger shock to wealth – and a bigger fall in spending.

Table 5: Regression results – retirement and unemployment

Dependent variable = (log) weekly real spending on food

	(1)	(2)
Retired	0.0225	0.0305
	(0.0203)	(0.0220)
Retired < 65, Involuntary (Group 4)	-0.0628*	-0.0541*
	(0.0259)	(0.0278)
Retired at 65, Voluntary (Group 2)	0.0039	0.0099
	(0.0388)	(0.0410)
Retired > 65, Voluntary (Group 3)	-0.0207	-0.0245
	(0.0360)	(0.0382)
Temporary unemployment	-0.0486*	-0.0173
	(0.0213)	(0.0237)
Log real income		0.0226*
		(0.0120)
N	4071	4071
Control variables	Yes	Yes
Notes to table		
Controls = household size, whether the respondent is divorced/widowed/separated, whether the spouse is working, whether the respondent has health problems, number of health problems, registered as disabled, age dummies		
Standard errors included in parenthesis, * denotes statistically significant at the 5% level		

An alternative explanation for why spending is different between the groups, is that it may reflect differences in their characteristics, shown in Table 2. This is explored by running further regressions, including interaction terms for whether or not someone has a private employer pension and, separately, whether or not they have any educational qualifications.

The results reported in column (1) of Table 6 show that, if no account is taken of whether retirement is involuntary or voluntary, changes in spending at retirement are correlated with pension status and educational qualifications. Spending falls significantly at retirement if someone does not have an employer pension, but not if they do (panel a). Spending falls significantly at retirement for someone with no educational qualifications, but not for someone with qualifications (panel b).

But, if pension status is further interacted with the group dummies, the results in column (2) show that whether or not retirement is voluntary or involuntary also matters. Within the group of men who retire involuntarily, it is only those with no employer pension who experience a significant fall in spending (panel a). But, it is

only for this group that the interaction term is significant. For all the other groups, having no employer pension is not associated with any significant fall in spending.

Table 6: Regression results – pension status and education

Dependent variable = (log) weekly real spending on food

Panel a		
	(1)	(2)
Retired	0.0086 (0.0172)	0.0129 (0.0192)
Retired, No OccPen	-0.0587* (0.0219)	
Retired < 65, Voluntary, No Occ Pen		-0.0340 (0.0544)
Retired at 65, Voluntary, No Occ Pen		-0.0047 (0.0459)
Retired > 65, Voluntary, No Occ Pen		-0.0334 (0.0351)
Retired < 65, Involuntary, Occ Pen		-0.0191 (0.0297)
Retired < 65, Involuntary, No Occ Pen		-0.1120* (0.0309)
Control variables		Yes
Panel b		
	(1)	(2)
Retired	0.0055 (0.0167)	0.0112 (0.0186)
Retired, No Qual	-0.0557 (0.0208)	
Retired < 65, Voluntary, No Qual		-0.0492 (0.0365
Retired at 65, Voluntary, No Qual		0.0206 (0.0471)
Retired > 65, Voluntary, No Qual		-0.0064 (0.0441)
Retired < 65, Involuntary, Qual		-0.0177 (0.0287)
Retired < 65, Involuntary, No Qual		-0.1175* (0.0306)
Control variables		Yes
Notes to table Controls = household size, whether the respondent is divorced/widowed/separated, whether the spouse is working, whether the respondent has health problems, number of health problems, registered as disabled, age dummies Standard errors included in parenthesis, * denotes statistically significant at the 5% level		

The results for educational qualifications are very similar (panel b). Within the group of men who retire involuntarily early, it is only those with no educational

qualifications who experience a significant fall in spending. But, within all other groups, those with no educational qualifications do not experience any significant change.

These results confirm that there is a significant difference in spending at retirement between voluntary and involuntary retirees. In cases where retirement is voluntary, there is little evidence to suggest that spending on food falls, even for those with no employer pension and no educational qualifications. But, the fall in spending associated with involuntary retirement is significant only among those with no employer pension and/or no educational qualifications (the two are closely correlated). Both these characteristics are likely to reflect low levels of lifetime wealth, which may give individuals less of a cushion against negative wealth shocks.

