Financial capability and wellbeing: Evidence from the BHPS

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1.   Summary

1.1 Introduction

This report presents the analysis from the project 'Financial capability and wellbeing: Evidence from the BHPS.' The project focuses on the potential relationships between people's ability to manage and take control of their finances (their 'financial capability') and their psychological wellbeing. One of the Financial Services Authority's (FSA's) four statutory objectives, set by the Financial Services and Markets Act (FSMA) 2000, is to promote public understanding of the financial system. Under this remit, the FSA leads the UK's National Strategy for Financial Capability, which brings together industry, government and the third sector to deliver financial capability programmes which create confident, capable consumers, doing so in ways that people will most understand and in places most useful to them. These programmes target different groups, such as expectant parents, employees, young people and hard-to-reach groups, with tailored initiatives designed to improve financial skills. This research explores how levels of financial capability might relate to and affect psychological wellbeing.

This insight contributes towards a deeper understanding of how financial capability affects individuals, helping the FSA's financial capability work to be targeted more appropriately. Part of this is identifying new ways to work with trusted intermediaries and stakeholders with an interest in psychological wellbeing, resulting in a wider reach of financial capability programmes. In addition, the findings will help to inform the evaluation of policies and programmes against the statutory objective of promoting public understanding, and the FSA's strategic aim of creating more capable and confident consumers.

It is important to note that financial capability is not correlated with income (Atkinson et al 2006); people across society require financial management skills to be in control of their money, regardless of how much money they have. Although financial management is important at any time, in the current economic downturn, reaching a wide swathe of the population is even more vital, as an increasing number of people find themselves in difficult financial situations. This research makes a valuable contribution towards the development of effective policy and practice aimed at improving the UK's financial management in this difficult time and beyond.

We use data from the British Household Panel Survey (BHPS) to construct indices of financial capability, based on the hypothesis is that there is some underlying factor (financial capability) which is better captured by reviewing a range of indicators of a person's current financial situation than by any of the specific items of information. We describe how financial capability varies according to individual and household characteristics. Then we examine in detail the relationship between financial capability and psychological wellbeing, using multivariate statistical models.

1.2 The data

This project uses data from the first 16 waves of the BHPS, covering the period 1991–2006. To assess financial capability, we focus on financial variables available in all 16 waves of the BHPS. These are: the respondent's current financial situation;

change in financial situation in the last year; expected change in financial situation in the coming year; whether respondent saves; the amount saved per month; whether the household has problems keeping up with housing payments; whether such problems have required borrowing; whether such problems have required cutbacks; whether the household has been more than two months in housing arrears in the last 12 months; and the number of consumer durables to which the household has access. The measures of psychological wellbeing that we focus on are the General Health Questionnaire (GHQ) score, reported life satisfaction, and having a health problem associated with anxiety or depression.

1.3 Summarising BHPS variables relevant to financial capability

We introduce and describe the variables available at all waves of the BHPS that are relevant to the concept of financial capability. Some of these are hard measures of financial wellbeing (such as the ability to keep up with housing payments) while others are perceptions of the individual respondent (such as perceived current financial situation). In all cases, the source of information is the respondent. We distinguish between four main groups of variables related to financial capability: measures of perceived financial wellbeing; saving behaviour; housing payment problems; and material wellbeing. On average, the proportion of individuals reporting that they are 'living comfortably' or 'doing alright' has been increasing since 1991, while the fraction reporting financial difficulties has fallen significantly (the data period ends pre-credit crunch). The proportion of respondents reporting being worse off financially than one year ago and less optimistic about the future has been falling since 1991. These perceptions are reflected in other measures of financial wellbeing, with respondents on average saving more and having access to more consumer durables over time, and fewer respondents living in households with housing payment problems over time.

1.4 Constructing an index of financial capability

We examine the degrees of association between the various indicators of financial capability that are available at all BHPS waves. Analysis of average inter-item and item-rest correlations indicate that a reliable and consistent index can be constructed from the following variables:
- perceived current financial situation;
- reporting that financial situation has worsened since last year;
- whether saves;
- has housing payment problems;
- problems required borrowing;
- problems required cutbacks; and
- been at least two months in housing arrears in last 12 months.

We call the resulting index the index of financial incapability. As an alternative approach, and to check the validity of the index, we add together the number of financial problems individuals currently face, using information on whether the respondent:
- is finding their financial situation quite or very difficult;
- is reporting that financial situation has worsened since last year;
- is not currently saving;
- has housing payment problems;
- has had to borrow to meet payments;

- has had to cut back to meet payments; and
- has been at least two months in housing arrears in the last 12 months.

The number of financial problems takes a value between 0 (none of the listed problems) to 7 (all of the listed problems).

We find that the two summary measures of financial capability are very highly correlated. Furthermore, we find that the two summary measures are relatively highly correlated with other financial variables available at intermittent waves of the BHPS. This suggests that the summary measures are valid and consistent indicators of financial capability.

We also construct a version of the index of financial incapability that is adjusted for income and examine how individuals' financial capability varies over the BHPS sample period. On average, people's financial capability improved but at a declining rate between 1991 and 2006. However, at the individual level, financial capability fluctuates considerably between one year and the next, presumably in response to other events in people's lives.

1.5 Relationships between financial capability and other characteristics

We introduce the individual and household variables with which we describe patterns of financial capability. Our indices of financial incapability are significantly associated with gender, age, marital status, number of children, health, employment status, job type, housing tenure and income, and also with changes in marital status, the number of children, health, employment status, housing tenure and income. In particular we find that people with the highest financial incapability tend to be young (aged less than 35), divorced or separated, have more than one or two dependent children, are single, non-elderly, lone parents, in fair or poor health, live in rented accommodation and are unemployed or economically inactive but would like a job. In contrast, people with the lowest levels of financial incapability are, on average, older (aged 55 or above), married or widowed with no dependent children, in good health, home owners and working in a full-time permanent job. Taking advantage of the panel nature of the data reveals that getting married, improvements in health, becoming a home owner and entering work are associated with an increase in financial capability, while death of a spouse, marital dissolution, an additional child, deterioration in health and unemployment are associated with a decrease in financial capability. These findings are consistent with the Financial Services Authority's Baseline Survey.

1.6 Relationships between financial capability and psychological wellbeing

Average psychological wellbeing fell between 1991 and 2006 using all three measures of wellbeing. Average GHQ scores increased by 5% indicating higher mental stress; the proportion of the sample experiencing anxiety or depression also increased; and average life satisfaction scores fell by 1%. We also find that these measures of psychological wellbeing are highly correlated.

However, at the individual level there is considerable change in reported psychological wellbeing between one year and the next. In addition, individuals

whose financial capability varies a lot from year to year also have high year-on-year variability in psychological wellbeing.

There is a strong association between financial capability and psychological wellbeing and also between changes in financial capability and changes in psychological wellbeing. We find that greater financial incapability is associated with greater mental stress, lower reported life satisfaction, and a greater likelihood of reporting health problems associated with anxiety or depression.

1.7 Estimating the effect of financial capability on psychological wellbeing

We estimate the impact of financial capability on psychological wellbeing using fixed effects panel data models. These allow us to estimate the effects of financial capability while also taking into account both observable characteristics and time-invariant unobserved characteristics of individuals (such as personality traits) that may be related both to an individual's level of financial capability and their psychological wellbeing.

Controlling for a range of observable individual and household characteristics, and time-invariant unobserved effects, people's financial capability is strongly related to their psychological wellbeing. For example, moving an individual from relatively low levels of financial capability (the 90th percentile of the distribution of the index of financial incapability) to average financial capability levels (the 50th percentile – and therefore improving their level of financial capability) reduces their GHQ score by about 0.65 GHQ points (or almost 6%), increases their reported life satisfaction by 0.12 (or 2.4%), and reduces the probability of an individual suffering a health problem related to anxiety or depression by 15%. These results are consistent with the hypothesis that changes in financial capability lead to changes in psychological wellbeing.

Additional analysis shows that the relationship between financial incapability and psychological wellbeing varies over the distribution of financial incapability: it is strongest at the bottom of the financial incapability distribution. This implies that increasing financial capability will improve the psychological wellbeing of most people, although focusing on those with the highest levels of financial incapability may have less effect. The impact of financial capability on psychological wellbeing also differs across different population groups. In particular, financial incapability compounds the already psychologically harmful effects of unemployment or divorce, while being in good health or retirement reduces the psychologically damaging impacts of financial incapability.

1.8 Summary and conclusions

This project has investigated in detail the relationships between financial capability and psychological wellbeing using data from the first sixteen waves of the BHPS, in order to contribute towards the FSA's financial capability policy and programmes. There is evidence of strong association between both financial capability and psychological wellbeing, and between changes in financial capability and changes in psychological wellbeing. Higher financial incapability is associated with higher mental stress, lower reported life satisfaction, and health problems associated with anxiety or depression. Estimates from fixed effects panel data models indicate that, even after controlling for a range of observable individual and household

characteristics and time-invariant unobserved effects, people's financial capability is a strong predictor of their psychological wellbeing. Moving an individual with relatively low levels of financial capability to an average level of capability improves their psychological wellbeing by about 6% (compared to an 8% deterioration in wellbeing associated with being divorced, and a 10% deterioration from being unemployed). However, the relationship between financial incapability and psychological wellbeing varies over the distribution, and in particular is strongest at the bottom of the financial incapability distribution. Financial incapability compounds the already psychologically harmful effects of unemployment or divorce, while being in good health or retirement reduces the psychologically damaging impacts of financial incapability.

A number of further questions emerge from these analyses. The first is the extent to which financial capability is related to favourable economic circumstances or by financial management skills. We have modelled psychological wellbeing as a function of financial capability (and found a relationship), but have not modelled the determinants of financial capability itself. If financial capability at the individual level is highly variable from one year to the next in an unpredictable way, then this makes it harder to design policies to improve it. The second is the complex relationship between an individual's income, their financial management skills and their savings behaviour. Our analysis touches on this, but it deserves further attention. Finally, and crucially for our results, is the extent to which people experience shocks or events that we do not observe that might affect both their financial capability and psychological wellbeing and confound the effects we found using statistical models.

2.   Introduction

This report presents the analysis from the project 'Financial capability and wellbeing: Evidence from the BHPS'. The project focuses on the potential relationships between people's ability to manage and take control of their finances (their 'financial capability') and their psychological wellbeing. The motivation for this research is to investigate the extent to which financial capability predicts psychological wellbeing. A key theme of this research project is the need to develop suitable measures of both financial capability and wellbeing, together with an understanding of the links between the two. One of the FSA's four statutory objectives, set by the Financial Services and Markets Act (FSMA) 2000, is to promote public understanding of the financial system.   Under this remit the FSA leads the UK's National Strategy for Financial Capability, which brings together industry, government and the third sector to deliver financial capability programmes which create confident, capable consumers, doing so in ways that people will most understand and in places most useful to them. These programmes target different groups, such as expectant parents, employees, young people and hard-to-reach groups, with tailored initiatives designed to improve financial skills. This research explores how levels of financial capability might relate to and affect psychological wellbeing.

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Financial capability may be defined in several ways. The government defines financial capability as:

"... a broad concept, encompassing the people's knowledge and skills to understand their own financial circumstances, along with the motivation to take action. Financially capable consumers plan ahead, find and use information, know when to seek advice and can understand and act on this advice, leading to greater participation in the financial services market" (HM Treasury 2007).

From this it is clear that financial capability should capture a range of skills, behaviour and knowledge. Atkinson et al (2006) identify five separate strands that

contribute to the concept: making ends meet, keeping track, planning ahead, choosing products and staying informed. The problem as researchers is how to operationalise this concept using available survey data. Melhuish and Malin (2008) created a measure of financial capability using survey responses to questions asking how well individuals are managing financially, how well they manage mortgage or rent payments, the number of unpaid bills, and the number of items which they cannot afford. NIACE (2007) stress the importance of defining financial capability in terms of relating the skills needed to earn income with those needed to manage savings and consumption. The starting point of this research is to extend existing knowledge about potential ways of measuring financial capability using responses to survey questions in the British Household Panel Survey (BHPS).

The analysis follows four distinct steps:

1. identify variables available in BHPS data relevant to the concept of financial capability;
2. test for the possibility that all, or some subset of, the identified variables might be combined into a single index measuring a single and common factor ('financial capability');
3. establish how this index is distributed across different groups in the population and how this changes over the BHPS sample period;
4. examine the relationship between the index of financial capability and psychological wellbeing and, using suitable multivariate analysis and panel data models, explore the existence of a causal relationship.

This report summarises the results from each step. The first half of the report focuses on Steps 1 and 2 – identifying variables in the BHPS data that are relevant to the concept of financial capability, and then testing which of these might be combined into a single index that measures financial capability. The latter provides an indication of the relative importance of relevant variables as contributors to the underlying concept of financial capability. We might conclude that some variables do not contribute to that concept at all, having failed the test of being 'linked and mutually reinforcing'. We test for the possibility that some or all of the variables might be combined into a single index. At its simplest, this index might be a straightforward count across a number of variables, or instead an index created using inter-item correlations. The hypothesis is that there is some underlying factor (financial capability) which is better captured by reviewing a range of indicators of a person's current financial situation than by any of the specific items of information. If so, we might expect financial capability to be more stable than any of the single indicators – people could make short term moves in and out of housing payment problems (or saving, or being unable to afford certain items, and so on) without having much effect on their overall level of financial capability.

The second half of the report focuses on Steps 3 and 4 – investigating the relationship between our measure of financial capability and a range of individual and household characteristics, including psychological wellbeing. We summarise how the index is distributed across different groups in the population, and over time. We provide summaries of the index by a range of individual and household characteristics including age, gender, marital status, number of children, health status, employment status and housing tenure. This highlights whether high financial capability is associated with particular subgroups in the population. We then examine the relationship between

financial incapability and psychological health, and whether the index of financial capability has any power in predicting psychological wellbeing. We do this by first describing the relationships between our measures of financial capability and psychological wellbeing, before estimating multivariate statistical models that help to control for potentially confounding and mediating factors that affect both financial capability and psychological wellbeing. Our results suggest that people's financial capability is a strong predictor of their psychological wellbeing, although the size of the effect depends on their initial level of financial capability and on a number of other individual and household characteristics.

The report is divided into three main sections. Section 2 introduces the data set used in the project (the BHPS), the variables that may be related to the concept of financial capability, and measures of psychological wellbeing. Section 3 summarises variables related to the concept of financial capability, and describes patterns in responses over time. Section 4 examines how the measures of financial capability are associated with each other, and investigates the possibility of creating an overall index of financial capability. Section 5 summarises relationships between financial capability and a range of individual and household characteristics, while Section 6 provides an initial analysis of how psychological wellbeing relates to financial capability. Section 7 investigates the strength of this relationship when controlling for potentially confounding and mediating factors through multivariate analysis. Section 8 summarises and draws some conclusions.

3. The data

In this section we introduce the data, the variables that may be relevant to the concept of financial capability and available measures of psychological wellbeing. This project uses individual-level data from the first sixteen waves of the British Household Panel Survey (BHPS), covering the years 1991–1996. Every year the BHPS follows and interviews the same adults (aged 16 and above), collecting information about their incomes, labour market status, housing tenure and conditions, household composition, education, health and many other aspects of people's lives. The BHPS is unique among British surveys in having annual snapshots on the details of people's lives over a relatively long time period. Changes in people's lives can be identified over a 15-year period.

3.1 Measures of financial capability

There is a range of variables within the BHPS that capture different dimensions of financial capability, and for each the source of information is the respondent. These variables, together with their availability in the BHPS, are described in Table 1 below.

Some of these measures relate specifically to individual adults (e.g. How well would you say you yourself are managing financially these days? Would you say you are living comfortably, doing alright, just about getting by, finding it quite difficult, or finding it very difficult?), while others refer to the household context (e.g. Many people these days are finding it difficult to keep up with their housing payments. In the last 12 months would you say you have had any difficulties paying for your accommodation?). In all of the following, the unit of analysis is the individual adult, though sometimes the personal measure refers to the household context – we have allocated the household level variable to each individual adult living within that household.

Also, a number of variables of interest are not available at every BHPS wave. This raises potential problems for constructing a consistent measure of financial capability that is available each year. Initially, therefore, we focus on variables that are available at all BHPS waves (the first 10 variables, in Panel A of Table 1), and then examine how any resulting index correlates with other relevant variables collected intermittently over the sample period (the following 10 variables, in Panel B of Table 1). The latter is carried out to help validate the reliability and robustness of the index.

Table 1: Financial capability: Relevant BHPS variables	Waves available in BHPS
PANEL A	
Many people these days are finding it difficult to keep up with their housing payments. In the last 12 months would you say you have had any difficulties paying for your accommodation?	All
Did you have to borrow in order to meet housing payments?	All
Did you have to make cutbacks in order to meet housing payments?	All
In the last 12 months have you ever found yourself more than two months behind with your rent/mortgage?	All
How well would you say you yourself are managing financially these days? Would you say you are living comfortably, doing alright, just about getting by, finding it quite difficult, or finding it very difficult?	All
Would you say that you yourself are better off, worse off or about the same financially than you were a year ago?	All
Looking ahead, how do you think you yourself will be financially a year from now, will you be better than now, worse than now, or about the same?	All
Do you save any amount of your income, for example by putting something away now and then in a bank, building society, or Post Office account, other than to meet regular bills?	All
About how much on average do you manage to save a month?	All
Access to consumer durables (colour TV, VCR, washing machine, dishwasher, microwave, home computer, compact disc player).	All
PANEL B	
Do you or anyone in your household have to make repayments on hire purchases or loans? Please do not include mortgage loans but do include DSS social fund loans.	5 onwards
To what extent is the repayment of such debts and the interest a financial burden on your household? Would you say it is a heavy burden, somewhat of a burden, not a problem?	5 onwards
Townsend/Breadline Britain-type indicators (keep home adequately warm; pay for annual holiday; replace furniture; buy new clothes; eat meat on alternate days; feed visitors once a month; would like to keep home warm; would like to pay for annual holiday; would like to replace furniture; would like to buy new clothes; would like meat on alternate days; can't afford visitors once a month).	6 onwards
I would like to ask you now about any other financial commitments you may have apart from mortgages and housing related loans. Do you currently owe any money on the things listed on this card: Hire purchase agreements, personal loans, credit cards, mail order purchase, DSS social fund loan, loans from an individual?	5, 10, 15
About how much in total do you owe?	5, 10, 15
Do you currently have any money in any of the investments shown on this card? National Savings Certificates, Premium bonds, Unit trusts, Personal Equity Plans, Shares, National Savings/Building Society/Insurance bonds?	5, 10, 15
Thinking of all your investments, about how much do you have invested in total?	5, 10, 15
Would you say your savings are mainly long-term savings for the future or mainly short-term savings for things you need now and for unexpected events?	10 onwards
Do you save on a regular basis or just from time to time when you can?	10 onwards
Thinking first about your savings accounts, TESSA or ISA, about you much do you currently have in total in these accounts?	10, 15

3.2 Measures of psychological wellbeing

The BHPS has collected five different measures of psychological wellbeing to date. These are:

- the General Health Questionnaire (GHQ), asked at all waves;
- whether a respondent suffers from a health problem related to anxiety or depression (asked at all waves as part of a battery of questions about current health problems);
- the SF-36 at waves 9 (1999) and 14 (2004);

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- life satisfaction scores collected at waves 6-10 (1996-2000) and waves 12-16 (2002-2006); and
- the CASP-19 scale at waves 11 (2001) and 16 (2006).

Our focus is on the relationships between financial capability and psychological wellbeing, with particular interest on the dynamics of any relationship and whether the index of financial capability has any power in predicting psychological wellbeing. To be able to address these issues requires repeated observations of the same measures for the same individuals over time. For this reason, our analysis of psychological wellbeing concentrates on the GHQ measure (available at all waves), whether a respondent suffers from a health problem related to anxiety or depression (available at all waves), and overall life satisfaction scores (collected at waves 6-10 and waves 12-16).

The GHQ is one of the most widely applied self-completion assessment measure of minor psychiatric morbidity in the UK (Goldberg & Williams 1988; McCabe et al 1996). It is a reliable indicator of psychological distress (Argyle 1989), widely used in medical literature (Goldberg 1972, 1978). The 12-item GHQ score has been used in all waves of the BHPS. The items take the form of responses to the following questions:

"Have you recently:
1.   Been able to concentrate on whatever you are doing?*
2.   Lost much sleep over worry?
3.   Felt that you are playing a useful part in things?*
4.   Felt capable of making decisions about things?*
5.   Felt constantly under strain?
6.   Felt you couldn't overcome your difficulties?
7.   Been able to enjoy your normal day-to-day activities?*
8.   Been able to face up to your problems?*
9.   Been feeling unhappy and depressed?
10.   Been losing confidence in yourself?
11.   Been thinking of yourself as a worthless person?
12.   Been feeling reasonably happy all things considered?*"

Answers are coded on a four-point scale running from 'Not at all/Much less than usual' (coded 0) to 'Much more than usual/Better than usual' (coded 3 - asterisked questions are coded in reverse), and added together provide a total GHQ score of mental distress ranging from 0 to 36. High scores correspond to low feelings of wellbeing (high stress) and vice-versa. This is sometimes known as a Likert scale. The GHQ in the BHPS has been shown to be robust to retest effects making it a suitable longitudinal instrument (Pevalin, 2000).[1] This is our primary measure of psychological wellbeing.

Every wave, BHPS respondents were also shown a card with various health conditions and asked whether they had any of the health problems listed on it. The

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[1] More recently, several papers have been published on alternative scoring schemes for the GHQ to measure positive wellbeing rather than mental distress (Huppert & Whittington, 2003; Hu et al, 2007). An alternative 'caseness' measure could be used, which takes a value of 0-12 and indicates the number of items with which an individual 'strongly agrees' with each statement. We choose to use the 36-point Likert measure because it is more appropriate to view it as a continuous measure of wellbeing. However all results presented in this report are robust to using the alternative 'caseness' measure.

condition most related to psychological wellbeing relates to health problems associated with anxiety and depression.

Our third measure of psychological wellbeing relates to overall life satisfaction. In particular, at waves 6–10 and waves 12–16 respondents were asked "How dissatisfied or satisfied are you with.........your life overall?" using a seven point scale where one equates to not satisfied at all and seven to completely satisfied.

In subsequent sections we summarise responses over time to financial questions asked in the BHPS, and the relationships between them to investigate the potential for constructing an index of financial capability. An analysis of these data over the BHPS sample period allows us to examine how patterns of financial capability have evolved over time. We then examine how movements in an individual's financial capability relate to changes in their wellbeing.

4. Summarising BHPS variables relevant to the concept of financial capability

In this section we introduce, describe and summarise the variables available at every wave of the BHPS that are relevant to the concept of financial capability. Some of these are hard measures (such as the ability to keep up with housing payments) while others relate to the perceptions of the individual adults (such as perceived current financial situation). Here we treat the BHPS data as a series of cross-sections and do not make use of the panel nature of the data – we do that in later stages of the analysis. We distinguish between four main groups of variables related to financial capability – measures of perceived financial wellbeing; saving behaviour; housing payment problems; and material wellbeing. We describe responses to such questions in detail, and examine how patterns in responses have changed over the sample period. We use the Pearson chi-squared statistic to test the null hypothesis that the responses to each survey question are independent over time.[2] The value of the chi-squared statistics cannot be compared across tables, although the reported level of statistical significance indicates whether the null hypothesis of no association can be rejected. In all tables the data have been weighted to take account of potential non-random attrition and non-random response (using weighting variable wXRWGHT). In the analysis we include all adult (aged 16 and above) respondents, irrespective of age, and focus on adults who provide non-missing responses to the variables of interest. This yields a sample size of 16,598 adults contributing 124,940 person-year observations. We provide sample sizes by wave and gender in the Appendix and do not show them in each table for brevity.

4.1 Measures of perceived financial wellbeing

At each date of interview, respondents are asked 'How well would you say you yourself are managing financially these days? Would you say you are living comfortably, doing alright, just about getting by, finding it quite difficult, or finding it very difficult?' This relates to what Atkinson et al (2006) identify as the 'keeping track' and 'making ends meet' strands of the concept of financial capability. Table 2 summarises responses to this question over the sixteen available waves.

This table indicates that on average over the sample period, almost two thirds of BHPS respondents report either living comfortably or doing alright, and that this proportion has increased significantly. For example, in 1991, 54.2% of respondents reported either living comfortably or doing alright, while this had increased to 71.4% in 2006. The proportion reporting finding it quite or very difficult has fallen correspondingly from 13.5% in 1991 to 6.6% in 2006. Most of these changes occurred during the 1990s, with little systematic movement since 1999.

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[2] These statistics take into account the clustering of individuals within households.

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Table 2: Perceived current financial situation by year: BHPS 1991–2006

Year	Living comfortably	Doing alright	Just getting by	Finding it quite difficult	Finding it very difficult
1991	0.265	0.277	0.323	0.087	0.048
1992	0.254	0.290	0.323	0.085	0.048
1993	0.256	0.303	0.321	0.084	0.036
1994	0.270	0.314	0.311	0.072	0.033
1995	0.265	0.329	0.308	0.070	0.029
1996	0.282	0.351	0.282	0.058	0.027
1997	0.313	0.351	0.258	0.053	0.026
1998	0.328	0.358	0.245	0.052	0.017
1999	0.315	0.368	0.248	0.049	0.020
2000	0.300	0.378	0.255	0.050	0.018
2001	0.327	0.391	0.222	0.044	0.017
2002	0.324	0.399	0.221	0.041	0.015
2003	0.337	0.399	0.216	0.035	0.013
2004	0.329	0.397	0.215	0.042	0.016
2005	0.304	0.408	0.229	0.042	0.018
2006	0.320	0.394	0.220	0.046	0.020
Total	0.298	0.355	0.264	0.058	0.026

Notes: Weighted using cross-sectional respondent weights. Table reads, for example, that in 1991 26.5% of respondents reported that they were living comfortably. Pearson $\chi^2 = 42.3$ P=0.0000. 'Total' shows data pooled from waves 1 to 16.

As well as being asked about their current financial situation, BHPS respondents are asked to evaluate the perceived change in their finances over the previous year. In particular, they are asked 'Would you say that you yourself are better off, worse off, or about the same financially than you were a year ago?' Again, this relates to the 'keeping track' strand of financial capability. Table 3 summarises responses to this question.

Table 3: Change in financial situation since one year ago: BHPS 1991–2006

Year	Better off	About the same	Worse off
1991	0.234	0.478	0.288
1992	0.214	0.480	0.306
1993	0.251	0.428	0.321
1994	0.248	0.440	0.312
1995	0.269	0.451	0.280
1996	0.286	0.472	0.242
1997	0.309	0.468	0.224
1998	0.300	0.479	0.221
1999	0.294	0.499	0.208
2000	0.305	0.482	0.213
2001	0.311	0.491	0.198
2002	0.285	0.509	0.207
2003	0.279	0.504	0.217
2004	0.272	0.520	0.208
2005	0.262	0.508	0.230
2006	0.262	0.517	0.222
Total	0.274	0.482	0.245

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 23.4% of respondents reported that they were better off financially than last year. Pearson $\chi^2 = 37.1$ P=0.0000. 'Total' shows data pooled from waves 1 to 16.

This table indicates that the proportion reporting being better off than one year ago increased consistently throughout the 1990s, from 23.4% in 1991 to 30.5% in 2000. However, this has since fallen to 26.2% in 2006. There was a corresponding fall (and subsequent increase) in the proportion reporting being worse off that one year ago, while approximately half of all respondents report their financial situation as being about the same.

The final question on respondents' perceived financial wellbeing relates to the expected change in their financial situation of the coming year. In particular, respondents are asked 'Looking ahead, how do you think you yourself will be financially a year from now, will you be better than now, worse than now, or about the same?' In contrast to the previous questions, this variable may relate to the 'planning ahead' strand of financial capability. Table 4 summarises responses to this question.

This table indicates that there has been little change in the proportion of respondents who expect to be better off financially (which has averaged 27.7% over the sample period). However there has been an increase in the proportion reporting that their financial situation in one year's time will be about the same as now (from 55.2% in 1991 to 62.1% in 2006), and a fall in that reporting that their financial situation will be worse (from 16.1% in 1991 to 10.8% in 2006).

We construct three summary variables from the subjective measures of financial wellbeing in order to simplify the construction of an index.[3] The first is a variable ('financial situation') which takes the value 1 if the individual reports living

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[3] We have experimented with several different combinations and definitions of these subjective variables, but these proved to have the highest correlations with the other financial variables.

comfortably, 2 if doing alright, through to 5 if the individual reports finding it very difficult. Therefore high values of this variable correspond to low financial capability. The second is a variable ('situation worsened') which takes the value 1 if the individual reports that he/she is worse off financially today than one year ago, and zero otherwise. The third is a variable ('expect to worsen') which takes the value 1 if the individual expects his or her financial situation to worsen in the coming 12 months. These contribute to what Atkinson et al (2006) identifies as the 'keeping track', 'making ends meet' and 'planning ahead' strands of financial capability.

Table 4: Expected change in financial situation over coming year: BHPS 1991–2006

Year	Better off	About the same	Worse off
1991	0.287	0.552	0.161
1992	0.239	0.543	0.219
1993	0.255	0.536	0.209
1994	0.259	0.575	0.166
1995	0.273	0.589	0.138
1996	0.286	0.594	0.120
1997	0.285	0.615	0.099
1998	0.298	0.607	0.095
1999	0.295	0.609	0.096
2000	0.292	0.621	0.087
2001	0.272	0.638	0.090
2002	0.277	0.638	0.085
2003	0.278	0.635	0.088
2004	0.286	0.618	0.097
2005	0.285	0.603	0.112
2006	0.271	0.621	0.108
Total	0.277	0.599	0.124

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 28.7% of respondents reported that they expected to be better off financially in a year from now. Pearson χ^2=60.8 P=0.0000. 'Total' shows data pooled from waves 1 to 16.

4.2 Savings behaviour

Two questions related to savings behaviour were asked at all available waves of the BHPS. The first is related to whether or not respondents are able to save some of their income, while the second relates to the average amount saved per month. In particular, respondents are asked 'Do you save any amount of your income for example by putting something away now and then in a bank, building society, or Post Office account other than to meet regular bills?', and 'About how much on average do you manage to save a month?' These variables contribute to the 'planning ahead' and 'making ends meet' strands of financial capability.

Table 5 summarises responses to these questions, reporting whether or not respondents report saving, the amount saved averaged across the sample as a whole (where non-savers are given a value of 0) and the amount conditional on saving. The amount saved has been deflated to January 2006 prices to allow a more direct comparison over time.

Table 5: Saving behaviour: BHPS 1991–2006

Year	Saves		Amount saved (per month)	Amount saved conditional on saving (per month)
	Yes	No		
1991	0.386	0.614	59.47	154.23
1992	0.369	0.631	57.92	157.04
1993	0.388	0.612	61.61	158.71
1994	0.384	0.616	63.15	164.40
1995	0.384	0.616	64.68	168.29
1996	0.390	0.610	65.66	168.46
1997	0.407	0.593	67.02	164.64
1998	0.417	0.583	77.92	187.03
1999	0.388	0.612	67.19	173.40
2000	0.403	0.597	68.60	170.29
2001	0.398	0.602	73.70	185.39
2002	0.396	0.604	72.29	182.58
2003	0.390	0.610	74.87	192.01
2004	0.387	0.613	76.75	198.10
2005	0.399	0.601	75.51	189.33
2006	0.381	0.619	75.12	197.33
Total	0.392	0.608	68.58	175.14

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 38.6% of respondents saved from their income; that on average respondents saved £59.47 per month, while those that were able to save on average saved £154.23 per month. Amounts saved in Jan 2006 prices. Pearson χ^2=4.4 P=0.0000. 'Total' shows data pooled from waves 1 to 16.

This table indicates little change in the proportion of respondents who report being able to save from their income. There is some evidence of an initial increase in the proportion saving, from 38.6% in 1991 to 41.7% in 1998, but this proportion has since declined (if not continuously) to 38.1% in 2006. In terms of amounts saved, there is evidence of a reasonably consistent increase over time, from £59 in 1991 to £75 in 2006. If we focus only on those that are saving at any particular year, this increase is more pronounced – increasing from £154 in 1991 to £197 in 2006.

4.3 Housing payment problems

There are four questions asked at each BHPS wave that relate to difficulties in meeting housing payments. These are asked of only one individual per household (normally the head of household – the individual mainly responsible for paying for housing), but for the purposes of this analysis we have allocated the response to all adult household members.

Households are asked 'Many people these days are finding it difficult to keep up with their housing payments. In the last 12 months would you say you have had any difficulties paying for your accommodation?' Households who say yes are subsequently asked 'Did you have to borrow in order to meet housing payments?', 'Did you have to make cutbacks in order to meet housing payments?' and 'In the last twelve months have you ever found yourself more than two months behind with your rent/mortgage?' These clearly relate to the 'making ends meet' strand of financial capability. Responses to these questions are summarised in Table 6.

Table 6: Housing payment problems: BHPS 1991–2006

Year	Housing payment problems Yes	Required borrowing Yes	Required cutbacks Yes	Been 2+ months in arrears Yes
1991	0.133	0.027	0.112	0.035
1992	0.123	0.023	0.103	0.028
1993	0.108	0.021	0.092	0.025
1994	0.090	0.013	0.071	0.020
1995	0.076	0.013	0.061	0.016
1996	0.064	0.011	0.052	0.011
1997	0.065	0.014	0.052	0.012
1998	0.059	0.012	0.048	0.009
1999	0.053	0.010	0.040	0.008
2000	0.060	0.013	0.045	0.008
2001	0.047	0.011	0.035	0.009
2002	0.046	0.012	0.037	0.008
2003	0.046	0.013	0.036	0.007
2004	0.040	0.013	0.029	0.011
2005	0.051	0.012	0.041	0.011
2006	0.041	0.016	0.040	0.009
Total	0.071	0.015	0.057	0.014
Pearson χ^2 (p-value)	51.67 (0.0000)	6.4 (0.0000)	47.5 (0.0000)	18.6 (0.0000)

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 13.3% reported having problems meeting housing payments, 2.7% had to borrow to meet payments, 11.2% had to make cutbacks to meet payments, while 3.5% were at least 2 months in arrears with their payments in the last 12 months. 'Total' shows data pooled from waves 1 to 16.

The table shows that in general meeting housing payments became less of a problem over the sample period. For example, the proportion of respondents in households reporting having problems meeting their housing payments fell from 13.3% in 1991 to less than 5% in 2006 (although the minimum was 4% in 2004). There were similar falls in the proportions reporting having to borrow or make cutbacks in order to meet their housing payment problems, from 2.7% to 1.6% and from 11.2% to 4% respectively. The proportion of respondents living in households that were two or more months in housing arrears at anytime in the last 12 months fell from 3.5% in 1991 to less than 1% in 2006.

4.4   Material wellbeing

At each date of interview, respondents are asked a series of questions relating to whether they, in their current accommodation, have access to a number of different consumer durables – a colour television, a video cassette recorder (VCR), washing machine, dishwasher, microwave oven, home personal computer (PC) and a compact disc (CD) player. Rather than examine the extent to which respondents had access to each consumer durable, we have combined these indicators into a summary measure that simply counts the number of consumer durables to which an individual has access. This variable therefore takes a value between 0 and 7. Responses to this set of questions provide an insight into the respondents' standard of living, and may contribute to the 'making ends meet' strand of financial capability. Responses are summarised in Table 7.

Table 7: Number of consumable durables: BHPS 1991–2006

Year	<3	3	4	5	6	7
1991	0.188	0.165	0.262	0.220	0.127	0.038
1992	0.167	0.141	0.258	0.238	0.139	0.057
1993	0.142	0.127	0.244	0.248	0.167	0.072
1994	0.125	0.113	0.226	0.260	0.183	0.093
1995	0.114	0.096	0.211	0.273	0.200	0.106
1996	0.090	0.093	0.198	0.275	0.227	0.117
1997	0.080	0.077	0.186	0.279	0.242	0.136
1998	0.065	0.074	0.169	0.279	0.254	0.159
1999	0.063	0.059	0.155	0.264	0.276	0.183
2000	0.047	0.060	0.140	0.246	0.285	0.222
2001	0.040	0.052	0.131	0.236	0.300	0.241
2002	0.032	0.045	0.112	0.218	0.309	0.284
2003	0.028	0.037	0.101	0.203	0.316	0.315
2004	0.025	0.035	0.091	0.185	0.323	0.341
2005	0.025	0.029	0.078	0.174	0.341	0.353
2006	0.022	0.029	0.081	0.164	0.345	0.359
Total	0.080	0.079	0.168	0.237	0.249	0.187

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 18.8% of respondents lived in a household with access to less than 3 consumer durables. Pearson χ^2=121.8 P=0.000. 'Total' shows data pooled from waves 1 to 16.

This table reflects the general increase in living standards over the sample period, with a significant increase in the number of consumer durables to which respondents had access. The proportion with access to fewer than three of the listed consumer durables has fallen from 18.8% in 1991 to just 2.2% in 2006, while that with access to all seven has increased from just 3.8% in 1991 to 36% in 2006.

4.5 Summary

In this section we have summarised variables that are available at all BHPS waves and that may be related to the concept of financial capability. All contribute to the different strands of financial capability identified by Atkinson et al (2006). They include measures of perceived financial wellbeing, savings behaviour, problems meeting housing payments and material wellbeing. On average, the proportion of individuals reporting 'living comfortably' or 'doing alright' has been increasing since 1991, while the fraction reporting financial difficulties has fallen significantly. The proportion of respondents reporting being worse off financially than one year ago and less optimistic about the future has been falling since 1991. These perceptions are reflected in other measures of financial wellbeing, with respondents on average saving more and having access to more consumer durables, and fewer respondents living in households with housing payment problems. In subsequent sections, we use responses to these variables to construct an index of financial capability and then examine correlations between this index and other financial variables that are available at intermittent waves of the BHPS.

5. Constructing an index of financial capability

Having described variables available at every BHPS wave that may be related to financial capability, we now turn our attention to the degrees of association between these variables. The ultimate aim is to examine the possibility of constructing an index of financial capability. This involves experimenting with a number of different ways of combining information collected in responses to BHPS survey questions on financial wellbeing described previously. A necessary first stage in this process is to examine the degree of correlation between responses to each question. A simple way of constructing an index would then be to simply sum variables with a high degree of correlation to provide a straightforward measure of financial capability (e.g. Taylor et al 2004). Another popular way of constructing an index is to employ factor analysis (or principal component analysis) which uses correlations between variables to determine the underlying factor (in this case financial capability) represented by the variables (e.g. Taylor et al 2004; Capellari and Jenkins 2007). This method allows us to construct a factor score for each individual that measures the particular combination and weighting of variables used. We adopt both procedures.

5.1   Correlations between measures

As a first step in developing an index, we present a correlation matrix which illustrates the degree of association between the available variables, shown in Table 8 below. Here we have pooled all 16 waves of BHPS data, as our interest is in constructing an index of financial capability that can be applied across the whole sample period (rather than examining changes in associations over time). The statistic reported is the Spearman rank correlation coefficient, which is a measure of association taking a value between –1 (indicating perfect negative correlation) and +1 (indicating perfect positive correlation).[4] A value of zero indicates no correlation between the relevant variables. This table can be used to examine the degree of association between variables, allowing us to identify variables that are likely to be capturing a common underlying factor (financial capability). Variables that have the closest association (with rank correlation coefficients of 0.3 and above) are highlighted in bold. Those with correlation coefficients between 0.1 and 0.29 are in normal print, while those with the weakest association are in grey. By construction, the matrix is symmetrical around the lead diagonal.

This table shows that the strongest correlations (of above 0.3) are found between an individual's perceived current financial situation and their savings behaviour, and between an individual's perceived current financial situation and reporting that their situation has worsened over the previous 12 months. This suggests that people reporting finding it difficult to get by financially are also more likely to report a worsening financial situation, and are less likely to save. (We've standardised the correlations with the saving behaviour and consumer durables variables so that the positive correlations here indicate that individuals in a difficult financial situation are less likely to save and have access to fewer consumer durables.) Other strong correlations are found between the housing payment variables, which are to be expected given the structure of these questions.

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[4] We use the Spearman rank correlation coefficient rather than the more common Pearson's correlation coefficient because the former is non-parametric and less likely to be distorted when the normality assumption does not hold.

Table 8: Correlations between financial variables: BHPS 1991–2006

	Financial situation	Worsened	Expect to worsen	Saves (-)	Amount saved (-)	Housing payment problems	Required borrowing	Required cutbacks	Arrears	Durables (-)
Financial situation	*1.00*	**0.35**	0.10	0.29	**0.33**	0.26	0.13	0.24	0.13	0.16
Situation worsened		*1.00*	0.22	0.14	0.15	0.14	0.08	0.14	0.06	0.05
Expect to worsen			*1.00*	0.02	0.02	0.02	0.00	0.02	0.00	0.07
Saves (-)				*1.00*	-	0.12	0.07	0.11	0.07	0.14
Amount saved (-)					*1.00*	0.13	0.07	0.11	0.07	0.16
Housing payment problems						*1.00*	**0.46**	**0.89**	**0.44**	0.08
Required borrowing							*1.00*	**0.42**	0.27	0.04
Required cutbacks								*1.00*	**0.41**	0.08
Arrears									*1.00*	0.05
Number of durables (-)										*1.00*
Mean	0.22	0.15	0.05	0.12	0.13	0.28	0.17	0.27	0.17	0.09

Notes: Figures reported are Spearman rank correlation coefficients. See text for how variables are constructed and defined.

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The final row of the table shows the average correlation between each variable and the others. This indicates that the variables most highly correlated with the others are perceived current financial situation, having housing payment problems and housing payment problems required cutbacks. It is clear that expecting one's financial position to worsen over the coming year has little correlation with the other variables, and for this reason we discard it from the remainder of the analysis. This lack of correlation is explained by the fact that individual's expectations about changes in their financial situation can be independent of their current financial situation. We now use the remaining variables to construct an index of financial capability.

5.2 Constructing indices of financial capability

We adopt two approaches to constructing an index of financial capability, based on the correlations presented in Table 8. The first approach uses factor analysis. The second approach sums the variables with a relatively high degree of correlation to provide a straightforward and easily interpretable measure of financial capability. The latter is a commonly used procedure in the deprivation and hardship literature, and often appears to work at least as well as much more complicated methodologies (Skrondal and Rabe-Hesketh 2004). We describe the procedure used in constructing each of the indices in detail below.

Identifying the common characteristic

Our aim is to construct an index of financial capability that can be traced over time. The individual variables can be interpreted as reflecting a common, underlying characteristic ('financial capability') if there is a consistent tendency for an individual who scores highly on one also to score highly on each of the other variables. We test the internal consistency of such summary measures using Cronbach's alpha which is calculated on the basis of the number of contributing variables and the correlations between them. Alpha takes a value between 0 and 1, with one indicating perfect internal consistency. The literature suggests that a good summary indicator should have a value of alpha of at least 0.7 (Nunnally and Bernstein 1994). Before constructing an index, we examine the inter-item correlations, which we present in Table 9 below. Because some of the variables have different scales (e.g. perceived current financial situation, amount saved, number of consumer durables), we have standardised all the variables to have mean zero and variance one.

Table 9: Standardised inter-item correlations: BHPS 1991–2006

Variable	Item-rest correlation	Average inter-item correlation	Alpha
Financial situation	0.451	0.180	0.638
Situation worsened	0.240	0.211	0.667
Saves (-)	0.309	0.200	0.683
Amount saved (-)	0.232	0.212	0.681
Housing payment problems	0.606	0.160	0.603
Required borrowing	0.351	0.194	0.659
Required cutbacks	0.570	0.164	0.611
Arrears	0.342	0.196	0.660
Number of durables (-)	0.151	0.224	0.698
Total		0.193	0.683

The item-rest correlation shows the correlation between each variable and the index that is formed by all the other items, while the average inter-item correlation shows the inter-item correlations excluding the relevant variable, and therefore indicates whether or not excluding the relevant variable would increase the average inter-item correlation. The last column of the table presents Cronbach's alpha for the index formed by excluding the relevant variable, and therefore indicates whether the internal consistency of the index would be improved by excluding the relevant variable. The results presented in Table 9 indicate that both the amount saved and the number of durables appear to be least well correlated with the other variables. They have the lowest item-rest correlation (indicating they are least well correlated with an index formed by all other items), and the average inter-item correlation and alpha would both increase if they were removed. This may be because both these variables reflect income levels as much as financial capability. Therefore it appears that it is the act of saving itself that is a more important indicator of financial management than the amount saved.[5]

This leaves us with the following variables from which to construct an index:

- perceived current financial situation;
- reporting that the financial situation has worsened since last year;
- whether saves;
- has housing payment problems;[6]
- problems required borrowing;
- problems required cutbacks; and
- been at least two months in housing arrears in last 12 months.

The internal consistency of such a summary measure yields a Cronbach's alpha of 0.71 and an average inter-item correlation of 0.26, which suggests it is a good summary indicator and that the individual variables all contribute to the underlying financial capability component in the same way. Wave-specific estimates show Cronbach's alphas that vary between 0.68 and 0.74, and average inter-item correlations that vary between 0.23 and 0.29, suggesting that the index has internal consistency across time. The distribution of the underlying factor score is summarised in Table 10 and Figure 1. Because this factor is essentially measuring financial incapability, we call it an index of financial incapability. Higher values of this index are associated with higher financial difficulty (lower financial capability), and vice versa.

Figure 1 shows that although there is a long right hand tail to the distribution of the index, the majority of observations actually lie between –0.537 and zero. Therefore, consistent with the Financial Services Authority's Baseline Survey, most

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[5] We have also experimented with using savings as a proportion of income. However this too is less well correlated with the underlying factor of financial capability than the act of savings.

[6] We have experimented with a number of different combinations of the housing payment problems variables, including creating a single variable measuring the scale of the problems and including the separate variables independently of the others. The current specification appears to provide the most consistent index.

people are financially capable but those that are not can suffer extreme difficulties. Table 10 indicates that the index has a mean of zero and a standard deviation of 0.601 and varies between −0.537 (indicating no financial difficulty) and 4.1 (indicating high financial difficulty).

Figure 1: Distribution of the index of financial incapability: BHPS 1991–2006
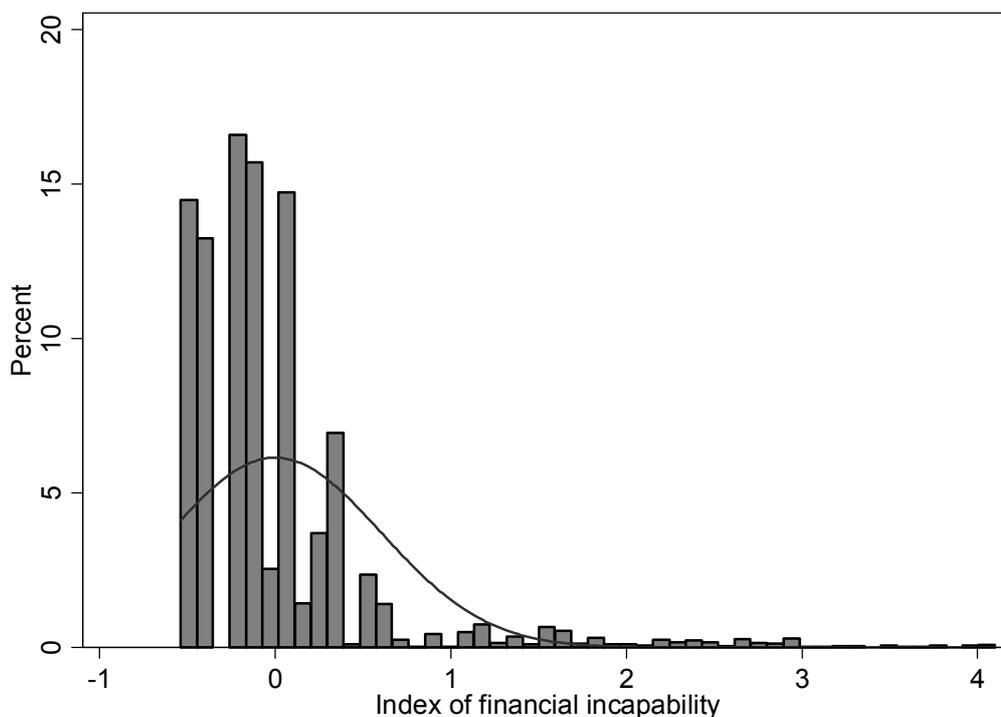
Table 10: Index of financial incapability: BHPS 1991–2006

	Mean	Std Dev	Min	Max
Financial difficulty index	0.000	0.601	−0.537	4.100

Notes: Index constructed using factor analysis from: Current financial situation; Financial situation worsened since last year; Whether saves; Has housing payment problems; Problems required borrowing; Problems required cutbacks; and Been at least two months in arrears in last 12 months.

An alternative approach

As an alternative approach, and to check the validity of the index constructed above, we have constructed a summary measure by simply adding together the indicators of financial incapability that individuals currently face. Such 'sum-score' indices are commonly used in the deprivation and hardship literature. To do this we have again focused on those variables with high average inter-item correlations: perceived current financial situation, reporting that the situation worsened, whether saves, housing payment problems, whether problems required borrowing, whether required cutbacks, and whether been in housing arrears. First we have used perceived current financial situation to define as having low financial capability individuals who are finding it quite difficult or very difficult. We also define as having low financial capability those who are not currently saving. Then we

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construct an index by adding together whether the individual: is finding it quite or very difficult, reports a worsened financial situation, is not currently saving, has housing payment problems, has had to borrow to meet payments, has had to cutback to meet payments, and has been in two or months arrears. This index takes a value between 0 (has none of the listed problems) to 7 (has all of the listed problems). Table 11 and Figure 2 summarise the distribution of this index which, for simplicity, we call the number of financial problems.

Table 11: Number of financial problems: BHPS 1991–2006

	0	1	2	3	4 or more	Mean
Number of financial problems	0.313	0.448	0.146	0.053	0.040	1.09

Notes: Table reads, for example, that 31.3% had no financial problems. Number of financial problems is sum of whether individual: is finding it quite or very difficult, has a worsened financial situation, is not currently saving, has housing payment problems, has had to borrow to meet payments, has had to cutback to meet payments, has been in two or months arrears, and has access to fewer than three consumer durables.

This table shows that on average over the sample period, individuals suffered from 1.09 financial problems each year. As with the index of financial incapability, the distribution of the number of financial problems has a long right hand tail (Figure 2). Again, most people suffer few problems, but those that do can suffer from extreme difficulty. More than three quarters of observations had at most one financial problem, while 15% had two. Only 4% suffered from four or more financial problems.

Figure 2: Distribution of the number of financial problems: BHPS 1991–2006

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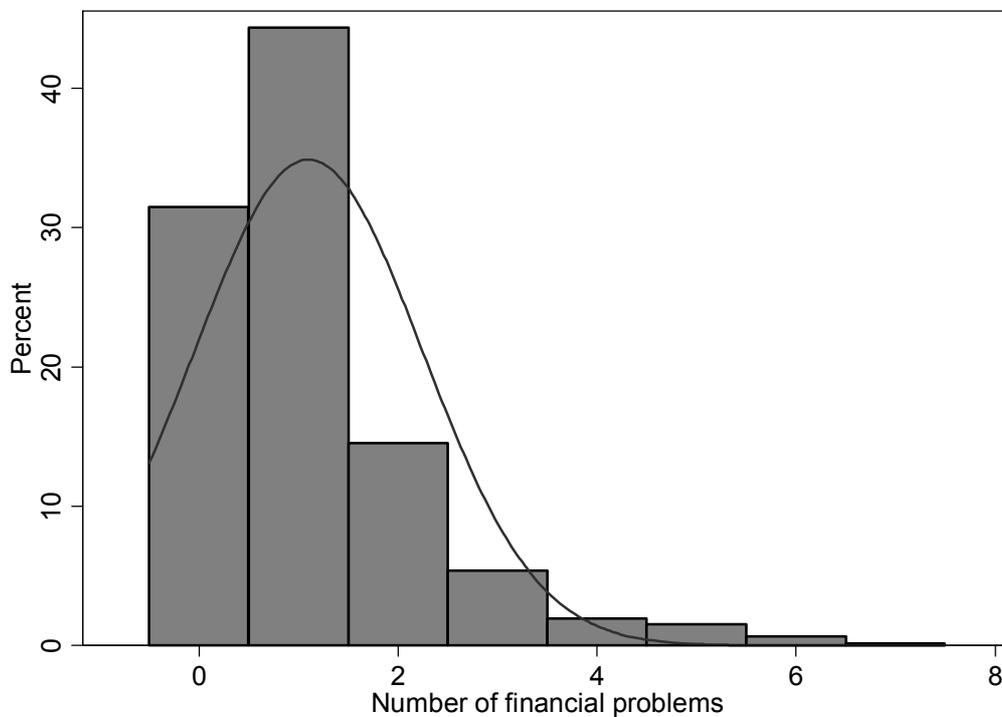
5.3 Validity checks

Before taking these two measures onto the next stage of the analysis, we carry out some validity checks. These take two forms. Firstly we examine the degree of correlation between our index of financial incapability and the number of financial problems. Secondly, we examine how each of these measures is correlated with other measures of financial wellbeing collected intermittently over the BHPS sample period.

Correlations between measures

The first validity check is to ensure that the two measures exhibit high degrees of association. Table 12 indicates that the mean index of financial incapability increases monotonically with the number of financial problems. Individuals with no financial problems have an average index of financial incapability of −0.44. This increases consistently, such that those with six or seven financial problems have a mean index of financial incapability exceeding 3. The two constructed measures have a Spearman rank correlation coefficient of 0.94. This indicates that there is a very high degree of association between these two indicators of financial capability.

Table 12: Association between number of financial problems and index of financial incapability: BHPS 1991–2006

Number of financial problems	Mean financial incapability
0	−0.443
1	−0.095
2	0.307
3	0.792
4	1.746
5	2.160
6	3.033
7	4.044
Spearman's rank correlation coefficient	0.943

Notes: Index of financial difficulty constructed from: Current financial situation; Financial situation worsened since last year; Whether saves; Has housing payment problems; Problems required borrowing; Problems required cutbacks; and Been at least two months in arrears in last 12 months. Number of financial problems is sum of whether individual: is finding it quite or very difficult, has a worsened financial situation, is not currently saving, has housing payment problems, has had to borrow to meet payments, has had to cutback to meet payments, has been in two or months arrears, and has access to fewer than three consumer durables.

As a further check, we have estimated Ordinary Least Squares regressions, with the number of financial problems as the dependent variable and the index of financial incapability as the explanatory variable. The estimates from such a regression (not shown) indicate that the index of financial incapability explains 88% of the total variance in the number of financial problems. This relationship is highlighted graphically in Figure 3, which plots the two measures together with a superimposed fitted regression line. The fitted line does not pass through the centre of the dots, indicating that the dots are denser at lower values of the index of financial incapability. Again therefore, there is evidence of a high degree of correlation between the two measures.

As a further validity and robustness check, we examine correlations between our summary measures of financial capability and the financial variables available intermittently across BHPS waves. Such variables were not considered in constructing the indices because they are not available at all survey waves, and therefore reduce both the time coverage of the index and the number of observations for which it can be calculated. Before presenting correlations, Table 13 describes the variables concerned.