5   Measures of well-being and retirement

As well as looking at what happens to spending at retirement, this paper also looks at what happens to (measures of) well-being for further insights into retirement among voluntary and involuntary retirees. This is not entirely straightforward. While there has been some recent advocacy of the view that economists should start focusing more on the ultimate goal of happiness itself (see Oswald (1997) and Layard (2003)), there is no universally agreed definition of what it is (or how to measure it in surveys).

Nevertheless, psychologists believe that happiness is something you can ask people about and receive reliable responses. As to what kinds of questions to ask, Argyle (1989) proposes that happiness, or well-being, has three key elements – satisfaction, joy and psychological distress (or disutility).[12] This paper focuses on the third of these – psychological distress (or disutility) – for which the General Health Questionnaire (GHQ) assessment contained in the BHPS is seen as being "one of the most reliable indicators" (Argyle (1989)). Clearly this is only a partial measure and, arguably, only a partial proxy (although, to a lesser extent, the same argument applies to non-durable spending as a measure of consumption). However, since the aim in this paper is to compare profiles of well-being of different groups of retirees then, so long

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[12] Health is seen either as a possible fourth component of happiness, or as factor that is strongly correlated with the other three.

as the measurement error problems do not vary systematically across the groups, the comparisons themselves should be valid, even if it is not possible to draw any firm conclusions about the level of well-being. The paper also looks at a measure of financial well-being, namely how well people feel that they are managing financially.

There are no clear predictions from the lifetime utility maximisation model as to what should happen to well-being at retirement – the model predicts that marginal utilities should be smoothed, not the level of utility itself. If retirement enters the utility function as an additive component, the level of well-being will change at retirement. But, the focus here is on whether there are differences between voluntary and involuntary retirees. If it is assumed that retirement has the same effect for both groups, then differences in well-being between the groups will reflect the differential impact of involuntary compared to involuntary retirement. In turn, this will reflect the impact of a negative wealth shock for involuntary retirees. Of course, it may also reflect the ill-health and/or involuntary redundancy that led to the involuntary retirement. As before, health controls are included in the regression analysis, although of course, these may not be perfect.

Previous empirical studies looking directly at the effect of retirement on measures of well-being are fairly inconclusive, but tend to point to retirement having a positive effect. In his general survey of the factors associated with differences in well-being, Oswald (1997) reports that retirement has been found to be a positive risk factor, but many of the studies on which this conclusion is based use cross-section data and fail to control for the possible endogeneity of retirement with respect to well-being.

In a more detailed study, Charles (1999) used panel data from the US Health and Retirement Survey to look at the impact of retirement on two measures of well-being – whether someone had recently been depressed and whether they recently felt lonely. The use of panel data controls for any fixed effects (ie people with permanently high well-being may be more or less likely to retire); the paper also controls for shocks to well-being that may be correlated with retirement by instrumenting retirement with policy changes to the social security system and the individual's exposure to a mandatory retirement rule in their job. The paper finds a small, but significant fall in the probability of being depressed associated with retirement. Here, the use of panel data will similarly control for fixed effects, but there is no control for shocks to well-

being that may be correlated with retirement, other than through the inclusion of health variables .

Measures of well-being in the BHPS

Two measures of well-being are examined. One is a measure of psychological distress derived from the General Health Questionnaire (GHQ) module within the BHPS, and the other is a measure of financial well-being.

The GHQ is designed to measure psychological distress or disutility which is seen as one of three key elements contributing to an individual's overall well-being or happiness (see Argyle (1989)). It has been used in previous studies (for example Oswald (1997)) and shown to vary systematically with risk factors that may be thought to increase or reduce utility (such as unemployment).

The GHQ has 12 individual measures covering concentration, loss of sleep, whether the individual feels they play a useful role, whether they are capable of making decisions, whether they are constantly under strain, whether they have problems overcoming difficulties, whether they enjoy day-to-day activities, their ability to face problems, whether they are unhappy/depressed, whether they are losing confidence, their belief in their self-worth and their general happiness.

In all cases, questions are asked relative to the individual's usual state. So, for example, individuals are asked "Have you recently been feeling reasonably happy, all things considered" and given the following four options: 1 = more than usual; 2 = same as usual; 3 = less so than usual; 4 = much less than usual. This paper uses the aggregate Likert index which recodes the responses from 0 – 3 and sums the twelve measures to produce a single index with a range of 0 – 36.[13] Here, a lower number reflects greater disutility.