Figure 3: Plot of index of financial incapability and number of financial problems: BHPS 1991–2006
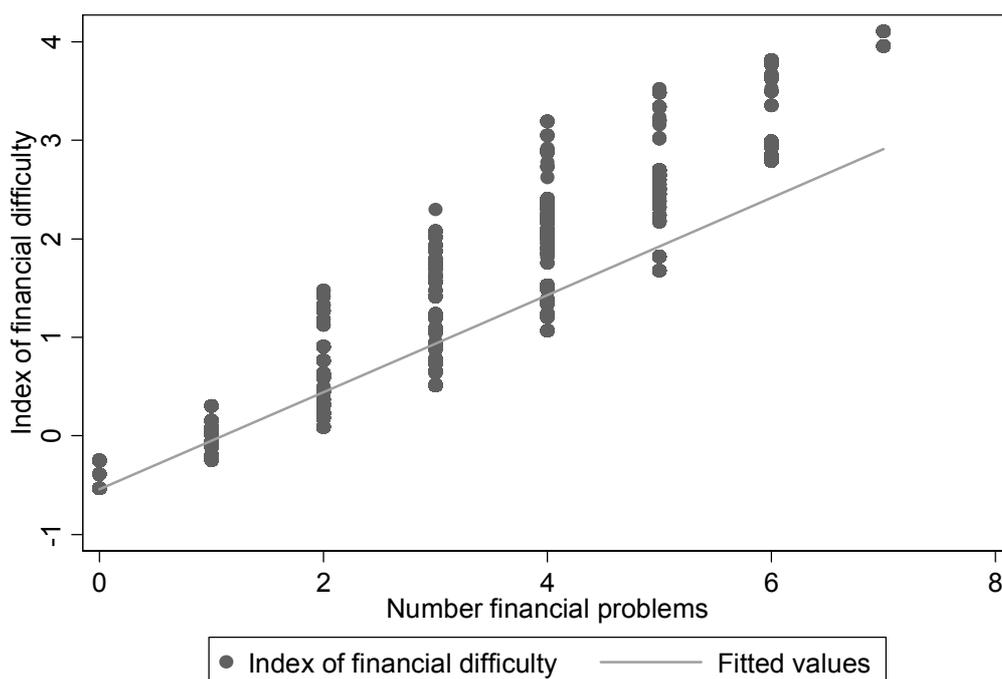
Source: BHPS 1991-2006

Table 13: Variables available at intermittent BHPS waves 1991–2006

Variable name	Description	BHPS Availability
Repayments	Individual or household has to make repayments on hire purchases or loans (excluding mortgages).	5 onwards
Repayments burden	Is the repayment of such debts and the interest a heavy burden, somewhat of a burden, not a problem?	5 onwards
Lifestyle	The number of the following which the household is able to do: Keep home adequately warm; pay for annual holiday; replace furniture; buy new clothes; eat meat on alternate days; feed visitors once a month.	6 onwards
Financial commitments	Number of the following financial commitments: Hire purchase agreements, personal loans, credit cards, mail order purchase, DSS social fund loan, loans from an individual, something else.	5, 10, 15
Amount of debt	The amount owed on the above.	5, 10, 15
Number of investments	Which of the following investments individuals have money in: National Savings Certificates, Premium bonds, Unit trusts, Personal Equity Plans, Shares, National Savings/Building Society/Insurance bonds, other.	5, 10, 15
Amount invested	How much money invested in the above?	5, 10, 15
Long-term saver	Are savings mainly long-term savings for the future?	10 onwards
Regular saver	Does respondent save on a regular basis?	10 onwards
Amount in savings accounts	How much respondent has in total in savings accounts, TESSAs or ISAs.	10, 15

These variables capture aspects of individuals' credit, savings and debt, ranging from the burdens of debt repayments and financial commitments, to lifestyle information, investments and savings behaviour. A priori, we would expect any measure of financial capability to be correlated with at least some of these variables, as they will also contribute to the different strands identified by Atkinson et al (2006). As a precursor to examining correlations between these variables and our two summary measures, in Table 14 we present a correlation matrix which illustrates the degree of association between the variables (this is symmetrical about the lead diagonal). Again we have pooled all waves of relevant data (the number of which vary according to the availability of the variables). Again, the statistic reported is the Spearman rank correlation coefficient, with variables having the closest association (with rank correlation coefficients of 0.3 and above) highlighted in bold. Those with correlation coefficients between 0.1 and 0.29 are in normal print, while those with the weakest association are in grey. (Again, we've standardised the correlations with lifestyle, investments and saving variables so that the positive correlations here indicate that individuals in a difficult financial situation are less likely to have investments and to save).

The table shows that the strongest correlations (of above 0.3) are found between repaying a loan and the number of financial commitments and amount of debt, between the number of investments, amount invested and amount in savings accounts, and between saving regularly, saving long-term and amount in savings accounts. These results accord with intuition – individuals repaying loans are likely to have more financial commitments and debt, while those with a larger number of investments are likely to have more invested. Similarly, individuals who save regularly and on a long-term basis are likely to have more money in savings accounts. The average correlations shown in the final row indicate that the amount

of money in savings accounts is most highly correlated with the other variables (average correlation of 0.25). The lifestyle variable (capturing the number of things the household is able to do) has the weakest correlations with the other variables.

Given the relatively low correlations between many of these variables, we might expect our two summary measures of financial capability to also be relatively poorly correlated with these variables. We examine this in Table 15, again presenting Spearman rank correlation coefficients. These, however, indicate relatively strong correlations between our measures and the other variables. In particular, our index of financial incapability and the number of financial problems exhibit relatively high correlations with the lifestyle measure, being a long-term saver, being a regular saver and the amount held in savings accounts. Relatively weak correlations emerge with repaying loans, the number of financial commitments and the amount of debt.

The average Spearman rank correlation coefficients (of 0.237 with the index of financial incapability and 0.226 with the number of financial problems) are greater than all but one of the average inter-variable correlations. This indicates that our summary measures are more highly correlated with these variables than the variables are correlated between themselves, and gives us confidence that the summary measures are valid, and consistent, indicators of financial capability.

Table 14: Correlations between financial variables intermittently available: BHPS 1991–2006

	Repayments	Repayments burden	Lifestyle (-)	Financial comms	Amount debt	N investments (-)	Amount invested (-)	LT saver (-)	Regular saver (-)	Amount savings (-)
Repayments	1.00	0.24	0.03	**0.50**	**0.49**	0.11	0.08	0.01	0.04	0.14
Repayments burden		1.00	0.13	0.16	0.14	0.07	0.06	0.03	0.06	0.12
Lifestyle (-)			1.00	0.03	0.02	0.04	0.04	0.08	0.16	0.20
Financial commitments				1.00	**0.91**	0.07	0.04	0.02	0.02	0.14
Amount of debt					1.00	0.06	0.02	0.01	0.05	0.12
Number of investments (-)						1.00	-	0.16	0.14	**0.43**
Amount invested (-)							1.00	0.17	0.14	**0.43**
Long-term saver (-)								1.00	**0.47**	0.28
Regular saver (-)									1.00	**0.38**
Amount in savings accounts (-)										1.00
Mean	0.18	0.11	0.08	0.21	0.20	0.14	0.12	0.14	0.16	0.25

Notes: Figures reported are Spearman rank correlation coefficients. See text for how variables are constructed and defined.

Table 15: Correlations between measures of financial capability and financial variables available intermittently: BHPS 1991–2006

Variable	Correlation with	
	Index of financial incapability	Number of financial problems
Repayments	0.040	0.018
Repayments burden	0.161	0.155
Lifestyle (-)	0.276	0.237
Financial commitments	0.083	0.054
Amount of debt	0.069	0.044
Number of investments (-)	0.211	0.177
Amount invested (-)	0.194	0.167
Long-term saver (-)	0.353	0.385
Regular saver (-)	0.578	0.650
Amount in savings accounts (-)	0.401	0.374
Mean	0.237	0.226

Notes: Figures reported are Spearman rank correlation coefficients. See text for how variables are constructed and defined.

5.4 Adjusting for income

Of course, financial difficulty is strongly related to income and it can be argued that any measure of financial capability should be adjusted for income. Financial capability should capture how capable people are at managing their finances independent of their income levels. Here we investigate the relationship between our index of financial incapability and income, defined as real equivalised gross household income (in the month prior to interview), deflated to January 2006 prices. Our index of financial incapability yields a Spearman rank correlation coefficient with income of –0.34, suggesting that financial incapability falls as income increases. Figure 4 provides smoothed plots to highlight the relationships between income and the index of financial incapability and the number of financial problems. This indicates that the relationship is stronger (the slopes are steeper) at lower income levels – financial capability increases with income at a faster rate for those with higher levels of financial incapability than for those with lower levels. The lines are relatively flat at higher income levels.

To create an income adjusted measure of financial incapability, we follow the procedure adopted in Melhuish and Malin (2008) and regress the index of financial incapability on real equivalised monthly household income (in January 2006 prices) and use the residuals as our income-adjusted index of financial incapability. The results from this Ordinary Least Squares (OLS) regression are shown in Table 16. The residuals from this regression can be interpreted as the part of financial incapability that is not explained by income, which we call our income-adjusted index of financial incapability. The relatively small (if statistically significant) coefficients on the quadratic and cubic terms suggest that the non-linearities in the relationship between income and financial incapability are small. This is highlighted in Figure 5, which plots the index of financial incapability, the income-adjusted index, and the estimated regression line. The closeness of the estimated line to the income-

unadjusted index indicates that the income-adjusted and income-unadjusted indices will only differ at low and very high equivalised household income (below £1,000 and above £6,000 per month). Given that over 80% of income observations lie within this range, we expect the income-adjusted and the income-unadjusted indices to provide very similar results. This figure also confirms that income-adjusted index is unrelated to income.

Figure 4: Relationship between financial incapability and income: BHPS 1991-2006
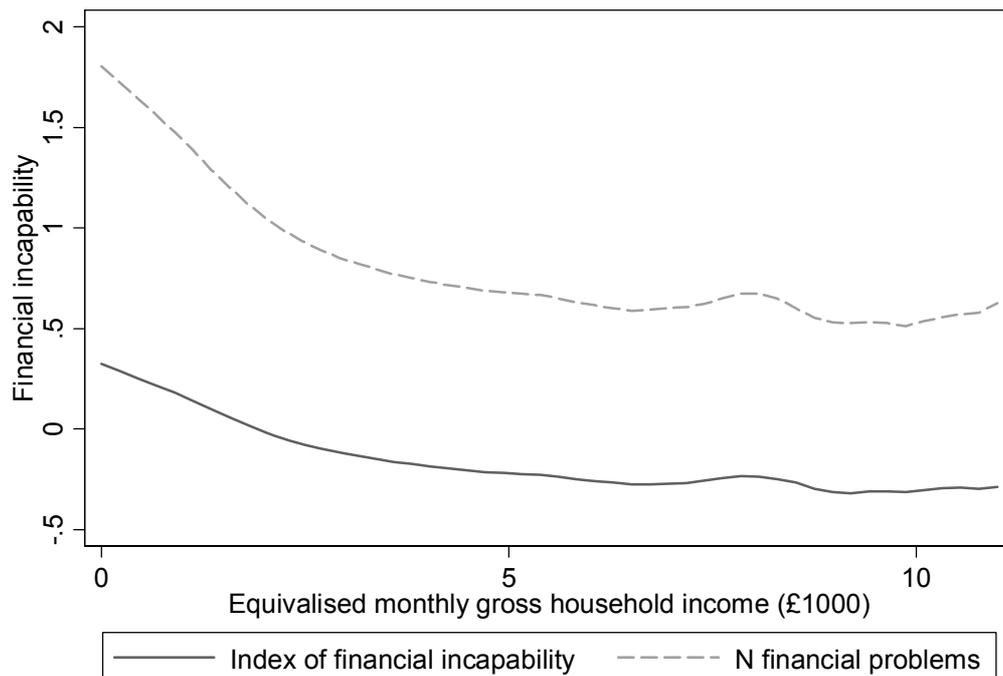
Source: BHPS 1991-2006

Table 16: OLS Regression of household income on index of financial incapability: BHPS 1991–2006

Variable	Coefficient	t-statistic
Real equiv. month household income (£1,000s)	−0.1553	33.32
Real equiv. month household income^2 (£1,000s)	0.0091	15.24
Real equiv. month household income^3 (£1,000s)	−0.0001	10.91
Constant	0.2923	34.87
R^2	0.0647	
N individuals	16598	
N observations	124940	

Notes: Estimates from ordinary least squares regression where dependent variable is index of financial incapability. Standard errors adjusted for clustering on individuals.

It is important to note that, according to Figure 5, financial incapability falls much faster at the lower end of the income scale. For example, an additional £1,000 per month in household income reduces financial incapability by more for an individual with a household income of less than £3,000 per month than for one with an income of more than £5,000 per month. Therefore increasing incomes of those at

the bottom of the income distribution will have relatively larger effects on financial capability than increasing incomes of those at the top of the distribution.

Figure 5: Relationships between financial incapability and income: BHPS 1991-2006
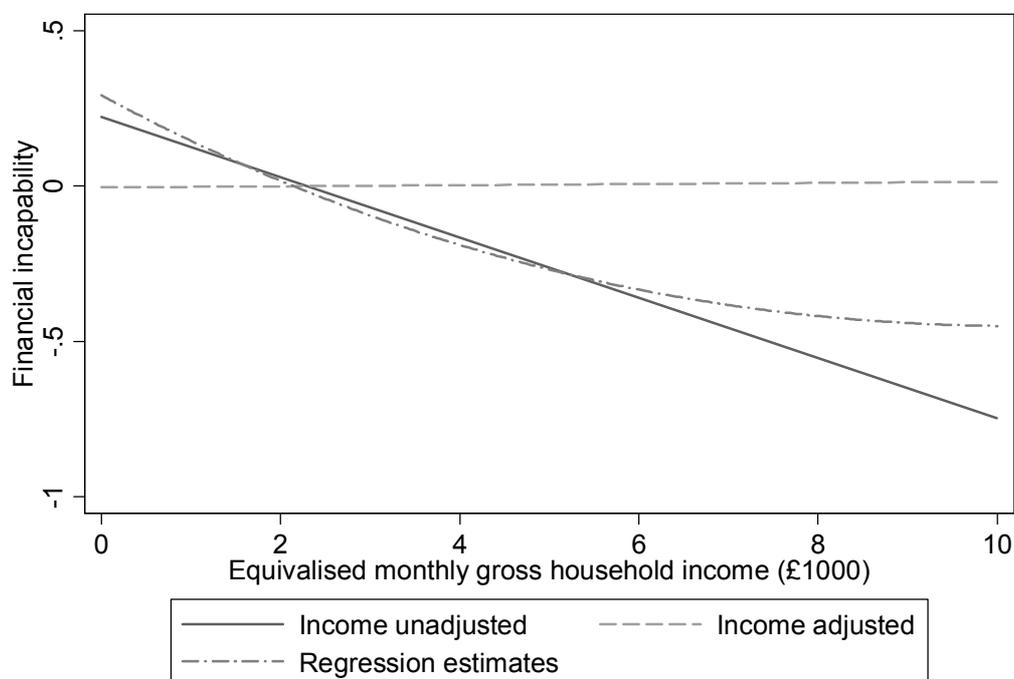
Source: BHPS 1991-2006

Table 17 and Figure 6 describe the distribution of the income-adjusted index of financial incapability. Table 17 shows that the income-adjusted index has a mean of zero and a standard deviation of 0.582 and varies between –1.978 (indicating no financial incapability) and 4.4 (indicating high financial incapability). Figure 6 indicates that the income-adjusted index has a long right hand tail (although this is less pronounced than with the income-unadjusted index) and that the majority of observations have values between –1 and zero. The clustering of observations at low levels of financial incapability indicate that most people manage their finances relatively well, and the long right hand tail indicates that those that have problems can suffer from extreme difficulty. Our income-adjusted index of financial incapability has a Spearman rank correlation coefficient of 0.88 with the unadjusted index, and exhibits an almost identical relationship with the number of financial problems (not shown).

Table 17: Income-adjusted index of financial incapability: BHPS 1991–2006

	Mean	Std Dev	Min	Max
Income-adjusted financial incapability index	0.000	0.582	–1.978	4.400

Notes: Index constructed using factor analysis from: Current financial situation; Financial situation worsened since last year; Whether saves; Has housing payment problems; Problems required borrowing; Problems required cutbacks; and Been at least two months in arrears in last 12 months.

Figure 7 below plots the evolution over the 16 years of available BHPS data of the means of both the income-adjusted and income-unadjusted index of financial incapability, and the number of financial problems. This shows, first, that all three measures indicate a decline in average financial incapability from the early 1990s until 2004, after which there is some evidence of an increase. Second, as expected given the relationships plotted in Figure 5, the averages in the income-adjusted and income-unadjusted index are almost identical over time. As we would expect, the income-adjusted index shows less variation over time, but the differences are small.

Figure 6: Distribution of the income-adjusted index of financial incapability: BHPS 1991–2006
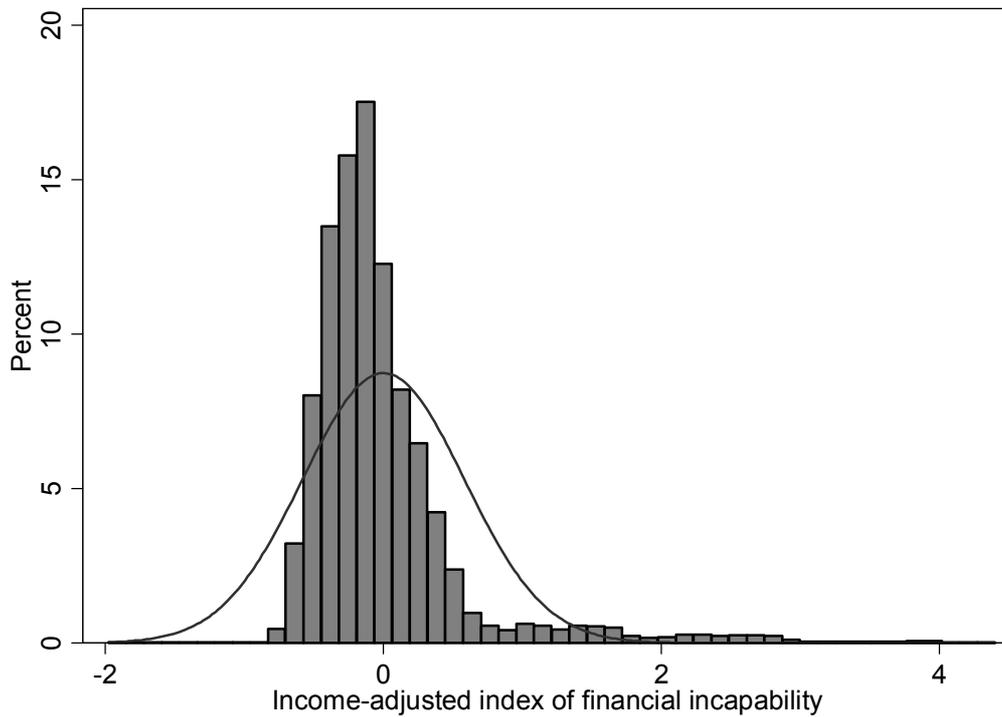
Figure 7: Plot of Index of financial difficulty and number of financial problems: BHPS 1991–2006
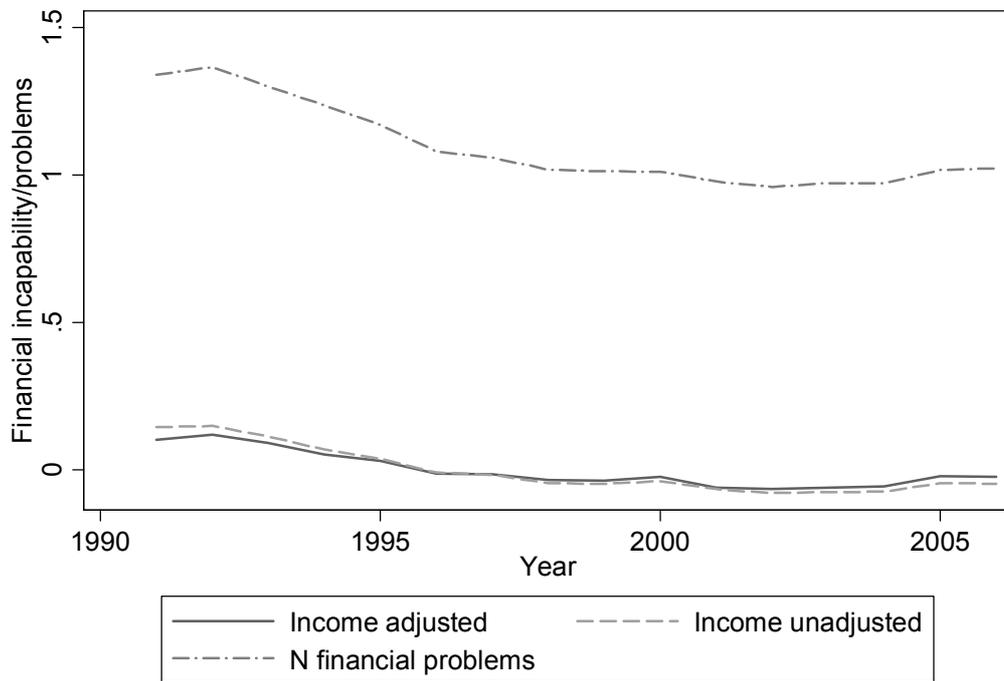
Source: BHPS 1991-2006

5.5 Changes in individual financial capability from one year to the next

Until now, we have analysed the indices of financial incapability from a cross-sectional perspective. We have not taken advantage of the panel nature of the data to examine how financial capability changes from one year to the next for each individual. Table 18 presents our first look at this. In this table we summarise individuals' mean financial incapability over two consecutive years, as well as the average change.

The table indicates that on average over the sample period, people's financial incapability fell between one year ("*t*–1") and the next ("*t*"). The mean changes in the indices were negative, showing that financial capability was improving. For example, the mean income-adjusted index fell from –0.020 in year *t*–1 to –0.032 in year *t*, while the mean number of financial problems fell from 1.077 to 1.053. This is consistent with Figure 7 which shows a downward trend in financial incapability over time. The table also presents average within-individual variances in the indices, which are very large relative to the means. This indicates a great deal of change in the indices at the individual level – financial incapability changes considerably between one year and the next. This is reinforced by a Spearman rank correlation coefficient between current index of financial incapability and index of financial incapability one year ago of 0.5. The implication of this is that financial capability is not a relatively stable characteristic but instead fluctuates considerably at the individual level presumably in response to other (possibly expected and unexpected) events that individuals experience. What factors determine this longitudinal flux is an interesting avenue for further research.

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Table 18: Within-individual year-on-year changes in financial incapability: BHPS 1991–2006

Financial incapability index	Means			
	$t-1$	t	Change	Within-individual variance
Income-adjusted	−0.020	−0.032	−0.012	0.365
Income-unadjusted	−0.013	−0.028	−0.015	0.365
Number financial problems	1.077	1.053	−0.024	0.776
N			95935	

Notes: Weighted using cross-sectional weights. Table reads, for example, that on average individuals had an income-adjusted index of financial incapability of −0.02 in year $t-1$ and of −0.032 in year t, indicating an average improvement in financial capability of 0.012.

Figure 8 plots the distribution of within-individual year-on-year changes in the income-unadjusted index of financial incapability. This shows that over 30% had no change in financial incapability from one year to the next. While this is clearly the modal value, the figure suggests that in almost 70% of cases, individuals' financial capability changed from one year to the next. Figures 9 and 10 reveal a similar pattern when looking at year-on-year changes at the individual level in the income-adjusted index and in the number of financial problems.

Figure 8: Within-individual year-on-year changes in income-unadjusted index of financial incapability: BHPS 1991–2006
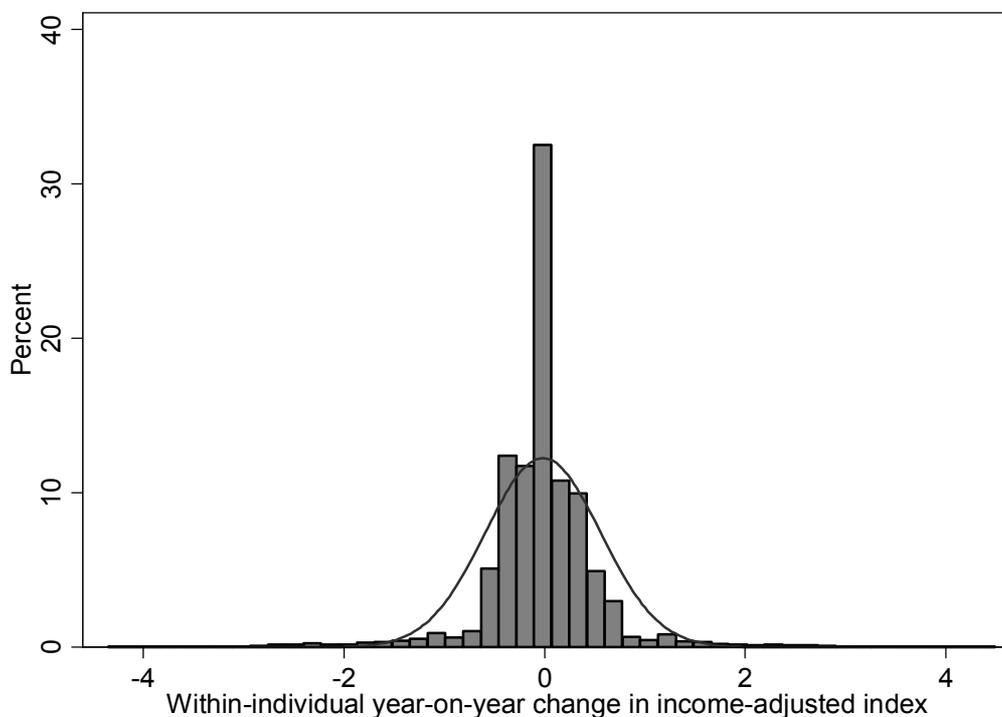
Figure 9: Within-individual year-on-year changes in income-unadjusted index of financial incapability: BHPS 1991–2006
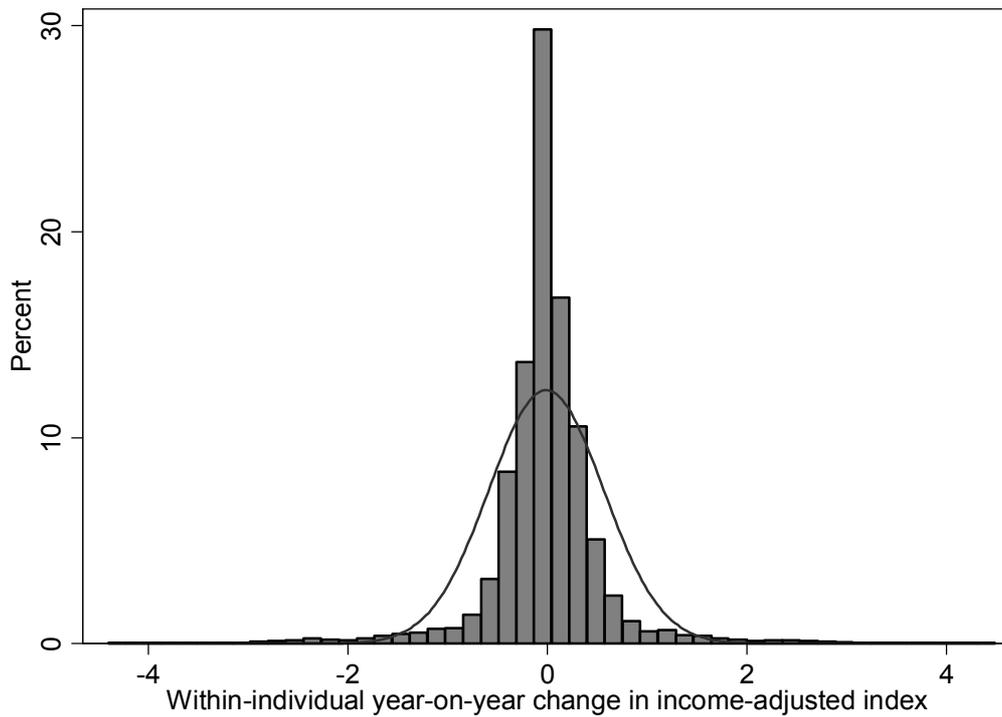
Figure 10: Within-individual year-on-year changes in the number of financial problems: BHPS 1991–2006
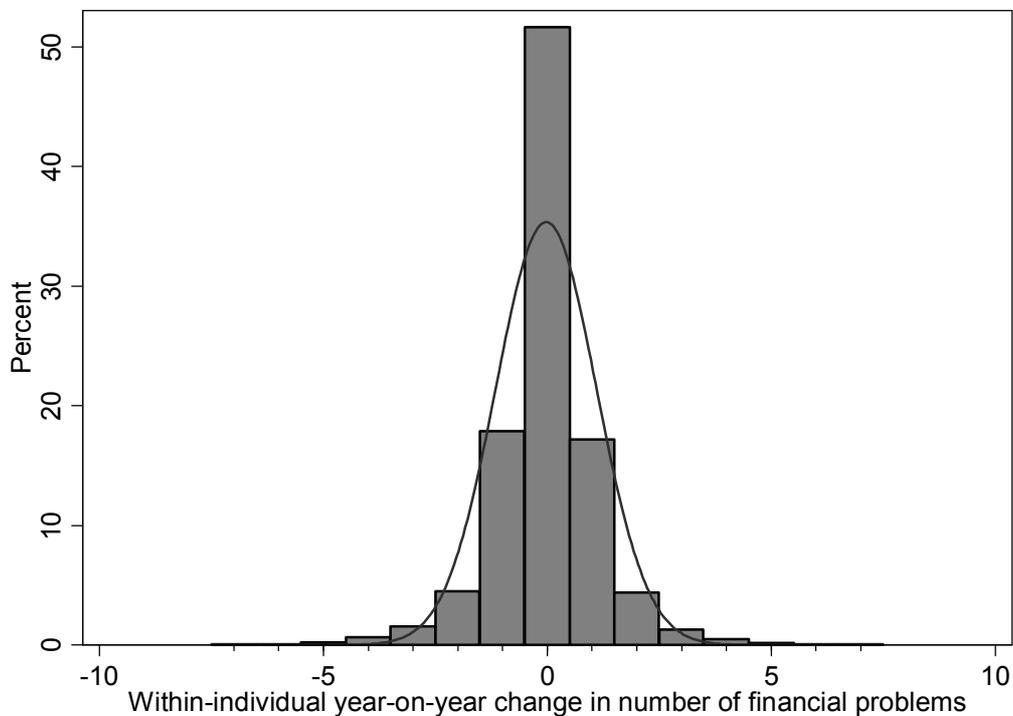
These plots are consistent with the Financial Services Authority's Baseline Survey, which finds that almost one-third of people experience large unexpected falls in

income over a three year period while one in five experiences a large unexpected expense. Such shocks will have implications for their financial capability.

Figure 11 plots how these within-individual average changes in financial incapability changed between 1991 and 2006. Note, first, that there are large average within-individual changes in these indices over time, relative to the average values of the means of the indices. Second, the average rate of improvement in financial capability has, on average, declined over the period. In the early 1990s, the average year-on-year change was more negative (indicating larger improvements in financial capability) than in more recent years. In fact, since 2004 there is evidence that the improvement has reversed, and financial incapability has started to increase (with average within-individual changes above zero).

The advantage of using a categorical (rather than continuous) measure of financial incapability is that it allows a more direct assessment of year-on-year change. We take advantage of this in Table 19, and summarise individual-level changes in the number of financial problems faced in two consecutive years. If there was no change in financial incapability, then all individuals would lie on the leading diagonal – they would have the same number of financial problems each year. Therefore the degree of change can be assessed by the proportion of individuals that lie off the leading diagonal – those that experience either an improvement or deterioration in the number of financial problems they face.

Figure 11: Mean within-individual year-on-year changes in financial incapability: BHPS 1991–2006
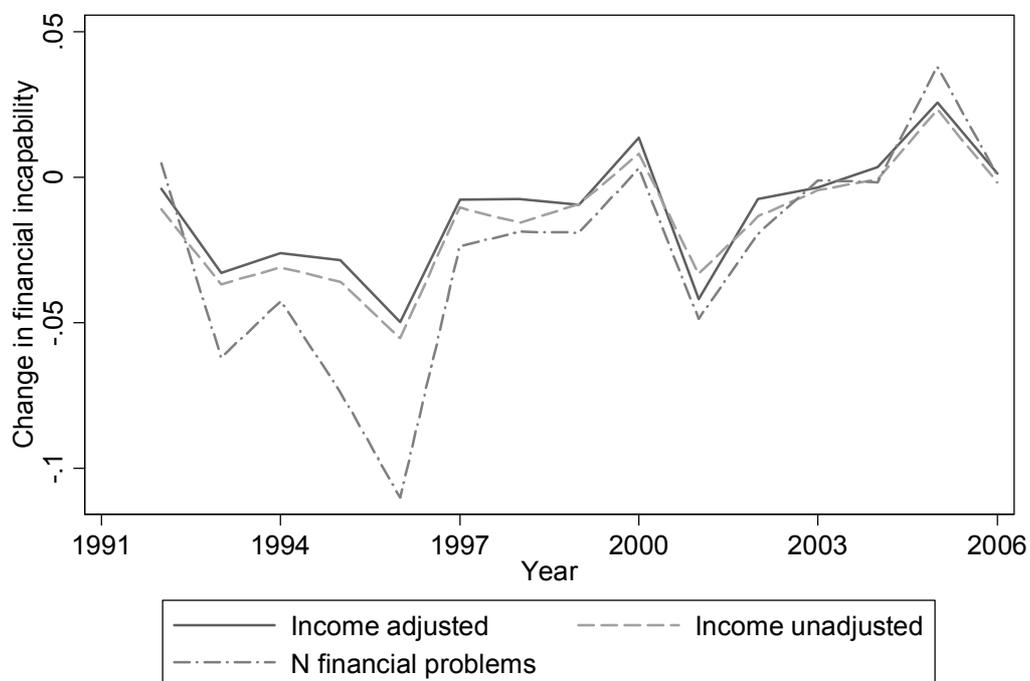
Source: BHPS 1991-2006

This table indicates that there is much year-on-year fluctuation in financial incapability. Although 60% of those with zero or one financial problem in one year also have zero or one financial problems in the subsequent year, the vast majority of

those with two or more financial problems experience a change in the number they have in the following year. For example, of those with two financial problems in one year, only 29.8% have two financial problems in the subsequent year. The majority (58%) have fewer than two, while 13% have more than two. Even more change is evident among those with more financial problems. Of course, such downward mobility is good, indicating that individuals are improving their position on average.

Table 19: Year-on-year changes in number of financial problems: BHPS 1991–2006

N problems at $t-1$	N financial problems at t								
	0	1	2	3	4	5	6	7	N
0	61.5	29.5	6.9	1.5	0.3	0.2	0	0	31224
1	21.7	60.0	13.3	3.2	0.9	0.6	0.2	0	42505
2	13.4	44.5	29.8	7.9	2.2	1.7	0.4	0.1	13803
3	10.2	35.0	22.4	21.1	4.9	4.7	1.5	0.3	4991
4	8.2	31.8	17.0	15.3	13.7	9.3	4.1	0.6	1812
5	5.7	22.0	17.5	17.4	12.3	15.9	7.2	2.0	1447
6	3.7	13.1	13.7	19.9	16.1	18.4	10.5	4.5	600
7	2.4	16.6	9.1	16.5	9.2	14.9	14.6	16.7	138
N	31282	43380	13596	4679	1622	1309	521	131	96520

Notes: Row percentages. Table reads, for example, that 61.5% of individuals with no financial problems at $t-1$ also had no financial problems at the year t interview, while 29.5% had one financial problem at the year t interview.

Having created these indices of financial incapability, together with the number of financial problems, we now turn to describing their relationships with a range of individual and household characteristics. We take all three measures of financial hardship forwards – the income-adjusted index, the income-unadjusted index and the number of financial problems – to highlight the differences and similarities that controlling for income makes in these bivariate relationships.

6. Relationships between financial capability and other characteristics

In this section we introduce the individual and household variables collected in the BHPS with which we describe patterns of financial capability. To maximise sample sizes and to simplify the analysis, we again focus on variables collected at all BHPS waves. For the purposes of this section, we treat the data as a series of separate cross-sections and for the time being do not make use of the panel nature of the data. We summarise how the constructed index is distributed across different groups in the population, and over time. We provide summaries of indices by a range of individual and household characteristics including age, gender, marital status, number and ages of children, health status, employment status, job type, housing tenure and income (note that it is not possible to summarise by ethnicity because of small sample sizes within the BHPS). This is important, because our analysis of the relationship between financial capability and psychological health needs to take account of such characteristics that may potentially confound or mediate the effects. (For example, it is very plausible that mentally healthy people are both more likely to get married, to be in employment and to be able to manage their finances effectively.) We need to ensure that factors that may affect both financial capability and psychological health are controlled for, and in this section we explore relationships between financial capability and a range of individual and household characteristics in detail.

As before, in all tables the data have been weighted to take account of potential non-random attrition and non-random response (using weighting variable wXRWGHT), and we include all adult (aged 16 and above) respondents, irrespective of age, and focus on adults who provide non-missing responses to the variables of interest. Because of missing values on some of the variables, the sample sizes are slightly reduced to 16,348 adults contributing 122,231 person-year observations. In each table, the 'Average' column shows the relationship using data pooled from all 16 waves of data.

6.1 Gender

Table 20 summarises mean financial capability by gender. This shows that, adjusting for income, the index of financial incapability does not differ significantly by gender. The averages for men over the sample period are consistently above those for women, indicating higher financial incapability, but these differences are small and not statistically significant. The income-unadjusted index and the number of financial problems measure, however, suggest that women have higher financial incapability than men (0.002 compared with −0.015, and 1.113 compared with 1.071), and that these differences are statistically significant. Furthermore, they persist over the sample period. From this we conclude that women on average have greater financial incapability than men, but that this difference can be explained by differences in incomes between men and women.

Table 20: Mean financial incapability by gender: BHPS 1991–2006

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
Male	0.112	–0.028	–0.079	–0.032	–0.010	
Female	0.098	–0.029	–0.081	–0.038	–0.017	
Income-unadjusted						
Male	0.143	–0.030	–0.091	–0.060	–0.015	*
Female	0.152	–0.004	–0.068	–0.045	0.002	
N. financial problems						
Male	1.327	1.044	0.929	1.009	1.071	*
Female	1.362	1.099	0.990	1.032	1.113	
N	8514	8012	7542	6971	122,231	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 men in the BHPS sample had a mean income-adjusted financial capability score of 0.112, compared to 0.098 for women. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by gender over the sample period are significantly different at the 5% level.

6.2 Age

Table 21 summarises mean financial capability by age category, together with the Spearman rank correlation coefficient measuring the association between age as a continuous variable and the constructed indices. The table indicates a statistically significant association between age and financial capability using all three indices. In particular, we find that on average financial capability increases with age (that is, the indices get smaller). For example, the mean income-adjusted index of financial incapability for people below 25 years of age is 0.051, compared to –0.158 for people aged 65 and above. This pattern emerges consistently over the sample period. A similar picture emerges using the income-unadjusted index, although the relationship is less pronounced suggesting that adjusting for income enhances differences in financial capability across age groups. Given that the population mean for these indices are zero (see Tables 11 and 17), this indicates that people aged below 45 have above average financial incapability (below average financial capability), while those aged 55 and above have below average financial incapability (above average financial capability). These results are consistent with those from the Financial Services Authority's Baseline Survey, which found that younger people (particularly aged under 30) had the most problems managing their finances.

The differences in the number of financial problems across age groups are small, and on average over the period again suggest that financial incapability is more pronounced among younger age groups. However this pattern is less consistent than with the indices of financial incapability, with some suggestion of a non-linear relationship (that is, the number of financial problems is greatest for the youngest and oldest age groups).

Table 21: Mean financial incapability by age: BHPS 1991–2006

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
Under 25	0.175	0.008	−0.034	0.057	0.051	*
25–34	0.257	0.023	0.010	0.029	0.076	
35–44	0.144	0.005	−0.037	0.034	0.034	
45–54	0.133	0.026	−0.086	−0.035	0.008	
55–64	−0.008	−0.074	−0.104	−0.076	−0.063	
65 and above	−0.092	−0.148	−0.198	−0.162	−0.158	
Spearman correlation	−0.117	−0.094	−0.124	−0.100	−0.118	
Income-unadjusted						
Under 25	0.213	0.032	−0.027	0.064	0.067	*
25–34	0.267	−0.013	−0.032	−0.034	0.038	
35–44	0.156	−0.009	−0.066	−0.021	0.012	
45–54	0.127	−0.004	−0.123	−0.090	−0.026	
55–64	0.054	−0.050	−0.090	−0.095	−0.047	
65 and above	0.036	−0.048	−0.115	−0.101	−0.063	
Spearman correlation	−0.033	−0.010	−0.029	−0.016	−0.024	
N. financial problems						
Under 25	1.408	1.116	1.020	1.192	1.178	*
25–34	1.477	1.024	0.976	0.987	1.110	
35–44	1.346	1.057	0.968	1.046	1.095	
45–54	1.319	1.091	0.872	0.924	1.052	
55–64	1.251	1.060	0.968	0.967	1.065	
65 and above	1.236	1.099	0.978	1.030	1.072	
Spearman correlation	−0.011	0.017	0.003	0.014	0.006	
N	8514	8012	7542	6971	122,231	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 those aged under 25 in the BHPS sample had a mean income-adjusted financial capability score of 0.051, compared to −0.158 for those aged 65 and above. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by age category over the sample period are significantly different at the 5% level.

6.3 Marital status

Table 22 summarises the indices of financial incapability by marital status, and shows that financial incapability differs significantly by marital status. Focusing initially on the income-adjusted index, this indicates that on average widowed individuals have the lowest financial incapability score of –0.137 (indicating above average financial capability). The divorced or separated have the highest financial incapability (0.154) indicating below average financial capability. This pattern is consistent over the time period, although there is evidence that in more recent years financial incapability has increased among the cohabiting relative to other marital status groups. The income-unadjusted index shows a different pattern, in that the married have the lowest financial incapability (and are on average the most financially capable) while the divorced or separated have the highest average

financial incapability. The differences in the income-adjusted and unadjusted indices suggest that the widowed are particularly good at managing their finances (their average incapability index falls when controlling for income). The divorced or separated also suffer the largest average number of financial problems over the period (at 1.49), while the married suffer the fewest at 1.04. Therefore on average the divorced suffer 44% more financial problems than married people.

Table 22: Mean financial incapability by marital status: BHPS 1991–2006

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
Married	0.075	−0.050	−0.106	−0.069	−0.040	*
Cohabiting	0.362	0.064	0.008	0.111	0.102	
Widowed	−0.058	−0.126	−0.185	−0.156	−0.137	
Divorced/separated	0.401	0.132	0.048	0.045	0.154	
Single never married	0.095	−0.015	−0.054	−0.011	0.006	
Income-unadjusted						
Married	0.108	−0.051	−0.113	−0.096	−0.043	*
Cohabiting	0.359	0.001	−0.033	0.050	0.049	
Widowed	0.078	−0.013	−0.100	−0.096	−0.034	
Divorced/separated	0.482	0.196	0.090	0.066	0.207	
Single never married	0.129	0.002	−0.055	−0.020	0.015	
N. financial problems						
Married	1.281	1.015	0.913	0.952	1.036	*
Cohabiting	1.656	1.100	1.033	1.175	1.160	
Widowed	1.313	1.138	0.982	1.002	1.102	
Divorced/separated	1.964	1.510	1.244	1.295	1.490	
Single never married	1.269	1.057	0.953	1.025	1.085	
N	8514	8012	7542	6971	122,231	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 the widowed in the BHPS sample had a mean income-adjusted financial capability score of −0.137, compared to 0.154 for the divorced or separated. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by marital status over the sample period are significantly different at the 5% level.

However Table 22 focuses on levels of financial incapability rather than change. The advantage of panel data is that we can examine how financial incapability changes over time and how this is associated with other life events. In Table 23 we examine how changes in financial incapability between two consecutive years are associated with changes in marital status over the same period. This table shows quite clearly that getting married is associated with a relative improvement in financial capability – on average people who get married experience a reduction in their financial incapability scores, and this reduction is larger (more than double) than the average year-on-year reduction experienced by the sample as a whole. For example, using the income-adjusted measure we see that individuals who married had a financial incapability score of 0.059 in the year before they were married, and of 0.034 in the year after marriage. This is a fall in financial incapability of 0.029, compared to a sample average fall of 0.012. In contrast, it is clear that those who suffer the death of a partner or who divorce or separate experience increases in their financial incapability. The average changes in the indices for such individuals

are positive and are especially large for those who experience a marital dissolution. For example, those who divorce experience an increase in their income-adjusted financial incapability index from 0.133 to 0.249. This represents an increase the index of 0.116, compared to an average fall of –0.012. Clearly spousal bereavement and marital dissolution are associated with large increases in financial incapability.

Table 23: Mean changes in financial incapability by changes in marital status: BHPS 1991–2006

| | Means of financial incapability indices | | | |
	t–1	t	Change	N
Sample average				95935
Income-adjusted	–0.020	–0.032	–0.012	
Income-unadjusted	–0.013	–0.028	–0.015	
Number financial problems	1.077	1.053	–0.024	
Got Married				1872
Income-adjusted	0.059	0.034	–0.029	
Income-unadjusted	0.002	–0.042	–0.046	
Number financial problems	1.049	0.996	–0.052	
Became Widow				512
Income-adjusted	–0.080	–0.078	0.001	
Income-unadjusted	0.009	0.020	0.012	
Number financial problems	1.176	1.250	0.074	
Became Divorced/separated				843
Income-adjusted	0.133	0.249	0.116	
Income-unadjusted	0.146	0.291	0.145	
Number financial problems	1.360	1.708	0.349	

Notes: Table reads, for example, that individuals who got married between two consecutive years on average experienced a fall in their income-adjusted financial incapability from 0.059 before the marriage to 0.034 post-marriage.

6.4 Number of children

Table 24 shows that average financial incapability scores vary significantly with the number of children. In particular, we find that those with no children have the lowest average financial incapability while those with four or more children have the highest, and this pattern is evident using all three measures. For example, individuals with no children have an average income-adjusted index of financial incapability score of –0.046 (and suffer from 1.04 financial problems), compared to 0.147 (and 1.583 financial problems) for those with four or more children. Although consistent over the time period, this relationship is non-monotonic. Adjusting for income reduces the differences in averages by number of children, suggesting that these are partly explained by differences in (equivalised) household income.

This focuses on levels of financial incapability, rather than change. Instead, Table 25 focuses on the change in financial incapability associated with the birth of an additional child. This suggests two things. Firstly that those about to have an additional child in the following year are already relatively high in the financial incapability distribution – they have above average levels of financial incapability at

t–1 irrespective of the index used. Secondly, it suggests that the birth of a child is associated with increases in financial incapability. For example, the income-adjusted index of financial incapability for individuals who experience an additional child in the household increases from 0.112 to 0.160. This represents an increase in incapability of 0.048, compared to a fall of 0.012 for the sample as a whole. Those with an additional child face an increase in the number of financial problems from 1.185 to 1.405 (or 19%). Financial incapability is positively related to family formation.

Table 24: Mean financial incapability by number of children: BHPS 1991–2006

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
0	0.046	−0.054	−0.107	−0.071	−0.046	*
1	0.253	0.105	−0.014	0.086	0.097	
2	0.216	−0.029	0.019	0.059	0.047	
3	0.320	0.051	−0.048	−0.016	0.086	
4 or more	0.424	0.141	−0.103	0.305	0.147	
Income-unadjusted						
0	0.083	−0.046	−0.108	−0.088	−0.041	*
1	0.288	0.101	−0.032	0.059	0.087	
2	0.273	−0.000	0.028	0.042	0.066	
3	0.408	0.123	0.012	0.008	0.150	
4 or more	0.563	0.276	0.022	0.353	0.264	
N. financial problems						
0	1.240	1.025	0.915	0.970	1.037	*
1	1.584	1.271	1.029	1.184	1.247	
2	1.542	1.072	1.135	1.144	1.191	
3	1.765	1.352	1.106	1.175	1.359	
4 or more	2.084	1.625	1.164	1.557	1.583	
N	8514	8012	7542	6971	122,231	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 those with no children in the BHPS sample had a mean income-adjusted financial capability score of 0.046, compared to 0.424 for those with four or more children. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by number of children over the sample period are significantly different at the 5% level.

Table 25: Mean changes in financial incapability by the birth of an additional child: BHPS 1991–2006

	Means of financial incapability indices			
	t–1	t	Change	N
Sample average				95935
Income-adjusted	−0.020	−0.032	−0.012	
Income-unadjusted	−0.013	−0.028	−0.015	
Number financial problems	1.077	1.053	−0.024	
Has an additional child				3358
Income-adjusted	0.112	0.160	0.048	
Income-unadjusted	0.061	0.141	0.080	
Number financial problems	1.185	1.405	0.220	

Notes: Table reads, for example, that individuals who had an additional child between two consecutive years on average experienced an increase in their income-adjusted financial incapability from 0.112 to 0.160.

6.5 Household type

Table 26 looks at the relationship between the types of household in which the individual lives and their financial incapability in more detail. The results suggest that average financial incapability differs significantly between household types. Focussing initially on the income-adjusted measure, we find that the lowest average index scores (indicating the highest level of financial capability) are found among the single elderly (−0.166), while couples with no children and couples with non-dependent children also have below average index scores. The highest average index scores (indicating the lowest financial capability) are found among lone parents (0.112) and adults living in unrelated multi-occupant households (0.208). Lone parents face almost 50% more financial problems than couples with no children (1.422 compared with 0.966). The Financial Services Authority's Baseline Survey reports similar findings.

Table 26: Mean financial incapability by household type: BHPS 1991–2006

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
Single non-elderly	0.266	0.122	0.019	0.047	0.097	*
Single elderly	−0.084	−0.149	−0.210	−0.183	−0.166	
Couple no children	0.005	−0.076	−0.135	−0.108	−0.078	
Couple dependent children	0.188	−0.010	−0.045	0.039	0.038	
Couple non-dependent children	0.045	−0.045	−0.077	−0.077	−0.038	
Lone parent	0.294	0.062	0.035	0.095	0.112	
2+ unrelated adults	0.155	0.229	0.142	0.024	0.208	
Other households	0.229	−0.056	−0.171	0.112	0.004	
Income-unadjusted						
Single non-elderly	0.276	0.118	0.001	0.005	0.081	*
Single elderly	0.072	−0.019	−0.110	−0.116	−0.048	
Couple no children	0.028	−0.096	−0.147	−0.137	−0.092	
Couple dependent children	0.232	0.001	−0.050	0.014	0.042	
Couple non-dependent children	0.046	−0.068	−0.121	−0.138	−0.069	
Lone parent	0.391	0.140	0.090	0.151	0.183	
2+ unrelated adults	0.179	0.233	0.105	−0.038	0.184	
Other households	0.257	−0.038	−0.120	0.123	0.024	
N. financial problems						
Single non-elderly	1.566	1.298	1.052	1.106	1.222	*
Single elderly	1.298	1.144	0.977	0.988	1.088	
Couple no children	1.156	0.952	0.871	0.899	0.966	
Couple dependent children	1.464	1.079	0.998	1.101	1.148	
Couple non-dependent children	1.155	0.940	0.867	0.862	0.961	
Lone parent	1.773	1.339	1.221	1.371	1.422	
2+ unrelated adults	1.477	1.614	1.171	0.966	1.422	
Other households	1.365	1.092	0.858	1.215	1.106	
N	8514	8012	7542	6971	122,231	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 adults in single non-elderly households in the BHPS sample had a mean income-adjusted financial capability score of 0.266, compared to −0.084 for those in single elderly households. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by household type category over the sample period are significantly different at the 5% level.

The general pattern remains unchanged when we focus on the income-unadjusted index, with individuals in couples with no children, with non-dependent children and single pensioners having the highest financial capability and lone parents and those living in households with unrelated adults having the lowest financial capability. (This pattern also emerges when looking at the number of financial problems.) The average index for lone parents and the single elderly is lower once we adjust for income – indicating that part of their financial incapability is caused by relatively low income. In contrast, that for the single non-elderly, adults in couples with no children, couples with non-dependent children and in households with unrelated adults increase once we adjust for income, indicating that part of their financial capability is associated with higher income levels.

6.6 Health status

At each wave of the BHPS, individuals are asked to assess their current health status. In particular, they are asked "Please think back over the last 12 months about how your health has been. Compared to people of your own age, would you say that your health has on the whole been Excellent, Good, Fair, Poor or Very poor?" For the purposes of this analysis we have collapsed this into being in good health (reporting excellent or good) and being in poor health (reporting fair, poor or very poor). Table 27 looks at the relationship between an individual's health status and their financial incapability. The results suggest that average financial incapability differs significantly by health. Focussing initially on the income-adjusted measure, we find that the lowest average index scores (indicating the highest level of financial capability) are found among those in good health (–0.043), while those in fair or poor health have above average scores (0.054). The general pattern remains unchanged when we focus on the income-unadjusted index, with individuals in good health reporting consistently lower financial incapability than those in fair or poor health. (This pattern also emerges when looking at the number of financial problems, where those in fair or poor health suffer from 32% more financial problems than those in good or excellent health.) This suggests a strong correlation between self-assessed health status and financial incapability.

Table 27: Mean financial incapability by health status: BHPS 1991–2006

| | Year | | | | Average | |
	1991	1996	2001	2006		
Income-adjusted						*
In good health	0.070	–0.067	–0.110	–0.064	–0.043	
In fair, poor, very poor health	0.200	0.059	–0.014	0.032	0.054	
Income-unadjusted						*
In good health	0.098	–0.071	–0.125	–0.097	–0.052	
In fair, poor, very poor health	0.284	0.108	0.025	0.056	0.101	
N. financial problems						*
In good health	1.243	0.954	0.867	0.933	0.998	
In fair, poor, very poor health	1.624	1.346	1.172	1.232	1.314	
N	8514	8012	7542	6971	121946	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 adults in good health in the BHPS sample had a mean income-adjusted financial capability score of –0.043, compared to 0.054 for those in fair, poor or very poor health. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by household type category over the sample period are significantly different at the 5% level.

In Table 28 we examine how changes in financial incapability between two consecutive years are associated with changes in health status over the same period. This table shows quite clearly that an improvement in health status (moving from fair or poor health to good or excellent health) is associated with a relative improvement in financial capability – on average people whose health improves experience a reduction in their financial incapability scores, and this reduction is larger (more than double) than the average year-on-year reduction experienced by

the sample as a whole. For example, using the income-adjusted measure we see that individuals who experienced an improvement in their health had a financial incapability score of 0.033 in the year prior to the improvement and of –0.005 in the year after the improvement. This is a fall in financial incapability of 0.038, compared to a sample average fall of 0.012. In contrast, it is clear that those who suffer deteriorations in their health status experience increases in their financial incapability. The average changes in the indices for such individuals are positive. For example, those whose health deteriorates from excellent or good to fair or poor experience an increase in their income-adjusted financial incapability index from 0.010 to 0.028. This represents an increase the index of 0.019, compared to an average fall of –0.012. Clearly health and financial incapability are strongly related.

Table 28: Mean changes in financial incapability by changes in health status: BHPS 1991–2006

	Means of financial incapability indices			
	$t{-}1$	t	Change	N
Sample average				95935
Income-adjusted	–0.020	–0.032	–0.012	
Income-unadjusted	–0.013	–0.028	–0.015	
Number financial problems	1.077	1.053	–0.024	
Entered good health				8594
Income-adjusted	0.033	–0.005	–0.038	
Income-unadjusted	0.051	0.009	–0.042	
Number financial problems	1.200	1.121	–0.078	
Left good health				9356
Income-adjusted	0.010	0.028	0.019	
Income-unadjusted	0.031	0.048	0.016	
Number financial problems	1.158	1.196	0.038	

Notes: Table reads that individuals who experienced an in health between two consecutive years on average experienced fall in their income-adjusted financial incapability from 0.033 to –0.005.

6.7   Education levels

Table 29 presents summaries of the indices of financial incapability by education, and shows that financial incapability differs significantly by education levels across all three measures. Both the income-unadjusted index and the number of financial problems reveal a monotonic relationship with education. That is, the most highly educated who hold higher or first degrees have the lowest average income-unadjusted index scores (–0.152 and –0.099) and the fewest average number of financial problems (0.838 and 0.910), while the least educated with no qualifications have the highest average income-unadjusted index score (0.066) and the most financial problems (1.265). Furthermore, the average index and number of financial problems rise with each successively lower education level – those with no qualifications suffer 50% more financial problems than those with a first or higher degree.

Table 29: Mean financial incapability by education level: BHPS 1991–2006

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
Higher degree	−0.015	−0.070	0.029	−0.067	−0.004	*
First degree	0.098	0.003	−0.038	−0.014	0.017	
Other higher qualification	0.023	−0.042	−0.079	−0.030	−0.029	
A-Levels or equivalent	0.123	−0.003	−0.081	−0.011	0.003	
GCSEs or equivalent	0.124	−0.032	−0.085	−0.029	−0.011	
Other qualifications	0.145	−0.040	−0.080	−0.004	−0.006	
No qualifications	0.118	−0.028	−0.105	−0.087	−0.022	
Income-unadjusted						
Higher degree	−0.131	−0.210	−0.094	−0.232	−0.152	*
First degree	0.012	−0.107	−0.155	−0.131	−0.099	
Other higher qualification	0.011	−0.074	−0.112	−0.071	−0.061	
A-Levels or equivalent	0.136	−0.016	−0.101	−0.033	−0.012	
GCSEs or equivalent	0.159	−0.021	−0.069	−0.024	0.002	
Other qualifications	0.209	0.008	−0.025	0.038	0.047	
No qualifications	0.220	0.060	−0.025	−0.016	0.066	
N. financial problems						
Higher degree	0.777	0.761	0.923	0.661	0.838	*
First degree	1.052	0.884	0.804	0.864	0.910	
Other higher qualification	1.066	0.960	0.882	0.981	0.982	
A-Levels or equivalent	1.281	1.039	0.885	1.028	1.059	
GCSEs or equivalent	1.350	1.033	0.974	1.074	1.081	
Other qualifications	1.453	1.124	1.076	1.188	1.188	
No qualifications	1.526	1.258	1.104	1.124	1.265	
N	8514	8012	7542	6971	122,231	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 adults holding a higher degree in the BHPS sample had a mean income-adjusted financial capability score of −0.015, compared to 0.118 for those with no qualifications. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by education category over the sample period are significantly different at the 5% level.