Average GHQ scores through retirement are very different for each of the four groups, as shown in Figure 5. For groups 2 and 3 (voluntary retirement at and after age 65 respectively), the profile of GHQ scores is fairly flat through retirement. For group 1 who retire voluntarily early, retirement appears to be associated with a fall in disutility (an increase in GHQ score), while for group 4, there appears to be an

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[13] The main alternative is the Caseness index, where scores of 0 or 1 are re-coded as 0, and scores of 2 or 3 are re-coded as 1. This produces a narrower aggregate index from 1 – 12.

increase in disutility at retirement (a decrease in GHQ score). In both cases, there appears to be some reversion to the previous level after retirement.

It is worth pointing out that the GHQ asks about indicators of psychological distress relative to usual. It is hard to know exactly how people will interpret "usual", but if their reference point is the previous year, such a one-off change for group 4 followed by a return to (roughly) the same level would imply a one-off decline, with no further deterioration. By the same measure, the profile of group 2 would imply a one-off improvement, followed by further (smaller) improvements.

Figure 5: Average GHQ score, by group

Graphs by group
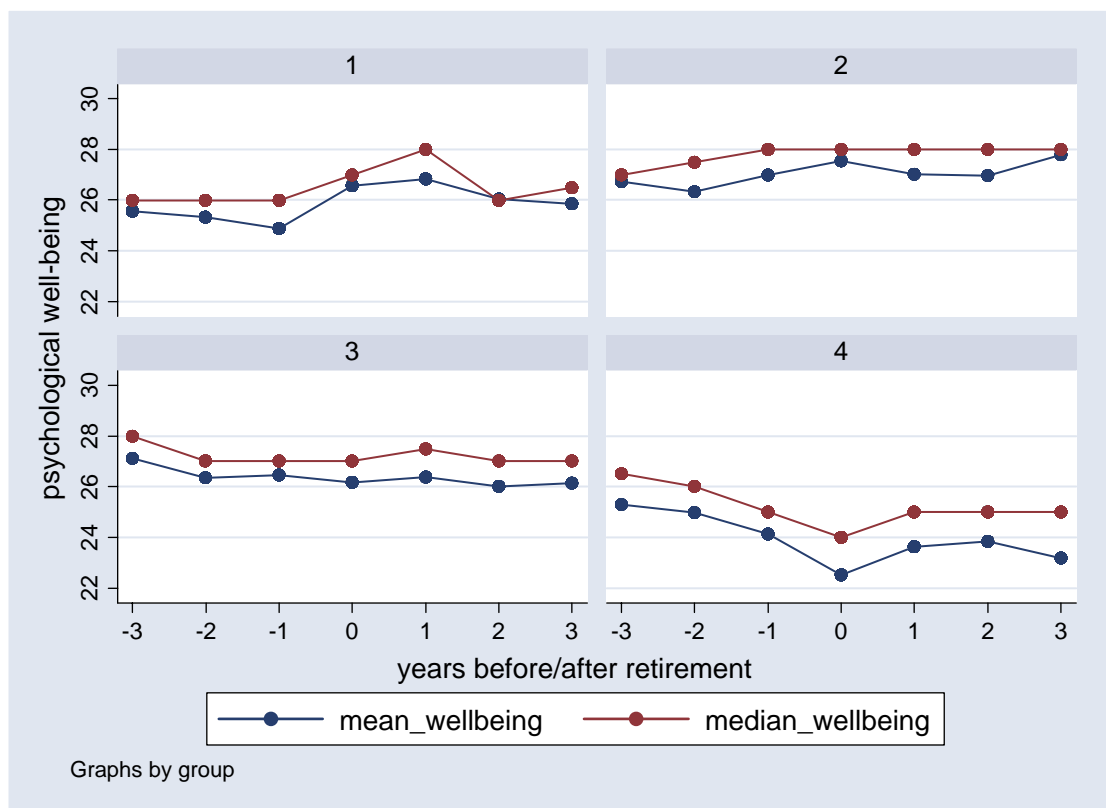
The second measure of well-being is derived from a question that asks how well people are managing financially. The answers – living comfortably, doing alright, just about getting by, finding it quite difficult and finding it very difficult – are re-coded from +2 to –2, and the scores for each of the four groups through retirement are plotted in Figure 6. Group 1 (who retire voluntarily before 65) have the highest score, as might be expected from their income level, and Group 4 (who retire involuntarily before 65) the lowest. There is very little variation in the scores through retirement

for any of the groups – even though average income for all groups falls by nearly one-quarter. For group 4, however, there does appear to be a slight fall in financial well-being at retirement.