However, when adjusting for income the pattern changes completely, and the monotonic relationship between financial incapability and education disappears. The highest average income-adjusted index score (indicating low financial capability) is for those with a first degree (0.017), while the lowest is for those with other higher qualifications (−0.029). These findings suggest that the large differences in financial capability between the more educated and the less educated is related to differences in income levels associated with education attained rather than the level of education itself. This has important implications, as it suggests that raising general education levels will not directly improve financial capability itself, and will only do so through an income effect.

6.8　Housing tenure

There is a statistically significant relationship between housing tenure and all three measures of financial incapability (Table 30). Home owners without a mortgage have the greatest financial capability (lowest values on average) while tenants have the

lowest financial capability (highest values on average). For example, the average income-adjusted index for individuals who own their own home with no mortgage is –0.184, while for private tenants it is 0.124. This pattern emerges consistently over the sample period and for all three measures. Adjusting for income reduces the differentials between housing tenure groups, and has a particularly large effect for local authority tenants indicating that part of their financial incapability stems from relatively low income. Private tenants suffer from 50% more financial problems than those who own their home outright, and 35% more than those with a mortgage. These results are consistent with those found in the Financial Services Authority's Baseline Survey, which found that home-owners were most able to make ends meet while tenants (in social housing in particular) had most problems planning ahead.

Table 30: Mean financial incapability by housing tenure: BHPS 1991–2006

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
Own home outright	–0.199	–0.194	–0.200	–0.171	–0.184	*
Own home mortgage	0.143	–0.005	–0.064	0.008	0.017	
Local authority rent	0.301	0.063	0.010	0.038	0.098	
Private rent	0.180	0.115	0.075	0.137	0.124	
Income-unadjusted						
Own home outright	–0.125	–0.153	–0.166	–0.155	–0.146	*
Own home mortgage	0.129	–0.052	–0.118	–0.067	–0.035	
Local authority rent	0.429	0.175	0.101	0.116	0.206	
Private rent	0.238	0.143	0.100	0.135	0.149	
N. financial problems						
Own home outright	0.935	0.884	0.865	0.899	0.906	*
Own home mortgage	1.262	0.967	0.862	0.958	1.003	
Local authority rent	1.873	1.434	1.283	1.314	1.480	
Private rent	1.535	1.398	1.236	1.326	1.358	
N	8514	8012	7542	6971	122,231	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 adults owning their home outright in the BHPS sample had a mean income-adjusted financial capability score of –0.199, compared to 0.180 for those in privately rented accommodation. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by housing tenure category over the sample period are significantly different at the 5% level.

Table 31 introduces some dynamics by focusing on the change in financial incapability associated with becoming a home-owner. This indicates that those who become home-owners have lower than average financial incapability both before and after buying a property. This suggests that those buying their own home have above average financial capability. However, they also experience a larger than average reduction in their financial incapability. For example, individuals who become a home-owner have an average income-adjusted index of financial incapability of –0.059 (compared to –0.020 for the sample as a whole), and this falls to –0.157 after the event. Therefore their financial incapability falls by 0.098 compared to a sample average fall of 0.012.

Table 31: Mean changes in financial incapability by becoming a home-owner: BHPS 1991–2006

	Means of financial incapability indices			
	$t-1$	t	Change	N
Sample average				95935
Income-adjusted	−0.020	−0.032	−0.012	
Income-unadjusted	−0.013	−0.028	−0.015	
Number financial problems	1.077	1.053	−0.024	
Became a home-owner				2203
Income-adjusted	−0.059	−0.157	−0.098	
Income-unadjusted	−0.073	−0.168	−0.095	
Number financial problems	0.970	0.820	−0.150	

Notes: Table reads that individuals who became a home-owner between two consecutive years on average experienced a fall in their income-adjusted financial incapability from −0.059 to −0.157.

6.9 Current house value

As well as housing tenure, at each year the BHPS asks home-owners to estimate the value of the house they currently live in. We use this as an approximation to wealth, as it is the only measure of wealth that is available at all 16 waves of the BHPS. We summarise the correlations between current house value (deflated to January 2006 prices) and our measures of financial incapability in Table 32 below. We present correlations both including non-owners (who are allocated a house value of zero) and excluding them.

Table 32: Correlations between financial incapability and current house value: BHPS 1991–2006

	Year				Average
	1991	1996	2001	2006	
Income-adjusted					
All	−0.143	−0.064	−0.016	−0.013	−0.066
Home-owners	−0.026	0.021	0.090	0.060	0.039
Income-unadjusted					
All	−0.254	−0.231	−0.191	−0.184	−0.227
Home-owners	−0.116	−0.108	−0.077	−0.098	−0.096
N. financial problems					
All	−0.212	−0.186	−0.142	−0.132	−0.180
Home-owners	−0.077	−0.065	−0.024	−0.041	−0.050

Notes: Table shows Spearman rank correlation coefficients. House values deflated to 2006 January prices. 'Average' shows data pooled from waves 1 to 16.

The correlations highlight a number of notable patterns. Firstly we find that the correlations are relatively small, suggesting that financial incapability is only weakly correlated with wealth, as measured by current house value. Focusing on the income-unadjusted measures, we find that financial incapability is negatively correlated with house value, indicating that wealthier individuals have lower financial incapability (and higher financial capability). This pattern emerges with both the income-unadjusted index of financial incapability and the number of financial problems. In addition, the correlation is stronger when tenants are

included (and given a house value of zero), suggesting that financial capability is in fact only very weakly correlated with wealth. When adjusting for income, the correlations between housing wealth and financial incapability become even smaller, indicating that much of the correlation was associated with income.

6.10 Labour market status

Table 33 summarises our measures of financial incapability by employment status, and shows significant differences for all three measures. For the purposes of this report, we have distinguished between full-time and part-time employees, and also the self-employed. Furthermore, we have separated the economically inactive into those who are inactive and would not like a job, and those who are inactive but would like to work if their circumstances permit it.

Table 33: Mean financial incapability by employment status: BHPS 1991–2006

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
Full-time employee	0.059	–0.039	–0.066	–0.022	–0.012	*
Part-time employee	0.104	–0.040	–0.052	–0.023	–0.013	
Self-employed	0.232	–0.051	–0.069	–0.043	0.011	
Unemployed	0.597	0.290	0.246	0.325	0.355	
Inactive not like job	0.073	0.052	–0.038	0.017	0.027	
Inactive like job	0.398	0.132	0.077	0.141	0.201	
Retired	–0.078	–0.144	–0.187	–0.157	–0.149	
Income-unadjusted						
Full-time employee	0.027	–0.109	–0.148	–0.120	–0.086	*
Part-time employee	0.144	–0.024	–0.046	–0.040	–0.006	
Self-employed	0.241	–0.086	–0.065	–0.066	–0.001	
Unemployed	0.718	0.389	0.345	0.418	0.461	
Inactive not like job	0.171	0.116	0.016	0.065	0.089	
Inactive like job	0.514	0.236	0.167	0.216	0.299	
Retired	0.049	–0.045	–0.102	–0.097	–0.057	
N. financial problems						
Full-time employee	1.037	0.831	0.772	0.831	0.873	*
Part-time employee	1.311	1.017	0.970	0.991	1.051	
Self-employed	1.491	0.896	0.966	0.972	1.090	
Unemployed	2.512	1.993	1.868	1.953	2.076	
Inactive not like job	1.454	1.365	1.183	1.273	1.309	
Inactive like job	2.059	1.586	1.450	1.540	1.705	
Retired	1.274	1.110	1.009	1.039	1.092	
N	8437	7908	7417	6874	120482	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 adults in full-time employment in the BHPS sample had a mean income-adjusted financial capability score of 0.059, compared to 0.597 for those in unemployment. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by employment status over the sample period are significantly different at the 5% level.

The table shows that the highest average financial incapability is found for the unemployed. The average income-adjusted index score for the unemployed is 0.355, while the income-unadjusted score is 0.461. Therefore even after adjusting for income, the unemployed have significantly higher financial incapability than average. They also suffer from an average of two financial problems. Economically inactive individuals who would like a job also have above average financial incapability. The table shows that they have an average income-adjusted score of 0.201 and an income-unadjusted score of 0.299. Again therefore, income cannot completely explain the relatively low financial capability among this group.

The table indicates that the lowest financial incapability (and highest levels of financial capability) is found among those in employment and the retired. Those in full-time employment have an average income-unadjusted score of −0.086, indicating below average financial incapability, while the retired have an average income-unadjusted score of −0.057. A similar pattern emerges using the number of financial problems. Those in full-time employment have on average 0.87 financial problems, compared with about 1.1 for those in part-time employment, self-employment and retirement while the unemployed suffer from more than two financial problems. Therefore the unemployed on average have more than twice the number of financial problems as those in full-time work. Adjusting for income only changes this picture slightly for those in employment. However, the average index falls considerably for the retired when adjusted for income, from −0.057 to −0.149. Therefore, average financial capability increases when adjusting for income, suggesting that the retired are able to manage their finances well given their income level. Our findings are consistent with those from the Financial Services Authority's Baseline Survey, which found that the unemployed in particular had problems in making ends meet.

Table 34 focuses on the dynamic association between employment status changes and changes in financial incapability. This indicates that entering employment is associated with significantly larger than average falls in financial incapability, and this is apparent using all three indices. For example, the average income-adjusted index falls for individuals who enter work from 0.171 before they enter work to 0.074 afterwards. This represents a fall of 0.098 compared to 0.012 for the sample as a whole. Those entering work experience a 27% reduction in the number of financial problems they face (1.145 from 1.559). In contrast, individuals who will enter unemployment in the following year already had higher than average financial incapability, and also suffer an increase in financial incapability on becoming unemployed. The income-adjusted index for those entering unemployment increases from 0.224 to 0.344 (an increase of 0.121), while the number of financial problems increases by 32%. Therefore, individuals who enter unemployment have higher than average financial incapability before entering unemployment, but this increases even further once unemployed. Furthermore, this increase is not caused by the loss of income associated with unemployment. The association between changes in financial incapability and entering retirement depends on the index being used. We find that using the unadjusted index and the number of financial problems, entering retirement is associated with an increase in financial incapability. For example, the income-unadjusted index increases from 0.000 pre-retirement to 0.055 post-

retirement. However, the income-adjusted index falls from 0.035 pre-retirement to −0.004 post-retirement. This indicates that the increases in the unadjusted measures of financial incapability reflect the fall in income associated with retiring.

Table 34: Mean changes in financial incapability by employment status changes: BHPS 1991–2006

	Means of financial incapability indices			
	t−1	t	Change	N
Sample average				95935
Income-adjusted	−0.020	−0.032	−0.012	
Income-unadjusted	−0.013	−0.028	−0.015	
Number financial problems	1.077	1.053	−0.024	
Entered work				4350
Income-adjusted	0.171	0.074	−0.098	
Income-unadjusted	0.215	0.061	−0.153	
Number financial problems	1.559	1.145	−0.414	
Entered unemployment				1879
Income-adjusted	0.224	0.344	0.121	
Income-unadjusted	0.271	0.445	0.173	
Number financial problems	1.578	2.081	0.503	
Entered retirement				2102
Income-adjusted	0.035	−0.004	−0.039	
Income-unadjusted	0.000	0.055	0.055	
Number financial problems	1.104	1.242	0.138	

Notes: Table reads that individuals who entered work between two consecutive years on average experienced a fall in their income-adjusted financial incapability from −0.171 to 0.074.

6.11 Job type

As well as employment status, each year the BHPS collects information on the types of jobs in which those in work are currently employed. In Table 35 we summarise financial incapability by whether people are currently employed in permanent jobs, seasonal or temporary work, or on a fixed-term contract.

Table 35: Mean financial incapability by job type: BHPS 1991–2006

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
Permanent job	0.070	−0.054	−0.064	−0.028	−0.017	*
Seasonal/casual job	0.229	0.111	−0.062	0.069	0.089	
Fixed term contract	0.311	0.106	−0.045	−0.060	0.114	
Income-unadjusted						
Permanent job	0.056	−0.103	−0.118	−0.100	−0.068	*
Seasonal/casual job	0.264	0.121	−0.068	0.059	0.099	
Fixed term contract	0.295	0.062	−0.094	−0.150	0.061	
N. financial problems						
Permanent job	1.109	0.849	0.833	0.879	0.917	*
Seasonal/casual job	1.519	1.284	0.948	1.227	1.251	
Fixed term contract	1.523	1.111	0.876	0.832	1.168	
N	5107	4975	4877	4483	76969	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 adults in permanent employment in the BHPS sample had a mean income-adjusted financial capability score of 0.07, compared to 0.311 for those employed on fixed term contracts. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by job type category over the sample period are significantly different at the 5% level.

This indicates that on average over the period, and on all three measures of financial incapability, those employed in permanent jobs have the lowest financial incapability scores (and therefore are most able to manage their finances). On average they suffer 0.9 financial problems, and have an income-unadjusted index score of −0.068, indicating above average financial capability. When adjusting for income this increases to −0.017, which suggests that some of their above average financial capability is due to higher incomes. A similar pattern emerges for those currently employed on fixed-term contracts – when adjusting for income, the average index score increases from 0.061 to 0.114. These patterns are evident across the sample period.

6.12 Income

In Table 36 we summarise the relationships between our three measures of financial incapability and real monthly equivalised gross household income. This allows us to establish the impact of adjusting for income on this relationship, and if this has changed over time.

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
Bottom quintile	0.253	0.027	−0.101	−0.017	0.043	*
Second quintile	0.180	−0.047	−0.060	−0.073	−0.026	
Middle quintile	0.066	−0.063	−0.089	−0.032	−0.050	
Fourth quintile	−0.009	−0.069	−0.112	−0.067	−0.054	
Highest quintile	0.031	0.008	−0.037	0.013	0.015	
Spearman correlation	−0.088	0.079	0.112	0.139	0.083	
Pearson correlation	−0.087	0.021	−0.007	0.034	0.000	
Income-unadjusted						
Bottom quintile	0.448	0.209	0.068	0.142	0.223	*
Second quintile	0.309	0.055	0.028	0.000	0.072	
Middle quintile	0.129	−0.035	−0.072	−0.035	−0.027	
Fourth quintile	−0.022	−0.133	−0.182	−0.160	−0.120	
Highest quintile	−0.136	−0.223	−0.265	−0.242	−0.217	
Spearman correlation	−0.384	−0.350	−0.343	−0.328	−0.339	
Pearson correlation	−0.245	−0.215	−0.230	−0.229	−0.217	
N. financial problems						
Bottom quintile	1.992	1.581	1.283	1.401	1.569	*
Second quintile	1.637	1.210	1.166	1.148	1.241	
Middle quintile	1.289	0.992	0.954	1.046	1.033	
Fourth quintile	1.003	0.815	0.741	0.797	0.854	
Highest quintile	0.786	0.676	0.602	0.644	0.686	
Spearman correlation	−0.358	−0.310	−0.304	−0.292	−0.302	
Pearson correlation	−0.268	−0.223	−0.228	−0.236	−0.217	
N	8514	8012	7542	6971	122,231	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 adults in the bottom income quintile in the BHPS sample had a mean income-adjusted financial capability score of 0.253, compared to 0.031 for those in the highest income quintile. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by income category over the sample period are significantly different at the 5% level.

Focusing initially on the income-adjusted incapability index, we find (by construction) an average Pearson correlation coefficient with income of zero, although there are deviations from zero across time. (The average Spearman rank correlation coefficient however is non-zero, although still small, which suggests that the normality distribution assumption may not hold.) The correlations are much larger between income and financial incapability when using the income-unadjusted measures. The income-unadjusted index has a Spearman rank correlation coefficient with income of −0.339, indicating that people with higher incomes have lower financial incapability levels. Furthermore, the average income-unadjusted index declines monotonically as income increases. For example, people in the bottom income quintile have an average income-unadjusted index score of 0.223, compared to −0.027 for those in the middle income quintile and −0.217 for those in the highest income quintile. This pattern is evident across the whole period, and is also evident when looking at the number of financial problems. For example, on average over the period people in the bottom

income quintile suffered from more than double the number of financial problems than those in the highest income quintile (1.569 financial problems compared with 0.686). The Financial Services Authority's Baseline Survey also found that those with low incomes struggled to make ends meet, but that to some extent financial incapability was evident at higher income levels.

Table 37: Mean changes in financial incapability by income changes: BHPS 1991–2006

	Means of financial incapability indices			
	t–1	t	Change	N
Sample average				95935
Income-adjusted	–0.020	–0.032	–0.012	
Income-unadjusted	–0.013	–0.028	–0.015	
Number financial problems	1.077	1.053	–0.024	
Income increase > 10%				33267
Income-adjusted	–0.007	–0.000	0.006	
Income-unadjusted	0.041	–0.035	–0.076	
Number financial problems	1.183	1.019	–0.164	
Income fell > 10%				26615
Income-adjusted	0.035	–0.004	–0.039	
Income-unadjusted	0.000	0.055	0.055	
Number financial problems	1.104	1.242	0.138	

Notes: Table reads that individuals who experienced an increase in real monthly equivalised gross household income exceeding 10% between two consecutive years on average experienced an increase in their income-adjusted financial incapability from –0.007 to –0.000.

Table 37 focuses on the dynamics of the relationship between financial incapability and income, by focusing on the changes in financial incapability experienced by individuals who experienced increases and falls of greater than 10% in their real monthly equivalised gross household income. The income-unadjusted index and the number of financial problems reveal the relationships we would expect to find – substantial increases in household income are associated with falls in financial incapability while substantial falls in household income are associated with increases in financial incapability. Those who experience a 10% drop in income suffer an increase of 12% in the number of financial problems they face, while those that experience an increase of at least 10% in their income face 14% fewer financial problems. However a different pattern emerges with the income-adjusted index. According to this index, individuals who experience substantial increases in their household income experience an increase in their financial incapability, and vice-versa. This suggests that such income changes are associated with other factors that influence an individual's financial incapability (for example, changes in household composition or in employment status).

6.13 Summary

In this section we have summarised how financial incapability is related to a range of individual and household characteristics that are available at all BHPS waves. This is important, given that such mediating and confounding factors have to be taken

into account in establishing any relationship between financial capability and psychological wellbeing. We find that our measures of financial incapability are significantly associated with gender, age, marital status, number of children, health, employment status, job type, housing tenure and income, and also with *changes* in marital status, the number of children, health, employment status, housing tenure and income. In particular, we find that people with the highest financial incapability tend to be young (aged less than 35), divorced or separated, have more than one or two dependent children, are single non-elderly, lone parents, in fair or poor health, live in rented accommodation and are unemployed or are economically inactive but would like a job. In contrast, people with lowest financial incapability are on average older (aged 55 or above), married or widowed with no dependent children, in good health, home owners and working in a full-time permanent job. In addition, there is evidence that financial incapability is strongly related to education, but this relationship is much less pronounced when adjusting for income. These findings are consistent with those from the Financial Services Authority's Baseline Survey. As well as associations between states, panel data allow us to investigate associations between events. Doing this reveals that getting married, improvements in health, becoming a homeowner and entering work are associated with increased financial capability, while the death of a spouse, marital dissolution, an additional child, a deterioration in health and unemployment are associated with falls in financial capability levels.

These bivariate relationships, while interesting, do not begin to address the question of what *determines* financial incapability. For example, we find that the unemployed on average exhibit lower financial capability than those in employment. However, we cannot interpret this as suggesting that unemployment reduces financial management skills, as the lack of financial management skills may have contributed to individuals losing their jobs. Similarly, although entering unemployment is associated with falls in financial capability, we cannot say this relationship is causal because there may be a factor that contributes both to an individual losing their job and to the fall in financial capability. An interesting and important avenue for future research would be to investigate these relationships in more detail and in a multivariate framework which would allow more robust and interpretable conclusions to be drawn. The subsequent sections of this report focus on the relationships between our measures of financial incapability and psychological wellbeing.

7. Relationships between financial incapability and psychological wellbeing

The next stage in the analysis is to investigate the relationships between financial capability and psychological wellbeing. Of particular interest is the dynamics of any relationship, and whether the index of financial capability has any power in predicting psychological wellbeing. As a first step we examine our measures of psychological wellbeing.

7.1 Psychological wellbeing in the BHPS

We use three measures of psychological wellbeing, each capturing a slightly different component. Our main measure is the GHQ-12 which we score using the Likert method, giving a range of 0 (no mental health problems at all) to 36 (serious mental health problems). As described in Section 2, this measure asks respondents to rate their level of experiencing each symptom in relation to what is 'usual'. Therefore it captures short term changes in psychological health but may underestimate chronic conditions. For example, if a person is depressed and never feel as if they play a useful part in things, they may respond 'same as usual' to this despite being depressed.[7] However the focus on short-term fluctuations seems appropriate as our concern is with the impact of financial capability on psychological health. Also, we have repeated all analysis using the 12-point 'Caseness' scale, which may be less sensitive to short-term fluctuations in mental health, and the results are very similar to those presented here. Furthermore, we use as a measure of psychological health whether or not a person suffers a health problem related to anxiety or depression, and this will more clearly capture any chronic condition. Our third measure of wellbeing is reported life satisfaction, collected at waves 6–10 and 11–16 using a seven point scale where one equates to not satisfied at all and seven to completely satisfied.

Table 38 summarises how patterns in GHQ scores, whether suffering from problems related to anxiety or depression and in reported life satisfaction evolve over the BHPS sample period. The average GHQ score over the period was 11.09, and there is some evidence of an increase in scores (and therefore in mental stress levels) over the period. The average proportion of people reporting a health problem related to anxiety or depression was 6.8%, and again there is some evidence of an increase over the period particularly in the decade to 2001. Average life satisfaction scores were 5.23, and these fell marginally over the period. Therefore this table would suggest that psychological wellbeing and life satisfaction are getting marginally worse over the period, despite improvements in financial capability (see Figure 7 – although of course this does not tell us whether it is the same people whose financial capability is improving that experience declines in mental wellbeing). However, these means do not tell us much about the distribution of GHQ scores or life satisfaction scores. We explore these in more detail in Figures 12 and 13. Figure

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[7] In fact, this is one of the advantages of using the 36-point Likert scale rather than the more common 12-point Caseness scale. For the latter, responding 'same as usual' would score zero points while in the former it scores one point.

12 plots the frequency distribution of GHQ scores, and clearly shows that the most common GHQ scores were between 6 and 13. In fact almost two-thirds of all reported scores lie in this interval, with only 20% of observations having scores above 13 and 10% above 18. The median GHQ score in the sample is 10.

Table 38: Measures of psychological wellbeing: BHPS 1991–2006

Year	GHQ Score	Suffers anxiety/ depression	Life satisfaction
1991	10.70	0.051	
1992	11.01	0.059	
1993	10.99	0.057	
1994	11.09	0.058	
1995	11.23	0.060	
1996	11.20	0.067	5.249
1997	11.14	0.073	5.267
1998	11.07	0.075	5.339
1999	10.95	0.063	5.239
2000	11.30	0.074	5.162
2001	11.15	0.080	
2002	11.10	0.080	5.238
2003	11.04	0.076	5.261
2004	11.11	0.074	5.199
2005	11.27	0.075	5.131
2006	11.24	0.079	5.188
Average	11.09	0.068	5.230
N observations	119290	121383	72954

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1996 adults in the BHPS sample had a mean GHQ score of 11.2, 6.7% suffered from health problems relating to anxiety or depression, while average life satisfaction scores were 5.249. 'Average' shows data pooled from waves 1 to 16.

**Figure 12: Frequency distribution of GHQ scores: BHPS 1991–2006**
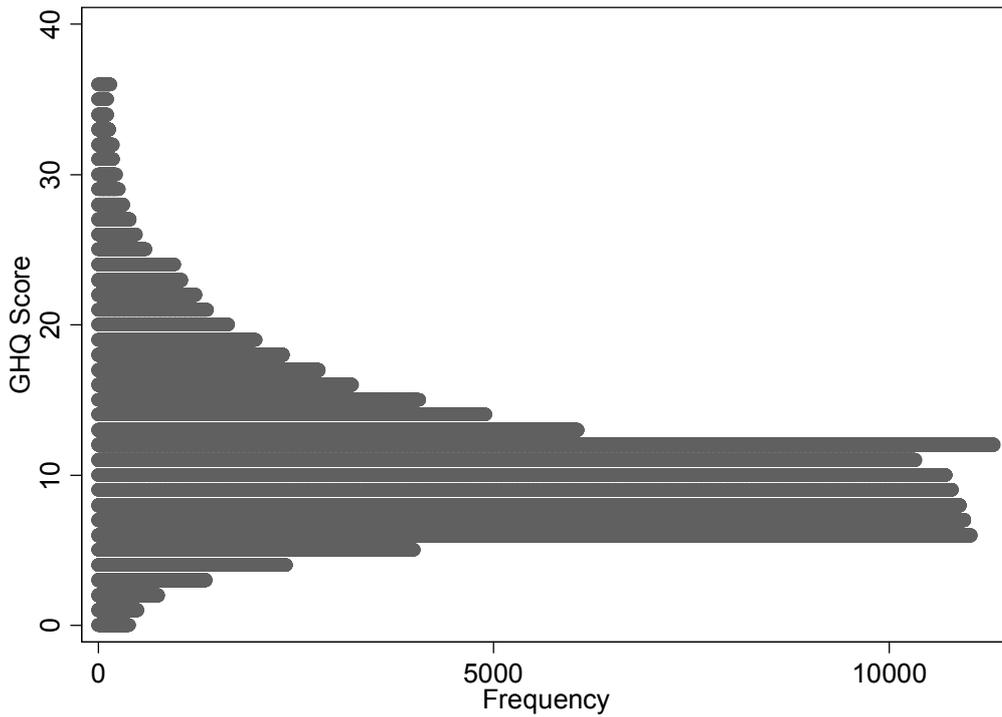
Figure 13 plots the frequency distribution of life satisfaction scores, and clearly shows that the most common satisfaction scores were 5 and 6. In fact 30% of the sample reported a life satisfaction score of 5, and 33% a score of 6, with only 23% reporting a life satisfaction score of 4 or less. The median life satisfaction score in the sample is 5.

Figure 13: Frequency distribution of life satisfaction scores: BHPS 1991–2006
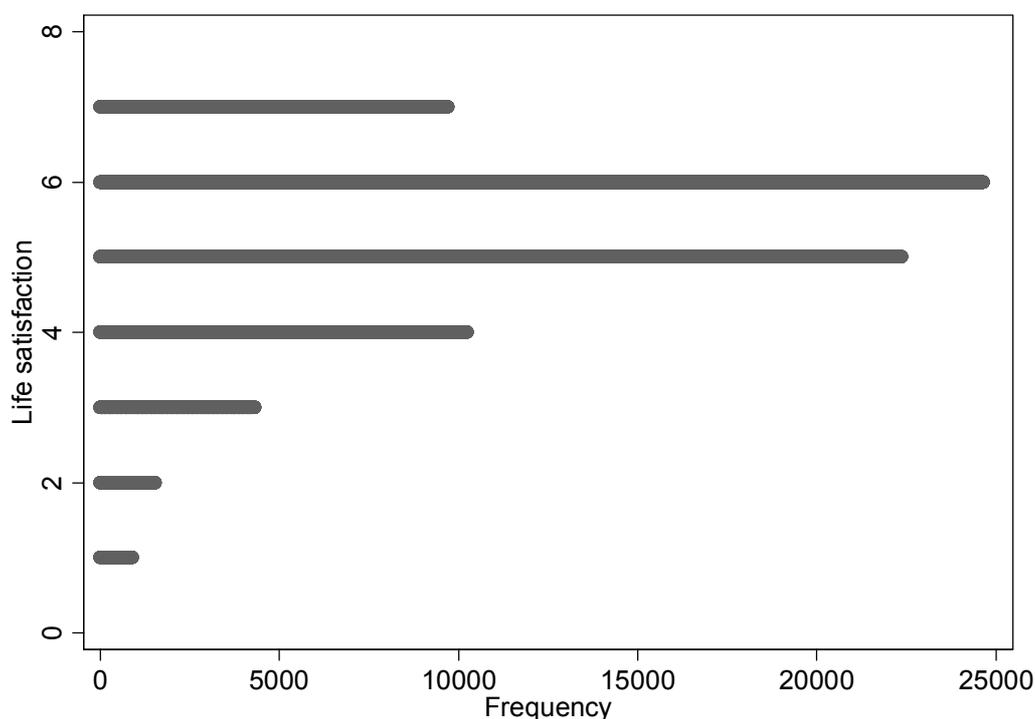
Table 39 summarises the relationships between the three measures of psychological wellbeing. It presents mean GHQ and life satisfaction scores by whether or not people are suffering from anxiety or depression, and then mean GHQ scores by reported life satisfaction. This table indicates high levels of association between these measures. For example, people who reported suffering a health problem related to anxiety or depression had an average GHQ score of 17.6, significantly larger than the average of 10.62 for people who reported no such health problems. Therefore mental stress is significantly higher for people reporting problems related to anxiety or depression. Similarly, people who reported suffering a health problem related to anxiety or depression also on average reported lower life satisfaction (4.089 compared with 5.319). A strong monotonic relationship also emerges between GHQ scores and reported life satisfaction, with a Spearman rank correlation coefficient of −0.506. This indicates that high mental stress is associated with lower reported life satisfaction. People reporting life satisfaction scores of one or two had average GHQ scores exceeding 20, while those reporting life satisfaction scores of six or seven had average GHQ scores of less than 10.