Figure 5: Average financial well-being, by group
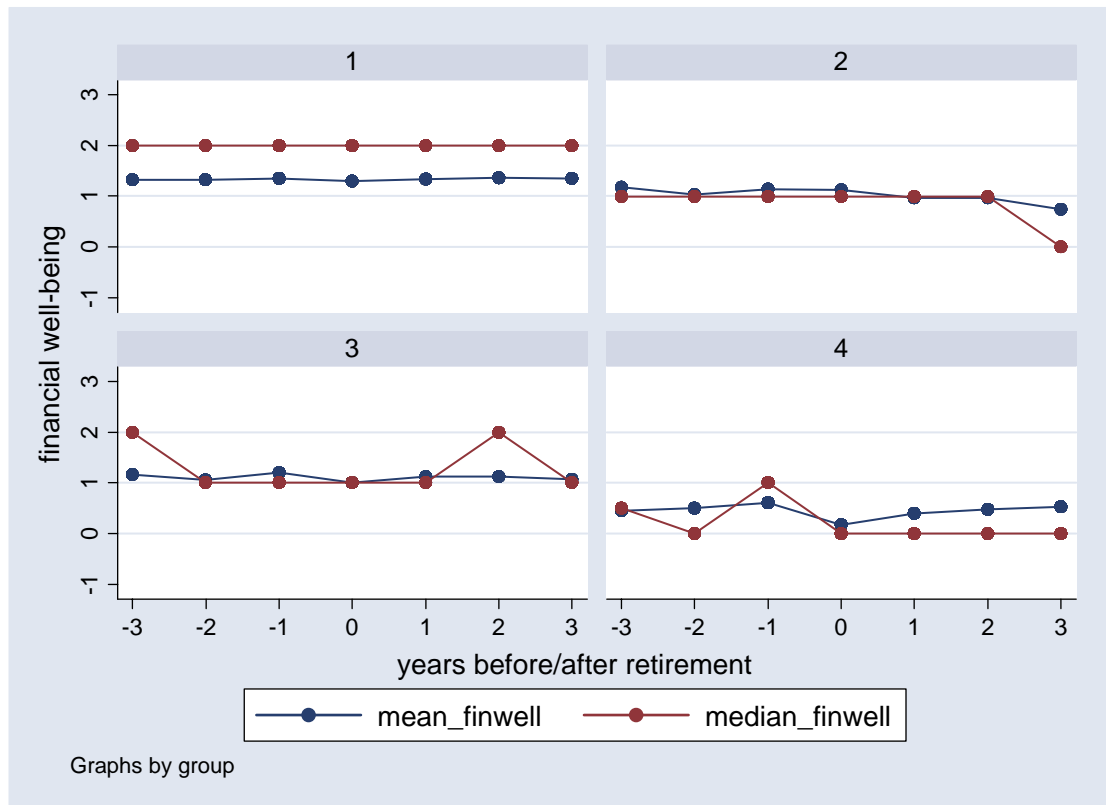
Of course, the profiles shown in the figures may result from other differences between the groups that affect well-being, such as age and health, as well as compositional changes. Table 7 therefore presents the results of fixed effects estimation that tries to control for these factors. In the regressions, retirement is included as a transition variable ie Retirement = 1 only during the first period in which the individual leaves employment. Since the questions ask respondents to report their level of disutility "compared to usual", it is more likely that a change in disutility would be picked up by the transition variable than by the state variable, and this is indeed the case.

The results confirm that psychological well-being at retirement is significantly different among involuntary retirees compared to voluntary retirees. For group 1 (voluntary early retirees), the coefficient on retirement shows a significant increase in

psychological well-being at retirement. The interaction terms for groups 2 and 3 are negative, but insignificant. For group 4 (involuntary retirees), by contrast, the differential effect is negative and significant and the magnitude of the coefficient shows that psychological well-being falls at retirement.

The results for financial well-being similarly show a significant difference between voluntary and involuntary retirees. Looking at retirement for all four groups (column (3)), the results show that there is a significant fall in financial well-being at retirement. But, when interaction terms for groups 2 – 4 are also included, only the coefficient on the group 4 interaction term is negative and significant.