Table 39: Relationships between measures of psychological wellbeing: BHPS 1991–2006

	GHQ Score	Life satisfaction
Anxiety/Depression		
Yes	17.60	4.089
No	10.62	5.319
Life satisfaction		
1	22.42	
2	20.28	
3	17.13	
4	14.04	
5	11.10	
6	9.03	
7	8.20	
Correlation	-0.506	

Notes: Weighted using cross-sectional weights. Table reads, for example, that individuals who reported health problems related to anxiety or depression had an average GHQ score of 17.6, compared to 10.6 for those who reported no such health problems, and an average life satisfaction score of 4.089 compared with 5.319 among those with no such health problems. Data pooled from waves 1 to 16.

7.2 Changes in individual psychological wellbeing from one year to the next

So far in this section, we have analysed the measures of psychological wellbeing from a cross-sectional perspective. That is, we have not taken advantage of the panel nature of the data to examine how psychological wellbeing changes for the same individuals over time. We do this in the same way as we did earlier for financial capability, and Table 40 below presents our first look at this. In this table we summarise individuals' mean psychological wellbeing over two consecutive years, as well as the average within-individual year-on-year change and within-individual variance.

Table 40: Within-individual year-on-year changes in psychological wellbeing: BHPS 1991–2006

Psychological wellbeing	Means		Change	Within-individual variance
	$t-1$	t		
GHQ scores	11.02	11.12	0.10	16.92
Life satisfaction	5.26	5.23	−0.03	0.82
Anxiety/depression	0.07	0.07	0.00	0.04

Notes: Weighted using cross-sectional weights. Table reads, for example, that on average individuals had a GHQ score of 11.02 in year $t-1$ and of 11.12 in year t, indicating an average increase in GHQ of 0.1.

The table indicates that on average people's psychological wellbeing fell between one year ($t-1$) and the next (t). The mean change in GHQ scores was positive while that in reported life satisfaction was negative, showing that individuals' psychological wellbeing was deteriorating over the period. For example, the mean GHQ score increased from 11.02 to 11.12 between two consecutive years,

while the mean reported life satisfaction fell from 5.26 to 5.23. On average there was no year-on-year change in suffering from a health problem related to anxiety or depression. The table also presents average within-individual variances in the measures of psychological wellbeing which, in the case of GHQ scores, are large relative to the means. Therefore there is some within-individual change in psychological wellbeing – people's psychological wellbeing changes from year-to-year. (This is also reflected in the fact that a person's GHQ scores at t and at $t-1$ exhibit a Spearman rank correlation coefficient of 0.52.) This may at least partly reflect the nature of the GHQ, in that it is likely to pick up short-term fluctuations in people's psychological health.

Figure 14 plots the distribution of year-on-year changes at the individual level in GHQ scores. This shows that 25% had no change in psychological wellbeing from one year to the next and so their psychological wellbeing was stable. While this is clearly the modal value, this suggests that in 75% of cases, individuals' psychological wellbeing changed from one year to the next and in some cases these changes were large. Again, this reflects the fact that the 36-point GHQ is good at identifying short-term change in mental health. Figure 15 reveals a similar pattern when looking at year-on-year changes at the individual level in reported life satisfaction, although the amount of individual level change from one year to another is smaller (almost 50% experience no change).

Figure 14: Within-individual year-on-year changes in GHQ scores: BHPS 1991–2006
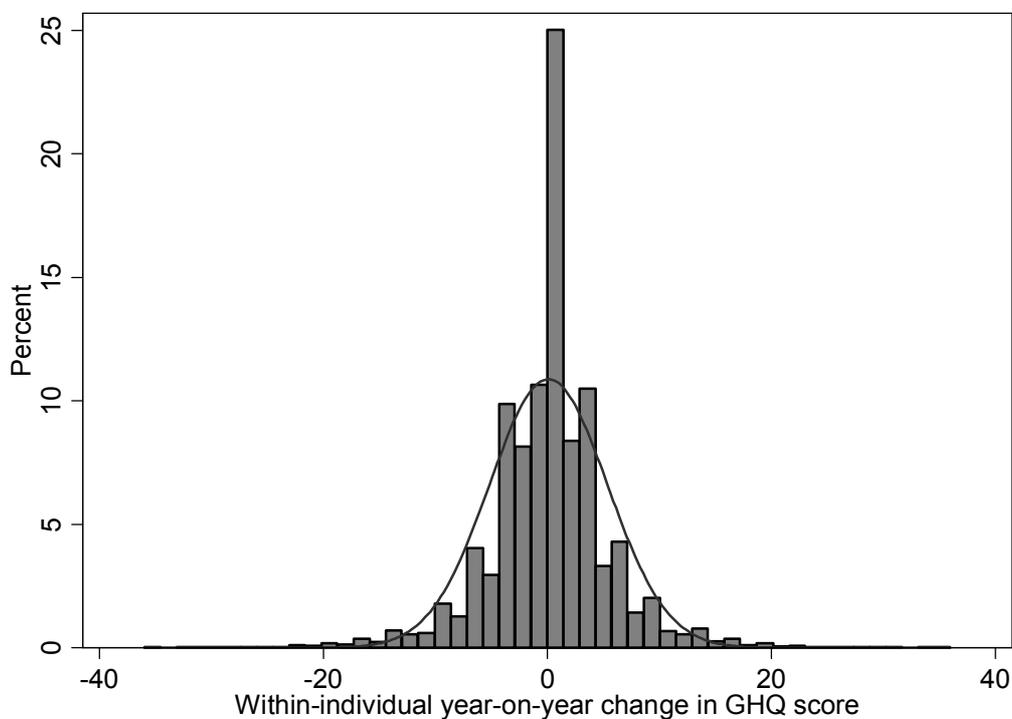
Figure 15: Within-individual year-on-year changes in life satisfaction: BHPS 1991–2006
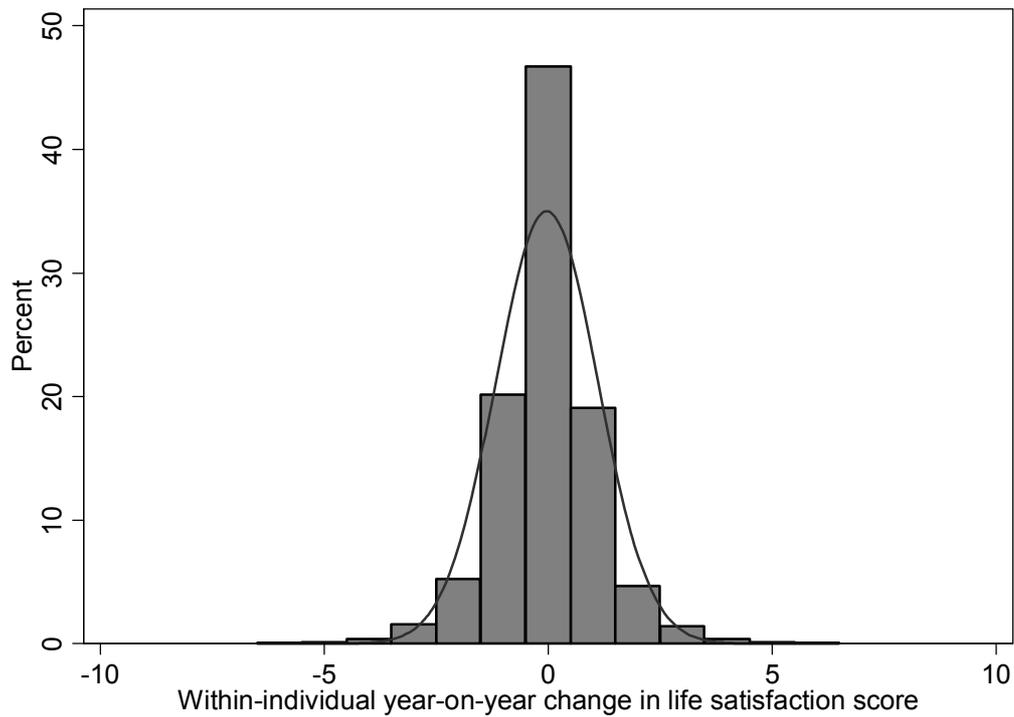
Figure 16: Mean within-individual year-on-year changes in GHQ scores: BHPS 1991–2006
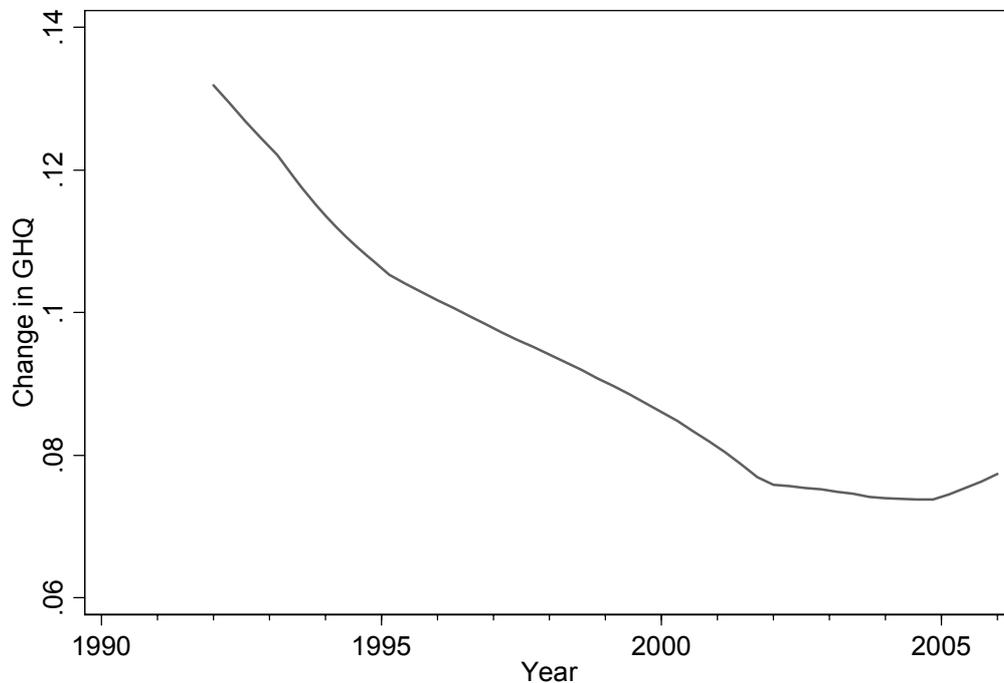
Source: BHPS 1991-2006

Figure 16 plots the trend in within-individual average change in GHQ scores. This clearly shows that the rate of year-on-year change in mental stress has fallen over the sample period. In the early 1990s, for example, individuals were on average experiencing increases in mental stress of around 0.12 GHQ points per year. This fell

throughout the decade and into the early 2000s, such that in 2005 the year-on-year average increases in GHQ scores were fewer than 0.08 points. There is evidence that this has subsequently increased.

The advantage of using a categorical (rather than continuous) measure of financial incapability is that it allows a more direct assessment of year-on-year change. We take advantage of this in Tables 41, 42 and 43, in which we summarise individuals' movements in psychological wellbeing in two consecutive years. If there was no change in psychological wellbeing, then all individuals would lie on the leading diagonal of each table – they would remain with the same wellbeing score each year. Therefore the degree of change can be assessed by the proportion of individuals that lie off the leading diagonal – those that experience either an improvement or deterioration in their psychological wellbeing.

Table 41 focuses on average year-on-year transitions in GHQ scores, and reveals a large degree of change at the individual level. For example, of individuals with a GHQ score of 9 at $t-1$ (and who were therefore psychologically quite healthy), 37% had a lower GHQ score at the subsequent year (and therefore had an improvement in wellbeing) while 49% had a higher GHQ score (and suffered a deterioration in their psychological wellbeing). Furthermore, one in ten had a GHQ score of 15 or above. A similar pattern emerges in the rest of the table – there are relatively large changes in psychological wellbeing on a year-to-year basis.

Table 41: Year-on-year changes in GHQ scores: BHPS 1991–2006

GHQ scores at $t-1$	GHQ scores at t								
	<9	9	10	11	12	13	14	15+	N
<9	60.8	9.7	7.6	5.7	4.2	2.3	1.6	8.1	33686
9	36.9	14.0	12.7	10.3	8.5	4.2	2.8	10.6	8607
10	28.0	12.9	14.4	12.5	10.5	4.9	3.6	13.3	8587
11	20.9	10.9	12.2	14.8	14.1	3.0	4.4	16.7	8216
12	15.3	7.2	9.1	11.8	23.8	7.8	5.5	19.6	8949
13	15.2	6.5	8.8	11.5	14.5	9.2	6.9	27.4	4770
14	13.9	5.5	7.1	9.8	13.9	8.7	7.6	33.4	3849
15+	12.7	4.5	5.5	6.2	8.4	6.2	6.1	50.4	19856
N	33011	8501	8471	8293	9258	4765	3818	20403	96520

Notes: Row percentages. Table reads, for example, that 60.8% of individuals with a GHQ score of less than 9 at year $t-1$ also had a GHQ score of less than 9 at year t, while 9.7% had a GHQ score of 9 at year t.

Table 42 reports year-on-year changes in reported life satisfaction, and reveals a similar pattern. Again there is a great deal of change from year to year. For example, only 20% of those who reported a life satisfaction score of two in one year reported the same score in the subsequent year. This increases to 25% of those reporting a score of three, 33% of those reporting a four, and 47% of those reported a five. Nevertheless, more than half report a different life satisfaction score from one year to another. Table 43 reveals that 45% of those who reported suffering from anxiety or depression in any particular year were no longer reporting the problem at the subsequent year. From this it is clear that, even on an annual basis, there is a great deal of change in reported psychological wellbeing. Our aim is to investigate the extent to which this change is associated with changes in financial capability.

Table 42: Year-on-year changes in reported life satisfaction: BHPS 1991–2006

Life satisfaction *t*−1	Life satisfaction *t*							
	1	2	3	4	5	6	7	N
1	28.8	15.1	15.2	15.5	11.9	6.7	6.7	570
2	8.1	19.6	26.5	21.2	15.7	6.2	2.7	977
3	3.0	9.9	25.3	30.0	21.4	8.7	1.8	2788
4	1.6	3.2	12.5	32.9	33.6	13.2	3.1	6699
5	0.3	1.2	4.7	15.8	46.8	27.5	3.7	15097
6	0.3	0.4	1.5	6.0	25.9	54.6	11.4	17086
7	0.7	0.4	1.3	3.3	9.3	29.5	55.5	6781
N	546	1008	2922	6903	15271	16995	6353	49998

Notes: Row percentages. Table reads, for example, that 28.8% of individuals with a life satisfaction score of 1 at year *t*-1 also had a life satisfaction score of 1 at year *t*, while 15.1% had a life satisfaction score of 2 at year *t*.

Table 43: Year-on-year changes in anxiety/depression: BHPS 1991–2006

	Anxiety/depression *t*		
t-1	No	Yes	N
No	96.5	3.5	90052
Yes	44.9	55.1	6335
N	89775	6612	96387

Notes: Row percentages.

7.3 Financial capability and psychological wellbeing

We now turn to a descriptive analysis of the relationship between financial capability and psychological wellbeing. This is the first analytical step towards developing an understanding of the links between financial management and capability and psychological health and emotional wellbeing. Descriptive analysis will not explore the effects of mediating factors (such as the role of education, employment status, age etc). This will be investigated in the next section.

Table 44: Correlations between within-individual variances in measures of financial incapability and psychological wellbeing: BHPS 1991–2006

Within-individual Variance in:	Within-individual variance in:		
	GHQ scores	Life satisfaction	Anxiety/depression
Income-adjusted	0.264	0.194	0.161
Income-unadjusted	0.255	0.187	0.159
N. financial problems	0.266	0.193	0.165

Notes: Spearman rank correlation coefficients.

As a first step, and to establish how the year-on-year changes at the individual level in psychological wellbeing is related to changes in financial incapability between one year to the next, in Table 44 we present Spearman rank correlation coefficients between each set of measures. This shows positive correlations between the within-individual variances in financial incapability and psychological wellbeing, which is

largest with GHQ scores. Therefore, at the individual level there is considerable change in both financial capability and in psychological wellbeing between one year and the next, and in addition individuals whose financial capability varies a lot from year to year also have high year-on-year variability in psychological wellbeing.

Financial capability and GHQ
Table 45 presents Spearman rank correlation coefficients to illustrate the degree of association between our three measures of financial incapability and GHQ scores. The correlation coefficients are similar, 0.204 with the income-unadjusted index and 0.18 with the income-adjusted index and the number of financial problems. Therefore higher financial incapability is associated with higher mental stress. There is evidence that the degree of association fell between 1991 and 2001 (for example, the correlation between GHQ scores and the income-adjusted measure fell from 0.225 to 0.165 over this period), although it has since strengthened.

Table 45: Relationship between indices of financial incapability and GHQ scores: BHPS 1991–2006

	Year				Average
	1991	1996	2001	2006	
Income-adjusted	0.225	0.196	0.165	0.178	0.179
Income-unadjusted	0.244	0.223	0.188	0.208	0.204
N. financial problems	0.226	0.194	0.154	0.174	0.177
N	8284	7875	7436	6842	120027

Notes: Figures reported are Spearman rank correlation coefficients. See text for how variables are constructed and defined.

Figure 17 investigates the relationships in more detail, by plotting average financial incapability by GHQ score. This suggests that financial incapability is constant when GHQ scores are very low (indicating low mental stress and high psychological wellbeing). However, financial incapability increases linearly with GHQ scores between scores of 6 and 27. Therefore, for 90% of observations, higher GHQ scores (and higher mental stress) are associated with higher financial incapability. This relationship becomes less smooth when GHQ scores exceed 27, but here sample sizes are relatively small (see Figure 12). Therefore from this we conclude that there is a clear positive relationship between levels financial incapability and mental stress.

We now turn to whether changes in GHQ scores are related to changes in financial capability – that is, do individuals who experience changes in their financial capability between one year and the next also experience changes in their psychological wellbeing at the same time? Figure 18 plots average changes in GHQ by average changes in financial incapability. The plots suggest a positive relationship between changes in GHQ and changes in incapability: increases in financial incapability are associated with increases in GHQ scores. This relationship is almost linear when using the number of financial problems, but is also apparent when using income-adjusted and income-unadjusted indices. Figures 8 and 9 showed that the vast majority of year-on-year changes in financial incapability lie in the range –2 to 2, and within this range the positive relationship is evident. Outside this range, the sample sizes become small, resulting in more fluctuations. This is evidence of a positive relationship between changes in financial capability and

changes in psychological wellbeing, which we test using multivariate analysis in subsequent sections.

Figure 17: Mean financial incapability by GHQ scores: BHPS 1991–2006
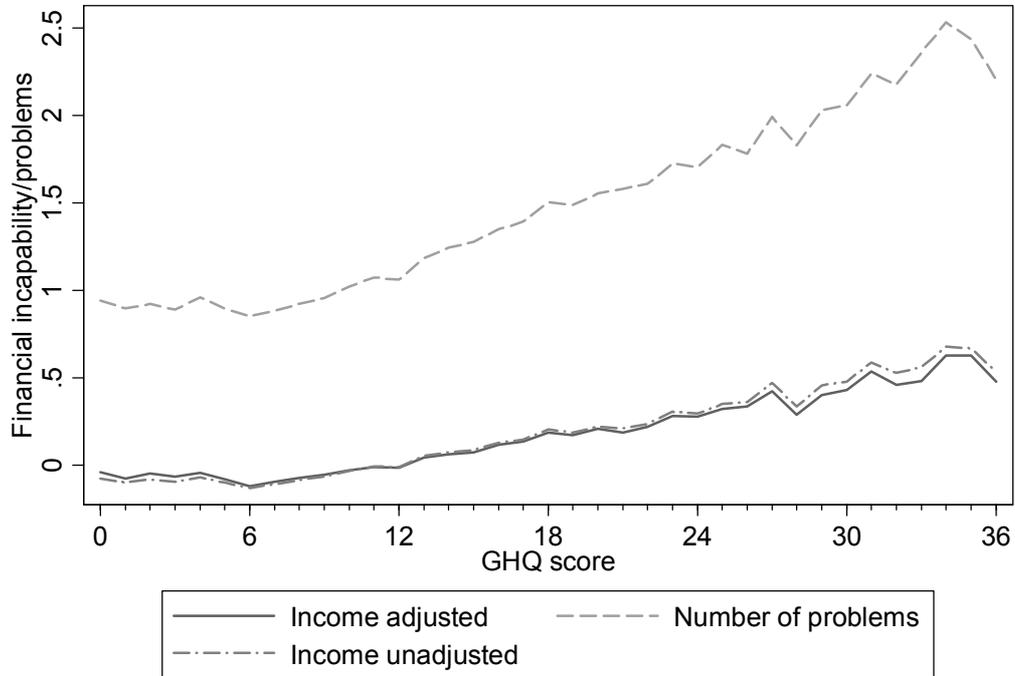
Source: BHPS 1991-2006

Figure 18: Changes in GHQ scores by changes in financial incapability: BHPS 1991–2006
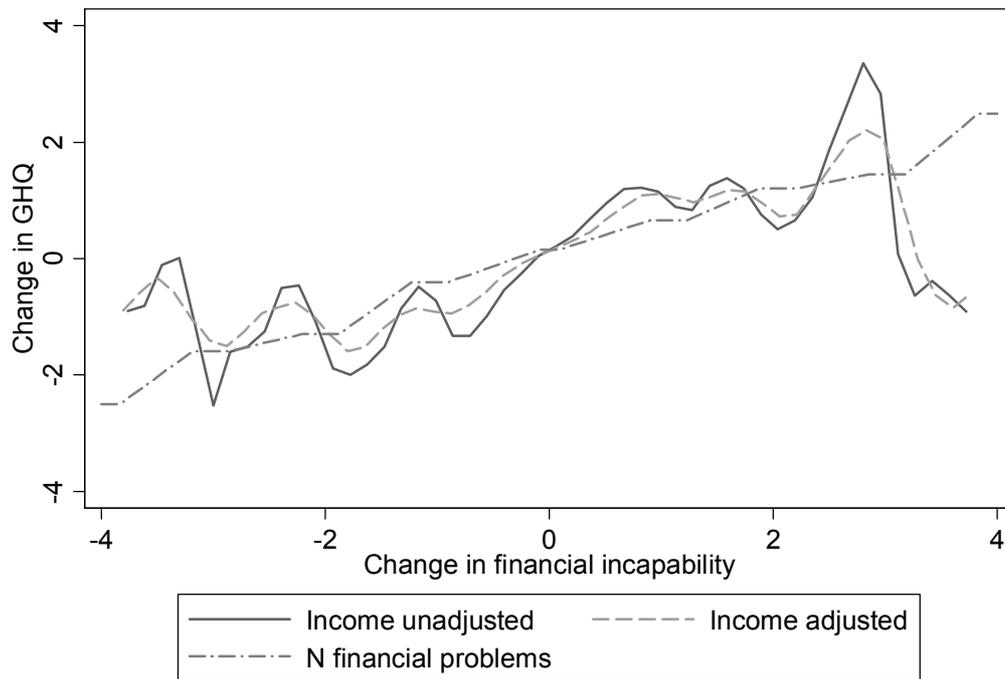
Source: BHPS 1991-2006

Financial capability and life satisfaction

Table 46 summarises our measures of financial capability by life satisfaction scores, and shows significant differences for all three measures. That is, we find that average financial capability varies significantly by reported life satisfaction. (Recall that the life satisfaction question was not asked before wave 6 of the BHPS and therefore no data is available before then.)

Table 46: Financial incapability and life satisfaction scores: BHPS 1991–2006

	Year			Average	
	1996	2000	2006		
Income-adjusted					
Not satisfied at all	0.405	0.313	0.537	0.376	*
2	0.280	0.354	0.389	0.280	
3	0.180	0.138	0.190	0.167	
4	0.093	0.071	0.063	0.058	
5	−0.036	−0.044	−0.026	−0.049	
6	−0.107	−0.122	−0.117	−0.123	
Completely satisfied	−0.138	−0.198	−0.205	−0.186	
Spearman correlation	−0.228	−0.217	−0.248	−0.216	
Income-unadjusted					
Not satisfied at all	0.501	0.408	0.606	0.465	*
2	0.349	0.380	0.432	0.319	
3	0.217	0.176	0.207	0.194	
4	0.126	0.080	0.068	0.074	
5	−0.044	−0.063	−0.058	−0.069	
6	−0.122	−0.154	−0.157	−0.150	
Completely satisfied	−0.091	−0.161	−0.184	−0.147	
Spearman correlation	−0.248	−0.228	−0.234	−0.220	
N financial problems					
Not satisfied at all	2.181	1.962	2.294	2.061	*
2	1.899	1.852	1.920	1.771	
3	1.563	1.480	1.537	1.497	
4	1.337	1.225	1.246	1.235	
5	0.999	0.952	0.987	0.955	
6	0.852	0.803	0.822	0.821	
Completely satisfied	0.969	0.827	0.820	0.874	
Spearman correlation	−0.180	−0.180	−0.192	−0.169	
N	7946	7592	6849	73617	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 adults in the BHPS sample who reported a life satisfaction score of 1 had a mean income-adjusted financial capability score of 0.405, compared to −0.138 for those who reported a life satisfaction score of 7. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by reported life satisfaction over the sample period are significantly different at the 5% level.

The table reveals a similar pattern for all three measures of financial capability, with low life satisfaction associated with higher financial incapability, with Spearman rank correlation coefficients ranging from −0.169 with number of financial problems to −0.220 with the income-unadjusted index. Furthermore, the average level of financial incapability falls monotonically as reported life satisfaction increases and this too is evident with all three incapability measures and across the sample period. For example, people reported not being satisfied at all with their life have, on average, an income-adjusted financial incapability index of 0.376. This falls to 0.058 for those who report a life satisfaction score of four and to −0.186 for those who report being completely

satisfied with their life. Therefore, we conclude that there is a clear relationship between financial incapability and reported life satisfaction.

Figure 19 examines the relationship between year-on-year *changes* in financial incapability and year-on-year *changes* in reported life satisfaction. This suggests a negative association – that is increases in financial incapability are associated with falls in reported life satisfaction. Again, an almost linear relationship is apparent between changes in the number of financial problems and changes in life satisfaction, but a similar trend is also evident between the income-adjusted and income-unadjusted indices. This is particularly apparent for year-on-year changes in financial incapability lying in the range from -2 and 2 which account for the majority of the observations. Outside this range, sample sizes are small resulting in greater fluctuations. From this, we conclude that increases in financial incapability are associated with falls in reported life-satisfaction.

Figure 19: Changes in life satisfaction scores by changes in financial incapability: BHPS 1991–2006
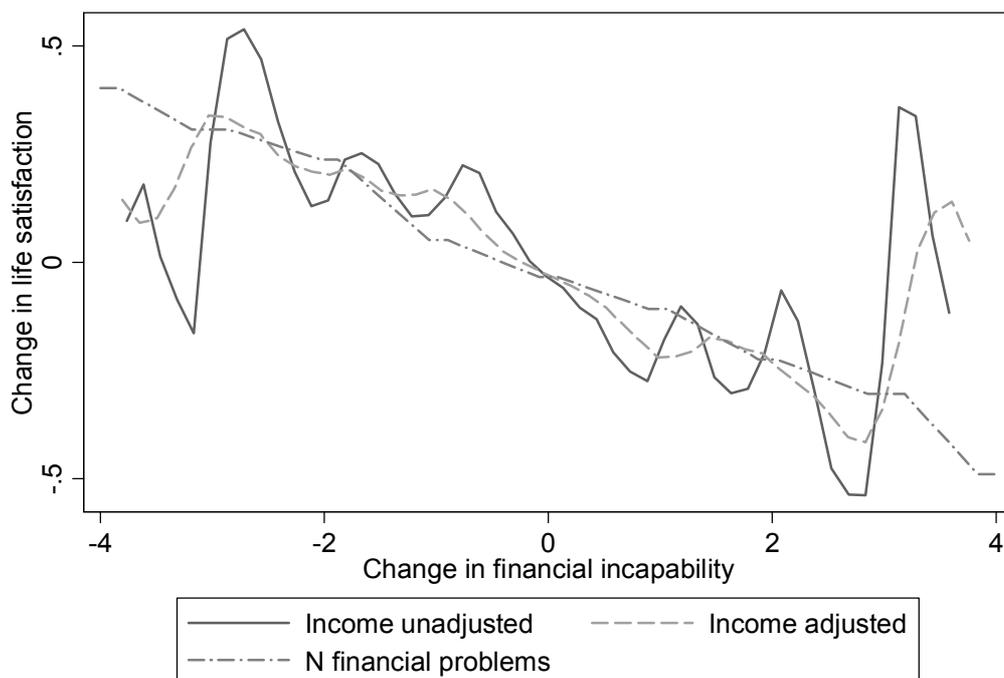
Source: BHPS 1991-2006

Financial capability and anxiety/depression
Table 47 summarises financial capability by whether or not people are suffering from a health problem related to anxiety or depression. Again we find a statistically significant association, with individuals reporting such a health problem having higher financial incapability across all three measures. For example, on average people who reported having a health problem associated with anxiety or depression had an income-adjusted financial incapability index score of 0.146, compared with – 0.025 among those who reported no such health problem. A similar pattern is apparent for all three measures of financial incapability. This is further evidence of a clear relationship between financial incapability and psychological wellbeing.

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Table 47: Financial incapability and suffering from anxiety or depression: BHPS 1991–2006

	Year				Average	
	1991	1996	2001	2006		
Income-adjusted						
Suffers anxiety/depression	0.293	0.219	0.078	0.138	0.146	*
Does not suffer	0.095	−0.046	−0.094	−0.050	−0.025	
Income-unadjusted						
Suffers anxiety/depression	0.379	0.280	0.127	0.160	0.202	*
Does not suffer	0.135	−0.037	−0.097	−0.052	−0.021	
N. financial problems						
Suffers anxiety/depression	1.785	1.699	1.367	1.436	1.516	*
Does not suffer	1.321	1.029	0.926	0.986	1.062	
N	8489	8009	7542	6971	122,132	

Notes: Weighted using cross-sectional weights. Table reads, for example, that in 1991 adults in the BHPS sample who reported suffering from anxiety or depression had a mean income-adjusted financial capability score of 0.293, compared to 0.095 for those who did not report suffering from anxiety or depression. 'Average' shows data pooled from waves 1 to 16. * indicates that the average scores by reported life satisfaction over the sample period are significantly different at the 5% level.

To examine the associations between changes in financial capability and changes in suffering from anxiety or depression, Table 48 summarises average year-on-year changes in financial capability by whether or not individuals suffer from anxiety or depression in each year. This shows that individuals who do not suffer from anxiety or depression in either year experience changes in the financial capability similar to the sample as a whole, and on average, have lower financial incapability than the sample average. Those that suffer from anxiety or depression in both years have higher than average financial incapability, although their financial capability improves by more than the sample average over the year. Those that start suffering from anxiety or depression have above average financial incapability, and their financial incapability increases. Finally, individuals that stop suffering from anxiety or depression have above average financial incapability but experience an above average improvement in capability. Therefore, as with the other measures of psychological wellbeing, we find that starting to suffer from anxiety or depression is associated with higher, and deteriorating, financial capability while recovering from such a health problem is associated with improving financial capability.

This descriptive analysis provides evidence of a strong association between both financial incapability and psychological wellbeing, and also between changes in financial incapability and changes in psychological wellbeing using all three indices of incapability and all three measures of wellbeing. We find that higher financial incapability is associated with higher mental stress, lower reported life satisfaction, and health problems associated with anxiety or depression. However, as we have seen, financial capability is strongly associated with a range of other individual and household characteristics that are also likely to affect people's psychological wellbeing, such as marital status, employment status etc. There may be mediating variables that jointly determine an individual's financial capability and their psychological wellbeing. In the next section, we attempt to disentangle these associations using multivariate analysis.

Table 48: Changes in suffering from anxiety or depression and changes in financial incapability: BHPS 1991–2006

	Means of indices			
	$t-1$	T	Change	B
Sample average				95935
Income-adjusted	−0.020	−0.032	−0.012	
Income-unadjusted	−0.013	−0.028	−0.015	
Number financial problems	1.077	1.053	−0.024	
Not suffered in either period				86921
Income-adjusted	−0.026	−0.037	−0.011	
Income-unadjusted	−0.032	−0.046	−0.014	
Number financial problems	1.034	1.012	−0.023	
Suffered in both periods				3481
Income-adjusted	0.178	0.153	−0.025	
Income-unadjusted	0.234	0.205	−0.029	
Number financial problems	1.580	1.522	−0.058	
Not in $t-1$, but suffered in t				3131
Income-adjusted	0.106	0.139	0.032	
Income-unadjusted	0.144	0.175	0.031	
Number financial problems	1.388	1.451	0.063	
Suffered in $t-1$, but not at t				2854
Income-adjusted	0.151	0.076	−0.074	
Income-unadjusted	0.188	0.111	−0.077	
Number financial problems	1.469	1.314	−0.156	

Notes: Table reads that individuals who did not suffer a health problem associated with anxiety or depression at year $t-1$ or year t on average experienced a fall in their income-adjusted financial incapability from −0.026 to −0.037.

8 Estimating the effect of financial capability on psychological wellbeing

10   Estimation procedures

The final stage of the analysis investigates the relationships between financial capability and psychological wellbeing in more detail. Of particular interest is whether the index of financial capability has any power in predicting psychological wellbeing. There are two problems which need to be addressed in attempting to answer this question. The first is that there are likely to be both mediating and confounding factors that are associated both with an individual's level of financial capability and his/her level of psychological wellbeing. Descriptive statistics in previous sections suggest that this is indeed the case. The second is that there are also likely to be both unobservable factors (such as ability, personality, ambition or motivation) and unobserved factors (such as an individual's attitude towards risk) that are similarly associated with both financial incapability and psychological wellbeing. Our estimation procedure attempts to deal with both these issues.

We use multivariate panel data models, and fixed effects models in particular. Multivariate analysis allows us to control for other (observable) characteristics of individuals and the households that they live in that might be correlated with both psychological wellbeing and financial capability (such as age, gender, marital status, employment status, income, housing tenure, family type etc). The BHPS is a particularly rich source of a wide range of such characteristics, allowing a more reliable coefficient on the variables of interest to be estimated. We can write the model to be estimated as the following, where y is our measure of psychological wellbeing, x our measure of financial capability and z is a vector of other control variables:

$$y_{it} = x_{it}\beta + z_{it}\delta + \varepsilon_{it} \qquad [1]$$

$$\varepsilon_{it} = \eta_i + h_{it} \qquad [2]$$

$\mathring{a}$ is the error term. Estimating [1] using simple Ordinary Least Squares (OLS) regression ignores any individual-specific characteristics that are included in ε. These can be separated, as in [2] where ς is a time invariant individual-specific effect capturing unobservable (or unmeasured) characteristics. If this is correlated with the observable x and/or z, then estimating [1] using OLS will yield biased estimates. This is likely to be especially important in the current context, as latent time-invariant psychological characteristics have been found to systematically influence reported mental wellbeing scores (De Neve and Cooper 1999), and estimation methods that do not allow for such time-invariant unobserved traits are likely to result in biased estimates. For example, if individuals are innately optimistic (pessimistic) they are more likely to both report being in a good (bad) financial situation and also more likely to report high (low) psychological wellbeing.

Panel data models allow us to control for the effects of unobserved variables that are fixed over time, and that might also be correlated with other explanatory variables. Furthermore, fixed effects models allow such traits to be arbitrarily correlated with the observable characteristics. This may be important if, for example, more optimistic or more motivated people are also more likely to get married, be in employment or have higher qualification levels. Such models are estimated by taking deviations from individual-specific means over time in both the dependent variable and explanatory variables, and therefore removing the effect of time invariant characteristics, so we estimate:

$$y_{it} - \overline{y}_i = \beta(x_{it} - \overline{x}_i) + \delta(z_{it} - \overline{z}_i) + h_{it} \qquad [3]$$

Therefore, a positive value for β would imply that higher values of x are associated with higher values of y, while a negative $\hat{a}$ indicates that a higher x is associated with a lower y. We estimate whether an individual's level of psychological wellbeing varies systematically with their financial capability, controlling for changes in a wide range of personal, household, family, and housing-related characteristics.

Such models are appropriate when the dependent variable (our measure of psychological wellbeing) is continuous. For the purposes of this report, we assume that GHQ scores and reported life satisfaction are continuous variables, and therefore use within group fixed effects models to estimate the impact of financial incapability on wellbeing. However, such models are less appropriate when the dependent variable is categorical, as is the case with the binary variable indicating whether or not the individual has a health problem related to anxiety or depression. Binary dependent variable models are more appropriate in these circumstances, and therefore we estimate fixed effects (or so-called conditional) logit models. The model specification can be written:

$$\Pr(y_{it} = 1 | x_{it}, z_{it}) = F(\eta_i + \beta x_{it} + \delta z_{it}) \qquad [4]$$

where $F(\bullet)$ is the cumulative logistic distribution. A feature of this approach is that when $y = 0$ or $y = 1$ for all observations for an individual, this individual's contribution to the log-likelihood is zero and their data does not contribute to the estimation. Therefore, estimation of the impact of financial capability on anxiety or depression is identified solely by individuals whose anxiety/depression status changes over time.

There are two issues concerning fixed effects models. The first is that they do not allow for the impact of time-invariant observable characteristics (e.g. ethnicity, gender etc.) to be estimated. We estimate models with both men and women combined as well as separate models for each sex to examine whether the effects of financial capability on wellbeing differs for men and women.

The second issue is that, although fixed effects models allow for time-invariant unobserved characteristics, and allow these characteristics to be correlated with observed characteristics (such as personality traits), they do not account for unobserved shocks that affect both the dependent variable and the explanatory variables of interest. So, for example, if individuals with particular characteristics

experienced an unobserved event that affected both their financial capability and their psychological wellbeing, the estimated coefficients would be biased. However, this problem is shared by all other existing estimation methods. We attempt to allow for any such potential shocks (or changes in an individuals level of optimism or pessimism) by including in all our model specifications a measure of whether people expect their financial situation to improve or worsen in the forthcoming year.

10   Estimation results

GHQ

We first focus on the results with GHQ scores as the dependent variable. We present estimates on variables of interest in Table 49, while a full set of estimates is available in the Appendix. Model [1] includes the income-adjusted index of financial incapability as an explanatory variable, Model [2] includes the income-unadjusted index, while Model [3] includes the number of financial problems. The table indicates that the financial incapability measures have a positive and statistically significant impact on GHQ scores, even when controlling for a large number of potentially confounding and mediating factors as well as time-invariant unobserved effects.[8]

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[8] The large t-statistics indicate these estimates are very precisely determined. This precision is likely to be caused by the high degree of year-on-year fluctuation in both the financial incapability indices and psychological wellbeing, which our analyses have shown to be experienced by the same individuals. It is also likely to reflect the fact that our measures of psychological health (and the GHQ score in particular) tends to emphasise recent events (although very similar results were obtained using the 12-point GHQ score which maybe less sensitive to short-term fluctuations). Further investigation suggests that the main driver behind the relationship between financial incapability and psychological wellbeing is an individual's perceived current financial situation – individuals who report finding it quite or very difficult have significantly lower levels of psychological wellbeing. Our estimation procedure accounts for time-invariant unobserved effects (such as personality traits), and so this is not caused by innately more optimistic individuals reporting a better financial situation and higher levels of psychological wellbeing. It is possible, however, that individuals may experience unobserved events that affect both their perceived financial situation and their wellbeing, or that individuals' perceptions and psychological health are strongly influenced by changes in the real-world financial situation.

Table 49: Within-group fixed effects estimates from the GHQ model

	Model [1]	Model [2]	Model [3]
Income-adjusted index	1.074		
	[38.62]		
Income-unadjusted index		1.092	
		[39.30]	
N financial problems			0.637
			[43.53]
Real equiv hh income pcm	−0.034	0.015	0.015
(x 1000)	[3.16]	[1.39]	[1.43]
Amount saved pcm	0.036	0.043	0.288
(x 1000)	[0.45]	[0.53]	[3.58]
In good health	−1.729	−1.729	−1.723
	[46.53]	[46.52]	[46.44]
Widowed	1.774	1.807	1.767
	[10.43]	[10.62]	[10.40]
Divorced/separated	0.920	0.930	0.897
	[7.24]	[7.32]	[7.07]
Unemployed	1.187	1.114	0.955
	[13.98]	[13.11]	[11.22]
Retired	−0.374	−0.441	−0.528
	[4.61]	[5.42]	[6.50]
Inactive not like job	0.383	0.332	0.250
	[6.26]	[5.41]	[4.08]
Inactive like job	0.783	0.723	0.615
	[9.64]	[8.90]	[7.57]
R-squared	0.0510	0.0515	0.0548
N observations		114190	
N individuals		15974	

Notes: Estimates from within-group fixed effects regressions with GHQ score as the dependent variable. Absolute ratio of coefficient to standard error in brackets. Table presents estimates for variables of interest; full estimation results are presented in the Appendix. Reference categories are in fair or poor health; single never married; in full-time employment.

The estimated coefficient on the income-adjusted index is 1.074 with a t-statistic of almost 39, while on the income-unadjusted index the coefficient is 1.092 with a t-statistic that exceeds 39. The size of the effects indicates that a one standard deviation decrease (equal to about a fall of 0.6 - see Tables 10 and 17) in the income-adjusted index of financial incapability would reduce GHQ scores by 0.619 GHQ points (or 5.6% at the sample means). Similarly, a one standard deviation reduction in the income-unadjusted index reduces GHQ scores by 0.65 GHQ points (or 5.9% at the sample means). To highlight the effect of reducing or increasing the index of financial incapability by one standard deviation, Figure 20 below plots the cumulative distribution of the income-adjusted index.

Figure 20: Cumulative distribution function of income-adjusted index of financial incapability: BHPS 1991–2006
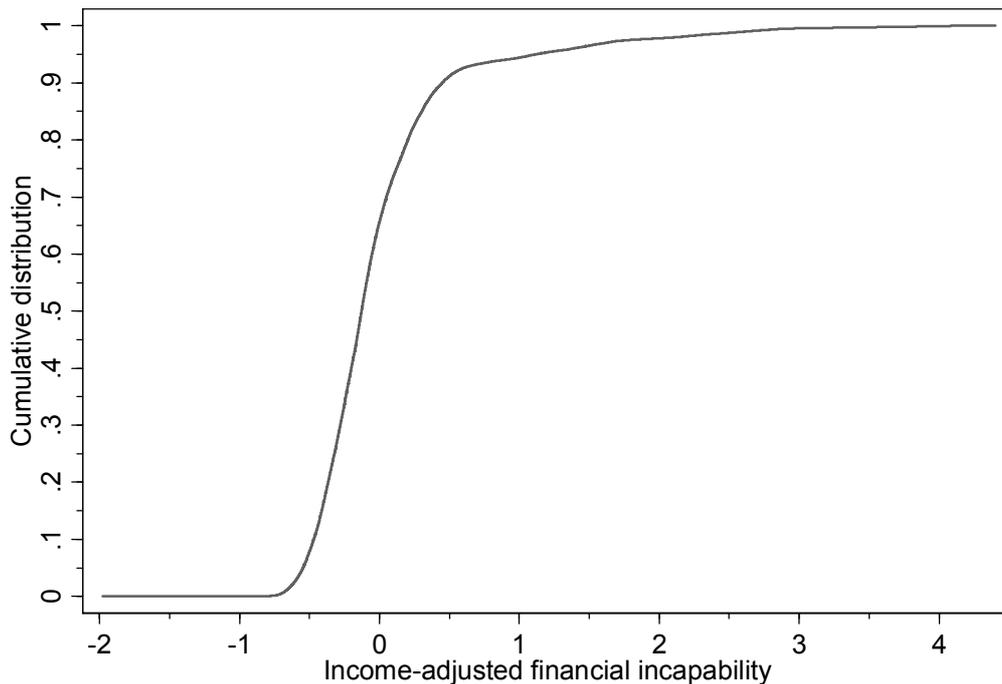
Source: BHPS 1991-2006

This shows that a standard deviation reduction in financial incapability (which equates to a reduction in the index of about 0.6 – see Table 17) are approximately equivalent to moving from the 90th percentile of the financial incapability index to the 50th percentile. Therefore, it moves an individual from having relatively high levels of financial incapability to having average levels of financial incapability. Doing so reduces their GHQ score by 0.62 to 0.65 GHQ points (almost 6%). A reduction of one financial problem also reduces GHQ scores by 0.637 GHQ points (or 5.7% at the sample means). This evidence supports the hypothesis that financial capability predicts psychological wellbeing and that improving people's financial capability leads to improving their psychological wellbeing.[9]

These effects are relatively large compared to the effects of other variables known to affect psychological wellbeing. For example, individuals who report themselves to be in good or very good health have GHQ scores 1.72 points (or 15.5%) lower than those in fair, poor or very poor health. Widowhood has the single largest impact on GHQ scores, and is associated with an increase of 1.8 GHQ points (or 16.2% at the sample means) relative to people who are single never married, while divorce or

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[9] We have also estimated models where we allow psychological health at time t to be affected by financial capability at time $t–1$, again using within-group fixed effects. The results indicate that those with high levels of financial incapability at $t–1$ have lower levels of psychological health at t, although the size and strength of the association is much lower than those presented here. This is to be expected given the considerable within-individual year-on-year variation in both financial incapability and psychological health (both show a Spearman rank correlation coefficient of 0.5 between a person's current value and that reported last year) – if psychological health is directly affected by financial capability and if an individual's financial capability fluctuates from year to year, then we expect a stronger relationship to emerge when both are measured at the same time.

separation is associated with an increase of 0.92 GHQ points (or about 8.3% at the sample means). Being unemployed also has a large impact on psychological wellbeing, increasing GHQ scores by 1.1 GHQ points relative to people in full-time work. These characteristics are those most commonly associated with psychological ill health, and a comparison of the relative sizes of effects suggests that moving an individual from average levels of financial capability to relatively low levels of financial capability (or the experience of an additional financial problem) has an impact almost comparable to that of divorce or separation.

The table also presents the impact of other covariates of interest on GHQ scores. We find that income has no effect on GHQ scores in Models [2] and [3], while it has a negative and statistically significant impact in Model [1]. This is to be expected, given that the income-adjusted index of financial incapability used in Model [1] is independent of income by design, while the indices used in Models [2] and [3] still capture some of the effects of income. In Model [1], the estimates suggest that a £1000 increase in household income reduces mental stress by 0.035 GHQ points. Controlling for financial incapability and income, the amount saved per month has no impact on GHQ scores. (However in Model [3] we find that a £1000 increase in savings per month *increases* mental stress, which is difficult to explain, although there may be problems of co-linearity with the number of financial problems.) Being retired improves people's mental wellbeing, reducing GHQ scores by between 0.37 and 0.44 points (or 3–4% at sample means). Economic inactivity increases mental stress, particular if the individual would like to work. In this case economic inactivity increases GHQ scores by an average of between 0.72 and 0.78 GHQ points.

Table 50: Gender-specific within-group fixed effects estimates from the GHQ model

	Men	Women
Income adjusted	1.094 *[28.13*	1.055 *[26.91]*
R-squared	0.0560	0.0502
Income unadjusted	1.103 *[28.26]*	1.081 *[27.59]*
R-squared	0.0562	0.0509
N financial problems	0.643 *[31.48]*	0.631 *[30.53]*
R-squared	0.0601	0.0539
N observations	52308	61882
N individuals	7657	8317

Notes: Estimates from within-group fixed effects regressions with GHQ score as the dependent variable. Absolute ratio of coefficient to standard error in brackets. Table presents estimates for variables of interest only.

One of the limitations of the within-group fixed effects approach is that we cannot identify the effect of time-invariant covariates (such as gender) on the outcome of interest. To identify whether the impacts of financial incapability on GHQ scores differ by gender, we have estimated separate models for men and women, and present the coefficients of interest in Table 50. This indicates that for men the coefficient on the income-adjusted index of financial incapability is 1.094, while for

women it is 1.055. In both cases it is highly statistically significant, although these coefficients are not significantly different from each other. The same is true of the gender-specific coefficients on the other financial incapability measures, from which we conclude that the impact of financial incapability on psychological wellbeing does not differ for men and women.

Life satisfaction
Having established that financial incapability is associated with increases in mental stress as measured by GHQ scores, we next examine its impact on life satisfaction. We present estimates on variables of interest in Table 51, while a full set of estimates is again available in the Appendix. As previously, Model [1] includes the income-adjusted index of financial incapability as an explanatory variable, model [2] includes the income-unadjusted index, while Model [3] includes the number of financial problems.

The table indicates that the financial incapability measures have a negative and statistically significant impact on reported life satisfaction scores, even when controlling for a large number of potentially confounding and mediating factors as well as time-invariant unobserved effects. The estimated coefficient on the income-adjusted index is –0.226 with a t-statistic of almost 27, while on the income-unadjusted index the coefficient is –0.231 with a t-statistic that exceeds 27. The number of financial problems has a coefficient of –0.122 with a t-statistic of 28. These results are consistent with changes in financial capability leading to changes in life satisfaction.

Again, we try to quantify the relative sizes of these effects. The coefficients imply that a one standard deviation fall in the income-adjusted index of financial incapability increases life satisfaction scores by 0.119 (or 2.3% at the sample means). Similarly, a one standard deviation fall in the income-unadjusted index increases reported life satisfaction by 0.125 (or 2.4% at the sample means). Therefore, moving an individual from the 90th percentile to the 50th percentile in the financial incapability distribution (or from relatively low levels of financial capability to average levels) would increase their life satisfaction by between 0.12 and 0.13 (about 2.5%). A reduction of one financial problem also increases life satisfaction by 0.122 (or 2.4% at the sample means).

These effects are relatively large compared to the effects of other variables. For example, as in the GHQ models, being in good health, widowhood and unemployment have the largest impacts on life satisfaction. Good health is associated with an improvement of about 0.28 (or 5.4% at the sample means) relative to being in fair or poor health, widowhood and unemployment are associated with a fall in reported life satisfaction of –0.23 (4.4%) relative to a person who has never been married and in full-time work respectively, while divorce or separation is associated with a fall in reported life satisfaction of 0.18 (or about 3.4%). Again, we find that moving an individual from average levels of financial capability to relatively low levels (or the addition of one more financial problem) has an effect on life satisfaction that is comparable to divorce or separation, but which is smaller than the impacts of good health, being widowed or being in unemployment.

As with the GHQ models, and as we expect, household income has an effect only in the model including the income-adjusted index of financial incapability. In this specification, a £1000 increase in income increases life satisfaction by 0.012, or 0.2% at the sample means. The amount saved has no significant effect on life satisfaction, while life satisfaction is higher for the retired. Being retired is a associated with life satisfaction scores about 0.16 points higher than full-time employment, or about 3% at the sample means. Being in economic inactivity reduces life satisfaction but only if a job is desired. In this case life satisfaction is reduced by –0.10 points (about 2%).

Table 51: Within-group fixed effects estimates from the life satisfaction model

	Model [1]	Model [2]	Model [3]
Income-adjusted index	–0.226		
	[26.91]		
Income-unadjusted index		–0.231	
		[27.43]	
N financial problems			–0.122
			[28.14]
Real equiv hh income	0.012	0.003	0.003
(x 1000)	[4.18]	[0.97]	[1.04]
Amount saved pcm	0.025	0.023	–0.015
(x 1000)	[1.18]	[1.09]	[0.68]
In good health	0.281	0.281	0.281
	[27.28]	[27.28]	[27.26]
Widowed	–0.230	–0.239	–0.233
	[4.60]	[4.77]	[4.65]
Divorced/separated	–0.177	–0.179	–0.175
	[4.82]	[4.87]	[4.75]
Unemployed	–0.231	–0.214	–0.191
	[8.88]	[8.21]	[7.32]
Retired	0.157	0.173	0.185
	[6.65]	[7.30]	[7.82]
Inactive not like job	0.008	0.020	0.031
	[0.46]	[1.12]	[1.78]
Inactive like job	–0.104	–0.090	–0.075
	[4.27]	[3.71]	[3.07]
R-squared	0.0397	0.0402	0.0408
N observations		73345	
N individuals		12640	

Notes: Estimates from within-group fixed effects regressions with life satisfaction score as the dependent variable. Absolute ratio of coefficient to standard error in brackets. Table presents estimates for variables of interest; full estimation results are presented in the Appendix. Reference categories are in fair or poor health; single never married; in full-time employment.

In Table 52 we present the results from estimating separate models for men and women. This indicates that for men the coefficient on the income-adjusted index of financial incapability is –0.229, while for women it is –0.223. In both cases it is highly statistically significant, although tests indicate that these coefficients are not significantly different from each other. The same is true of the gender-specific coefficients on the other financial

incapability measures, from which we conclude that the impact of financial incapability on life satisfaction does not differ between men and women.

Table 52: Gender-specific within-group fixed effects estimates from the life satisfaction model

	Men	Women
Income adjusted	−0.229 *[18.83]*	−0.223 *[19.24]*
R-squared	0.0460	0.0381
Income unadjusted	−0.233 *[19.14]*	−0.229 *[19.68]*
R-squared	0.0464	0.0386
N financial problems	−0.123 *[19.73]*	−0.121 *[20.07]*
R-squared	0.0472	0.0390
N observations	33594	39751
N individuals	5977	6663

Notes: Estimates from within-group fixed effects regressions with life satisfaction score as the dependent variable. Absolute ratio of coefficient to standard error in brackets. Table presents estimates for variables of interest only.

Anxiety or depression

Our final measure of psychological wellbeing focuses on whether or not individuals have a health problem that relates to anxiety or depression. Because this variable is binary rather than continuous, we estimate the impacts of financial incapability using a fixed effects (conditional) logit specification. Recall that in this estimation procedure, the impact of financial capability on suffering anxiety or depression is identified solely by individuals whose anxiety/depression status changes over time, and therefore the sample sizes in these tables are much smaller than in previous ones. The results, shown in Table 53, are consistent with those using both GHQ and life satisfaction as measures of psychological wellbeing. In particular we find that higher financial incapability is associated with a higher probability of having a health problem related to anxiety or depression – in each case the coefficients on the financial incapability measures are positive and statistically significant.

These coefficients are difficult to interpret, in terms of the size of the effect that changes financial incapability have on the probability of suffering a health problem that relates to anxiety or depression. The coefficients on the income-adjusted and income-unadjusted indices suggest that a one standard deviation reduction in financial incapability (equivalent to moving an individual from the 90th to the 50th percentile of the distribution – from high levels of incapability to average levels) reduces the probability of an individual suffering a health problem related to anxiety or depression by 15% at the sample means.

Coefficients on the other covariates are also generally consistent with those presented in previous models. For example, we find that good health significantly reduces the probability of suffering from anxiety or depression (by 70%) relative to a person in fair or poor health, while widowhood, divorce or separation, or unemployment significantly increases the probability of suffering anxiety or depression (by 51%, 35% and 43% respectively relative to never having married or

being in full-time work). However, in contrast to the previous models we find that being retired reduces psychological wellbeing, in that it significantly increases the probability of suffering anxiety or depression (by 23%). Household income and the amount saved have no significant impact here.