Table 7: Regression results – well-being at retirement

	Dependent variable = GHQ score		Dependent variable = Financial well-being score	
	(1)	(2)	(3)	(4)
Retired	-0.3192 (0.2217)	0.7987* (0.3664)	-0.1726* (0.0416)	-0.0554 (0.0693)
Retired < 65, involuntary (Group 4)		-0.5951 (0.8047)		0.0182 (0.1526)
Retired at 65, voluntary (Group 2)		-1.2649 (0.6537)		-0.0189 (0.1219)
Retired > 65, voluntary (Group 3)		-2.3682* (0.5268)		-0.3261* (0.0993)
Control variables	No	Yes	Yes	Yes
N	3343	3343	3409	3409
Notes to table Controls = household size, whether the respondent is divorced/widowed/separated, whether the spouse is working, whether the respondent has health problems, number of health problems, registered disabled, age dummies Standard errors included in parenthesis, * denotes statistically significant at the 5% level				

These findings are consistent with there being an adverse wealth shock for some retirees which has a negative effect on psychological and financial well-being. Of course, the difference between the groups may directly reflect the factors that cause people to retire involuntarily – ie ill-health or redundancy. While a number of health variables have been included in the regression, they may not be adequate controls for health. It is also possible that redundancy may have a direct effect on well-being other than through the associated negative wealth shock – this is not something that can be controlled for explicitly. Nevertheless, as with the analysis of food spending, these results on well-being point to significant differences between voluntary and involuntary retirees that are likely to be important for resolving the puzzle.

6.   Conclusions and policy implications

This paper has found that retirement is associated with a fall in spending only where retirement occurs involuntarily, through ill-health or compulsory redundancy, for example. For voluntary retirees, retirement is not associated with any significant fall in spending. This finding is consistent with a negative wealth shock hypothesis – that the retirement consumption puzzle can be explained by an adverse shock to lifetime wealth that affects some retirees.

Further analysis has shown that the difference between voluntary and involuntary retirees cannot be explained in terms of differences in pension status and levels of education. But, among the group of involuntary retirees, it is only those with no occupational pension and no educational qualifications (there is a strong correlation between the two) who experience a significant fall in spending. This suggests that those with lower levels of lifetime wealth are less able to cushion the effects of an adverse shock.

There are also significant differences in measures of well-being between voluntary and involuntary retirees. Where retirement is involuntary, it is associated with a significant deterioration in relative psychological and financial well-being. These results are also consistent with a negative wealth shock, which is likely to have an adverse effect on well-being. Of course, the decline in well-being may reflect the causes of involuntary retirement (ill-health and redundancy), as well as the negative shock to wealth. Nevertheless, the findings show that understanding the nature of retirement is crucial for understanding individuals' retirement experience.

What are the implications of the results? Most people smooth spending on food through retirement and experience no relative decline in psychological or financial well-being despite lower income. This does not necessarily imply that, even among this group, people are planning optimally for retirement. Rather, that people are able to maintain spending and well-being through a combination of ex ante financial planning, and adjustments to work if necessary. For example, it is possible that some people may have found that they had insufficient wealth to enable them to retire when they first wanted to, but could smooth their spending at retirement by working longer.

Nevertheless, the fact that most people can find a strategy to allow them to smooth spending and well-being is a fairly positive one for the UK Government's policy of informed choice to encourage individual pension provision.

But there is a significant minority of people who retire involuntarily early – through ill-health or redundancy – whose spending and well-being fall at retirement. Within this group, the fall is concentrated among those with no employer pension and no educational qualifications, who are likely to have low lifetime wealth. Among this group, spending on food after retirement is 11% lower than it was before.

Blau (2004) argues that it may not be optimal for this group to save more since it would reduce lifetime utility still further. The issue then is whether – and how – the Government should support them. In the UK, incapacity benefit is the primary benefit for those unable to work because of health reasons, although eligibility has been tightened in an attempt to slow rising take-up levels. Since 1999, the means-tested Minimum Income Guarantee has provided a higher level of benefit to everyone aged 60+ who is not working, but from 2010 the age of eligibility will increase to 65 in line with rising female state pension age. Particularly if the state pension age rises, as seems likely in the long term, providing an income for those who are forced to retire earlier – through means-tested benefits or flexibility in drawing a pension before the state pension age – is crucial.

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