Table 53: Fixed effects logit estimates from the anxiety or depression model

	Model [1]	Model [2]	Model [3]
Income-adjusted index	0.196		
	[6.67]		
Income-unadjusted index		0.200	
		[6.81]	
N financial problems			0.123
			[7.54]
Real equiv hh income	0.004	0.016	0.017
(x 1000)	[0.26]	[1.08]	[1.14]
Amount saved pcm	0.068	0.072	0.129
(x 1000)	[0.53]	[0.56]	[1.07]
In good health	−1.220	−1.220	−1.219
	[27.73]	[27.73]	[27.69]
Widowed	0.414	0.419	0.415
	[2.16]	[2.19]	[2.17]
Divorced/separated	0.299	0.299	0.290
	[2.03]	[2.03]	[1.97]
Unemployed	0.355	0.344	0.310
	[3.37]	[3.27]	[2.93]
Retired	0.205	0.196	0.177
	[2.03]	[1.94]	[1.75]
Inactive not like job	0.466	0.459	0.439
	[6.09]	[6.00]	[5.74]
Inactive like job	0.586	0.578	0.555
	[6.50]	[6.41]	[6.14]
Log likelihood	−8602.8	−8601.8	−8596.5
N observations		27170	
N individuals		2583	

Notes: Estimates from fixed effects (conditional) logit regressions with whether suffers a health problem related to anxiety or depression as the dependent variable. Absolute ratio of coefficient to standard error in brackets. Table presents estimates for variables of interest; full estimation results are presented in the Appendix. Reference categories are being in fair or poor health; single never married; in full-time employment.

In Table 54 we investigate whether the impact of financial incapability has a gender-specific impact on the probability of having a health problem related to anxiety or depression. The results suggest that they do. In particular, we find the impact of financial incapability to be larger among women than men – the coefficient for women is significantly larger on the financial incapability indices than it is for men. For example, in the models estimated for men, the estimated coefficient is 0.12, compared to 0.24 for women. These indicate moving from average levels of financial incapability to relatively high levels increases the probability of anxiety or depression by 17% for women and by 9% for men.

Table 54: Gender-specific fixed effects logit estimates from the anxiety or depression model

	Men	Women
Income-adjusted	0.120 *[2.27]*	0.236 *[6.55]*
Log likelihood	−2578.1	−5957.0
Income-unadjusted	0.124 *[2.35]*	0.240 *[6.66]*
Log likelihood	−2577.9	−5956.3
N financial problems	0.091 *[3.07]*	0.140 *[7.07]*
Log likelihood	−2576.0	−5953.5
N observations	8627	18543
N individuals	847	1736

Notes: Estimates from fixed effects (conditional) logit regressions with whether suffer a health problem related to anxiety or depression as the dependent variable. Absolute ratio of coefficient to standard error in brackets. Table presents estimates for variables of interest only.

10   Extensions to the analysis

Our estimates are consistent with financial capability being a good predictor of psychological wellbeing. As well as the standard models described previously, we have also estimated some variants that (i) allow for the effect on psychological wellbeing of financial incapability to be non-linear; and (ii) allow for the effect of financial incapability to vary according to a range of other observable characteristics. In these extensions we focus solely on our GHQ score measure of psychological wellbeing for simplicity and ease of interpretation, although we draw similar conclusions when using the life satisfaction and having a health problem related to anxiety or depression measures. Therefore there is no loss of generality.

Non-linear specifications
Table 55 below presents the estimates resulting from entering a quadratic and cubic index term into the models. We focus only on the coefficients on the index terms because those on other variables change only marginally in these specifications. We find that the coefficients on the quadratic and cubic variable are statistically significant in each specification, suggesting that the impact of financial incapability on GHQ scores is non-linear. In particular the coefficient on the income-adjusted index of financial incapability is 1.528, that on the quadratic term is −0.460 and that on the cubic term is 0.07. This suggests that although GHQ scores increase with financial incapability, they do so at a declining rate initially, before increasing again towards the tail of the distribution. The same pattern emerges with the income-unadjusted index.

Table 55: Non-linear effects of financial incapability on GHQ scores

	Index of financial incapability		N financial
	Income adjusted	Income unadjusted	Problems
Index	1.528	1.661	0.256
	[31.99]	[32.86]	[4.87]
Index squared	−0.460	−0.572	0.151
	[8.73]	[10.63]	[5.77]
Index cubed	0.074	0.097	−0.013
	[5.16]	[6.95]	[4.00]
R-squared	0.0523	0.0532	0.0555
N observations		114190	
N individuals		15974	

Notes: Estimates from within-group fixed effects regressions with GHQ score as the dependent variable. Absolute ratio of coefficient to standard error in brackets. Table presents coefficients on variables of interest.

Figure 21: Estimated effects of financial incapability on GHQ scores: BHPS 1991–2006
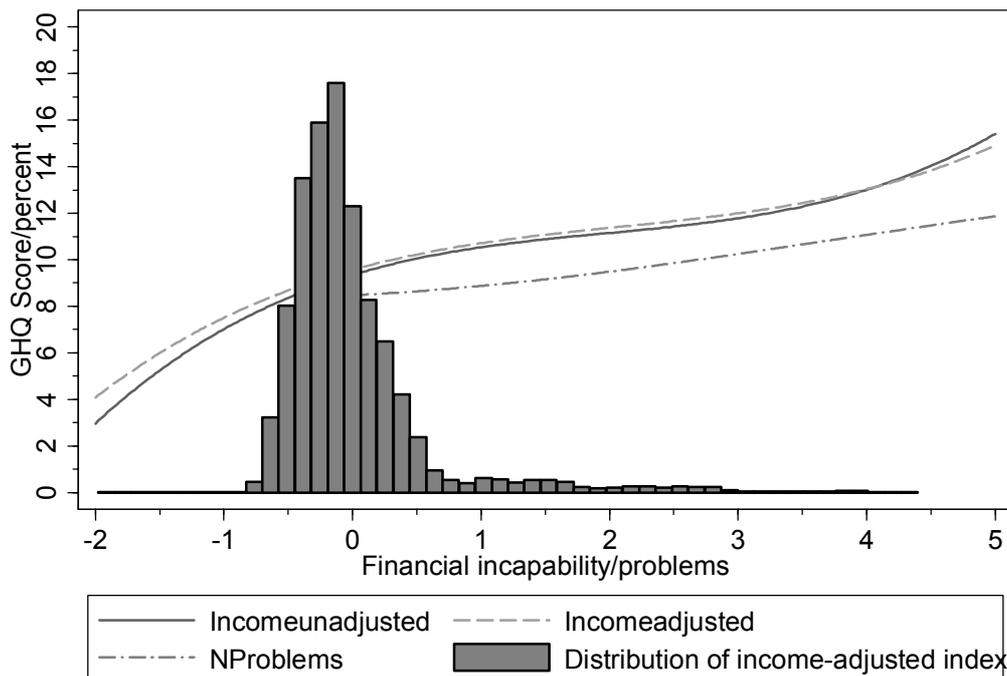
Source: BHPS 1991-2006

To highlight this relationship Figure 21 plots these estimates together with the underlying distribution of the income-adjusted index. The figure shows that the relationship between financial incapability and GHQ is stronger at the bottom and at the top of the financial incapability distribution. That is, the effect on GHQ scores of changes in financial incapability is larger at the bottom of the incapability distribution. The distribution of the income-adjusted index shows that for most people an increase in financial capability (a reduction in the index) will improve their psychological wellbeing (reduce their GHQ scores). However focusing on those with the highest levels of financial incapability may have less effect. For example,

GHQ scores could be reduced by 3 points by decreasing financial incapability from zero to –1, but only by 2 points by reducing it from four to zero. This may be related to the fact that those with very high levels of financial incapability are likely to face a mixture of financial, psychological and other problems in their lives, and so improving just their financial capability has little overall impact on their mental wellbeing. This figure also shows that the impact of the number of financial problems on GHQ scores is almost linear – each additional financial problem suffered increases mental stress levels by a similar amount across the distribution.

Including interaction terms
We have also investigated the extent to which the impact of financial incapability varies by other characteristics of individuals, through introducing interaction terms into the specifications. Table 56 presents the results on the key coefficients of interest. We have focused on key factors that are known to affect their psychological wellbeing such as physical health, widowhood, divorce, unemployment and retirement.

Table 56: Within-group fixed effects estimates from the GHQ model: The impact of interaction terms

	Index of financial incapability				N financial Problems	
	Income adjusted		Income unadjusted			
Index	1.238	[23.67]	1.234	[24.00]	0.763	[27.85]
In good health	–1.722	[46.31]	–1.718	[46.17]	–1.440	[29.68]
Widowed	1.744	[10.24]	1.756	[10.32]	1.610	[8.49]
Divorced/separated	0.824	[6.44]	0.812	[6.33]	0.317	[2.23]
Unemployed	1.056	[11.75]	0.952	[10.57]	0.219	[1.65]
Retired	–0.406	[4.95]	–0.443	[5.45]	–0.091	[0.93]
Inactive not like job	0.391	[6.37]	0.341	[5.53]	0.266	[3.40]
Inactive like job	0.784	[9.46]	0.718	[8.49]	0.422	[3.68]
Interactions:						
Index*						
In good health	–0.314	[6.10]	–0.309	[6.15]	–0.239	[9.01]
Widowed	0.239	[1.59]	0.221	[1.49]	0.086	[1.23]
Divorced/separated	0.465	[5.83]	0.508	[6.51]	0.375	[8.87]
Unemployed	0.417	[4.47]	0.408	[4.46]	0.368	[7.08]
Retired	–0.379	[3.40]	–0.334	[3.01]	–0.371	[7.58]
Inactive not like job	–0.094	[1.32]	–0.051	[0.72]	–0.010	[0.27]
Inactive like job	–0.028	[0.32]	0.006	[0.07]	0.105	[2.15]
Constant	9.224	[6.11]	9.047	[6.00]	8.078	[5.37]
R-squared	0.0521		0.0527		0.0578	
N observations			114190			
N individuals			15974			

Notes: Estimates from within-group fixed effects regressions with GHQ score as the dependent variable. Absolute ratio of coefficient to standard error in brackets. Table presents estimates for variables of interest only. Reference categories and in fair or poor health, single never married, in full-time employment.

The estimated coefficients on the financial incapability indices show that mental stress increases significantly with financial incapability, consistent with our earlier estimates. However the average sizes of these effects are larger (compared with those presented in Table 49). The estimates suggest that a standard deviation increase in the income-adjusted index of financial incapability (moving from average levels to relatively high levels) increases mental stress levels by about 0.7 GHQ points (or 6.3% at the sample means). However, several of the interaction terms also have statistically significant effects on GHQ scores. For example, being in good health reduces the impact of financial incapability, the coefficient on the financial incapability and good health interaction term is negative and statistically significant. This indicates that the impact of financial incapability on GHQ scores is lower for individuals who are in good health. The estimates from the income-adjusted index indicate that a one standard deviation increase in financial incapability (again in this case equivalent to moving from the 50th to the 90th percentile in the financial incapability distribution – from average levels to relatively high levels) for someone who is in good health increases their GHQ scores by 0.53 points (or 4.8%) relative to an otherwise identical person who was in good health but whose financial incapability level did not change. The interaction term on retirement has a similar effect – being retired reduces the psychologically damaging impacts of financial incapability.

Unemployment and being divorced increase the effect of financial incapability, the coefficients on the financial incapability and divorce and on the financial incapability and unemployed interaction terms are positive and statistically significant. This indicates that the impact of financial incapability on GHQ scores is greater for individuals who are divorced or separated or in unemployment. The estimates from the income-adjusted index indicate that a one standard deviation increase in financial incapability for someone who is divorced or separated or unemployed increases their GHQ scores by about 0.98 points (or 8.8%) relative to an otherwise identical person who was divorced or unemployed but whose financial incapability level did not change. This pattern emerges when using the income-unadjusted index of financial incapability. Therefore financial incapability compounds the already psychologically harmful effects of job loss or marital dissolution, while being in good health or retired reduces the psychologically damaging impacts of financial incapability.

The results when using the number of financial problems follow similar patterns. The coefficients from this model indicate that increasing the number of financial problems that an individual suffers by one results in increasing that individual's GHQ score by 0.76 points. This increase is larger if that individual is also divorced or unemployed, to the extent that one additional financial problem in these circumstances raises GHQ scores by 1.1 points (or 10% at the sample means). Being in good health and retirement reduces the effect of financial incapability on mental stress.

9 Summary and conclusions

The aim of this project is to investigate the relationships between financial capability and psychological wellbeing in Britain, and in particular to establish whether low psychological wellbeing is predicted by low financial capability, all else equal. This hypothesised link between a low level of financial capability and poor psychological wellbeing is the central issue.

We create an index of financial incapability, which we adjust for income, using variables measuring perceived current financial situation; reporting that the situation worsened since last year; whether respondent saves; whether household has housing payment problems; whether such problems have required borrowing; whether they have required cutbacks; and whether the household has been two or more months in housing arrears in the previous 12 months. As an alternative, and as part of the validity checking process, we have constructed a simpler measure that counts the number of financial problems each individual is facing.

People with the highest financial incapability tend to be young (aged less than 35), divorced or separated, have more than one or two dependent children, are single non-elderly, lone parents, in fair or poor health, live in rented accommodation and are unemployed or economically inactive but would like a job. In contrast people with the lowest levels of financial incapability are on average older (aged 55 or above), married or widowed with no dependent children, in good health, home owners and working in a full-time permanent job. These findings are consistent with those from the Financial Services Authority's Baseline Survey. Taking advantage of the panel nature of the data reveals that getting married, improvements in health, becoming a home owner and entering work are associated with increasing financial capability, while death of a spouse, marital dissolution, an additional child, deterioration in health and unemployment are associated with falls in financial capability. Furthermore, and most importantly within the context of this report, higher financial incapability is associated with higher mental stress, lower reported life satisfaction, and health problems associated with anxiety or depression.

Estimates from panel data models indicate that, even controlling for a range of observable individual and household characteristics, and time-invariant unobserved effects, people's psychological wellbeing is strongly related to their financial capability. This is consistent with financial capability being a good predictor of psychological wellbeing. For example, moving an individual from very high relative levels of financial incapability to average levels reduces their GHQ score by about 0.65 GHQ points (or almost 6%), increases their reported life satisfaction by 0.12 (or 2.4%), and reduces the probability of an individual suffering a health problem related to anxiety or depression by 15%. The relationship between financial incapability and psychological wellbeing varies over the distribution, and in particular is strongest at the bottom of the financial incapability distribution. This implies that increasing financial capability will improve the psychological wellbeing of most people but may have less effect among those with the highest levels of financial incapability. The impact of financial capability on psychological wellbeing differs across different population groups. For example, being in good health or

being retired reduces the impact of financial incapability on psychological wellbeing, while unemployment and being divorced increase the effect of financial incapability on wellbeing.

The results from our analysis lead us to conclude that financial capability has a relative large and statistically significant impact on psychological wellbeing. This would indeed suggest that improving people's financial management skills would have substantial effects on stress-related illnesses and outcomes associated with such problems. The FSA is committed to identifying and promoting financial capability programmes which create confident, capable consumers, and doing so in ways that people will most understand, in places most useful to them. The indication from this research that financial capability has a relatively large and statistically significant impact on psychological wellbeing will be valuable in the formation and implementation of the FSA's financial capability policy. The findings will contribute to the targeting of financial capability policy, to the formation of effective relationships with stakeholders and trusted intermediaries and to the successful measurement and evaluation of the FSA's work. Improving the engagement and effectiveness of financial capability is important at any time, but it is particularly crucial in the current economic downturn, when an increasing number of the population are experiencing anxiety and stress about managing their finances.

However, a number of further questions emerge from these analyses. The first is the extent to which financial capability is related to favourable economic circumstances or to financial management skills. We have modelled psychological wellbeing as a function of financial capability (and found a relationship), but have not modelled the determinants of financial capability itself (although we have discussed bivariate relationships with other observable characteristics and found strong associations). Our results suggest that a person's financial capability varies considerably between one year and the next, and this also has implications. If, for example, financial capability at the individual level is highly variable from one year to the next in an unpredictable way, then this makes it harder to design policies to improve it.

The second is the complex relationship between an individual's income, their financial management skills and their savings behaviour. For example, higher income does not necessarily reflect higher financial capability (and our analysis indicates this relationship is not linear) as it implies larger financial responsibilities. This is partly reflected in the relationship between savings behaviour and financial capability – the incidence of saving is a more important indicator of financial capability than the amount saved. Our analysis touches on this, but it deserves further attention.

Finally, and crucially for our results, is the extent to which people experience shocks or events that we do not observe that might affect both their financial capability and psychological wellbeing. Our estimation procedure allows for time invariant unobserved or unobservable characteristics of individuals, such as personality traits, which may affect both financial capability and psychological wellbeing. However, if there are particular events that people experience, but that we are unable to capture in our data, that reduce their financial capability levels and also reduce their psychological wellbeing, then these may confound the effects we found using statistical models.

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11. Appendix

Sample sizes by wave and gender: BHPS 1991–2006

Year	Men	Women	Total
1991	3938	4599	8537
1992	3758	4450	8208
1993	3623	4228	7851
1994	3684	4326	8010
1995	3529	4153	7682
1996	3734	4373	8107
1997	3816	4390	8206
1998	3698	4355	8053
1999	3686	4324	8010
2000	3597	4308	7905
2001	3585	4183	7768
2002	3480	4063	7543
2003	3429	4063	7492
2004	3335	3911	7246
2005	3262	3889	7151
2006	3291	3880	7171
Total	57445	67495	124940

Notes: Unweighted sample sizes for adults with non-missing information on relevant variables at each wave. Total row sums all waves. BHPS 1991–2006.

Full estimates from the GHQ model

	Index of financial incapability				N financial Problems	
	Income adjusted		Income unadjusted			
Index	1.074	[38.62]	1.092	[39.30]	0.637	[43.53]
Age	0.073	[1.73]	0.076	[1.81]	0.073	[1.74]
Age squared/100	−0.017	[1.45]	−0.019	[1.63]	−0.012	[1.04]
In good health	−1.729	[46.53]	−1.729	[46.52]	−1.723	[46.44]
Expect improvement	−0.201	[5.76]	−0.206	[5.91]	−0.232	[6.66]
Expect worsen	0.488	[10.71]	0.484	[10.62]	0.429	[9.42]
Real equiv. hh income	−0.034	[3.16]	0.015	[1.24]	0.015	[1.43]
Amount saved pcm	0.036	[0.45]	0.043	[0.53]	0.288	[3.58]
Marital status						
Married	0.520	[4.54]	0.532	[4.64]	0.507	[4.44]
Cohabiting	0.282	[2.63]	0.291	[2.71]	0.265	[2.48]
Widowed	1.775	[10.43]	1.807	[10.62]	1.767	[10.40]
Divorced/separated	0.920	[7.24]	0.930	[7.32]	0.897	[7.07]
Number of children						
One child	0.035	[0.43]	0.019	[0.23]	0.004	[0.05]
Two children	−0.012	[0.13]	−0.046	[0.52]	−0.055	[0.62]
Three children	0.007	[0.06]	−0.041	[0.35]	−0.039	[0.33]
Four or more children	0.056	[0.27]	−0.004	[0.02]	−0.020	[0.10]
Household type						
Single elderly	−0.536	[3.63]	−0.525	[3.56]	−0.516	[3.50]
Couple no children	−0.438	[3.75]	−0.400	[3.43]	−0.379	[1.38]
Couple dep child	−0.235	[2.00]	−0.204	[1.73]	−0.173	[1.47]
Couple non-dep child	−0.041	[0.38]	0.003	[0.03]	0.014	[0.13]
Lone parent	0.202	[1.92]	0.203	[1.93]	0.223	[2.13]
2+ unrelated adults	−0.115	[0.78]	−0.100	[0.67]	−0.084	[0.58]
Other household type	−0.261	[1.55]	−0.226	[1.35]	−0.187	[1.12]
Highest qualification						
Higher degree	0.394	[1.36]	0.418	[1.44]	0.398	[1.38]
First degree	0.436	[2.26]	0.450	[2.33]	0.423	[2.20]
Other higher qual.	0.005	[0.03]	0.004	[0.03]	0.003	[0.02]
A-Levels or equiv	0.018	[0.11]	0.006	[0.04]	−0.010	[0.06]
GCSE or equivalent	0.112	[0.72]	0.116	[0.75]	0.136	[0.87]
Other qualification	0.235	[1.15]	0.234	[1.15]	0.222	[1.09]
Housing tenure						
Own outright	−0.126	[2.06]	−0.139	[2.28]	−0.153	[2.51]
Local authority tenant	−0.128	[1.53]	−0.153	[1.83]	−0.145	[1.74]
Private tenant	−0.088	[1.16]	−0.112	[1.47]	−0.116	[1.52]
House value/£100000	−0.034	[3.16]	−0.035	[2.02]	−0.039	[2.30]
Labour market status						
Part-time employee	−0.011	[0.18]	−0.041	[0.67]	−0.064	[1.05]
Self-employed	−0.022	[0.27]	−0.064	[0.78]	−0.086	[1.05]
Unemployed	1.187	[13.98]	1.114	[13.11]	0.955	[11.21]
Retired	−0.374	[4.61]	−0.441	[5.42]	−0.528	[6.50]
Inactive not like job	0.383	[6.26]	0.332	[5.41]	0.250	[4.08]
Inactive like job	0.783	[9.64]	0.723	[8.90]	0.615	[7.57]
Seasonal/casual job	−0.206	[2.54]	−0.209	[2.59]	−0.217	[2.69]
Fixed term contract	−0.429	[4.41]	−0.425	[4.37]	−0.426	[4.39]
Constant	9.243	[6.12]	9.062	[6.00]	8.434	[5.60]

Notes: Estimates from within-group fixed effects regressions with GHQ score as the dependent variable. Models also include region and time dummies to capture macro-economic effects. Absolute ratio of coefficient to standard error in brackets.

Full estimates from the life satisfaction model

	Index of financial incapability				N financial Problems	
	Income adjusted		Income unadjusted			
Index	−0.226	[26.91]	−0.231	[27.43]	−0.122	[28.14]
Age	−0.005	[0.41]	−0.006	[0.48]	−0.006	[0.47]
Age squared/100	−0.013	[3.34]	−0.012	[3.25]	−0.013	[3.43]
In good health	0.281	[27.28]	0.281	[27.28]	0.281	[27.26]
Expect improvement	0.025	[2.56]	0.026	[2.71]	0.029	[3.05]
Expect worsen	−0.039	[2.94]	−0.038	[2.86]	−0.032	[2.37]
Real equiv. hh income	0.012	[4.18]	0.003	[0.97]	0.003	[1.04]
Amount saved pcm	0.025	[1.18]	0.023	[1.09]	−0.015	[0.68]
Marital status						
Married	−0.006	[0.19]	−0.008	[0.24]	−0.006	[0.17]
Cohabiting	0.019	[0.62]	0.018	[0.58]	0.020	[0.65]
Widowed	−0.230	[4.60]	−0.239	[4.77]	−0.233	[4.65]
Divorced/separated	−0.177	[4.82]	−0.179	[4.87]	−0.175	[4.75]
Number of children						
One child	0.003	[0.12]	0.006	[0.27]	0.007	[0.30]
Two children	−0.019	[0.71]	−0.011	[0.40]	−0.011	[0.44]
Three children	−0.016	[0.45]	−0.005	[0.14]	−0.006	[0.16]
Four or more children	−0.113	[1.80]	−0.100	[1.60]	−0.100	[1.60]
Household type						
Single elderly	0.036	[0.82]	0.035	[0.78]	0.035	[0.80]
Couple no children	0.090	[2.68]	0.080	[2.39]	0.079	[2.36]
Couple dep child	−0.003	[0.07]	−0.010	[0.30]	−0.012	[0.36]
Couple non-dep child	−0.041	[1.30]	−0.051	[1.64]	−0.051	[1.64]
Lone parent	−0.135	[4.44]	−0.135	[4.46]	−0.137	[4.52]
2+ unrelated adults	−0.058	[1.34]	−0.061	[1.43]	−0.065	[1.53]
Other household type	−0.003	[0.07]	−0.012	[0.26]	−0.016	[0.33]
Highest qualification						
Higher degree	−0.022	[0.24]	−0.030	[0.33]	−0.028	[0.32]
First degree	−0.014	[0.24]	−0.017	[0.30]	−0.014	[0.24]
Other higher qual.	0.089	[1.97]	0.090	[1.97]	0.088	[1.93]
A-Levels or equiv	0.090	[1.85]	0.093	[1.92]	0.094	[1.93]
GCSE or equivalent	0.039	[0.82]	0.038	[0.79]	0.033	[0.69]
Other qualification	0.016	[0.26]	0.017	[0.27]	0.016	[0.26]
Housing tenure						
Own outright	0.049	[2.82]	0.051	[2.97]	0.054	[3.15]
Local authority tenant	0.035	[1.38]	0.040	[1.60]	0.036	[1.42]
Private tenant	0.013	[0.57]	0.018	[0.83]	0.016	[0.70]
House value/£100000	0.004	[1.02]	0.004	[1.05]	0.005	[1.18]
Labour market status						
Part-time employee	0.035	[2.01]	0.041	[2.41]	0.043	[2.53]
Self-employed	0.034	[1.43]	0.044	[1.88]	0.046	[1.98]
Unemployed	−0.231	[8.88]	−0.214	[8.21]	−0.191	[7.32]
Retired	0.157	[6.65]	0.173	[7.30]	0.185	[7.82]
Inactive not like job	0.008	[0.46]	0.020	[1.12]	0.031	[1.78]
Inactive like job	−0.104	[4.27]	−0.090	[3.71]	−0.075	[3.07]
Seasonal/casual job	−0.015	[0.64]	−0.014	[0.60]	−0.013	[0.55]
Fixed term contract	0.027	[0.97]	0.027	[0.96]	0.028	[0.99]
Constant	5.376	[9.26]	5.420	[9.34]	5.569	[9.60]

Notes: Estimates from within-group fixed effects regressions with life satisfaction score as the dependent variable. All models also include region and time dummies to capture macro-economic effects. Absolute ratio of coefficient to standard error in brackets.

Full estimates from the anxiety or depression model

	Index of financial incapability				N financial Problems	
	Income adjusted		Income unadjusted			
Index	0.196	[6.67]	0.200	[6.81]	0.123	[7.54]
Age	0.235	[4.47]	0.235	[4.47]	0.235	[4.47]
Age squared/100	−0.115	[7.76]	−0.115	[7.77]	−0.114	[7.68]
In good health	−1.220	[27.73]	−1.220	[27.73]	−1.219	[27.69]
Expect improvement	0.039	[0.82]	0.038	[0.81]	0.030	[0.63]
Expect worsen	0.076	[1.37]	0.075	[1.36]	0.056	[1.01]
Real equiv. hh income	0.004	[0.26]	0.016	[1.08]	0.017	[1.14]
Amount saved pcm	0.069	[0.53]	0.072	[0.56]	0.129	[1.07]
Marital status						
Married	0.152	[0.94]	0.150	[0.93]	0.147	[0.91]
Cohabiting	0.425	[2.82]	0.424	[2.82]	0.419	[2.79]
Widowed	0.414	[2.16]	0.419	[2.19]	0.415	[2.17]
Divorced/separated	0.299	[2.03]	0.299	[2.03]	0.290	[1.97]
Number of children						
One child	0.156	[1.49]	0.155	[1.48]	0.153	[1.46]
Two children	0.044	[0.38]	0.041	[0.35]	0.041	[0.35]
Three children	0.165	[1.07]	0.159	[1.03]	0.162	[1.05]
Four or more children	0.087	[0.35]	0.082	[0.33]	0.083	[0.33]
Household type						
Single elderly	−0.210	[1.35]	−0.209	[1.34]	−0.213	[1.37]
Couple no children	−0.490	[3.30]	−0.482	[3.24]	−0.482	[3.25]
Couple dep child	−0.590	[3.73]	−0.582	[3.68]	−0.583	[3.69]
Couple non-dep child	−0.412	[2.85]	−0.401	[2.78]	−0.407	[2.82]
Lone parent	−0.158	[1.27]	−0.157	[1.26]	−0.160	[1.29]
2+ unrelated adults	−0.063	[0.30]	−0.057	[0.27]	−0.056	[0.27]
Other household type	−0.490	[2.30]	−0.484	[2.27]	−0.481	[2.25]
Highest qualification						
Higher degree	−0.286	[0.66]	−0.282	[0.65]	−0.291	[0.67]
First degree	−0.072	[0.26]	−0.069	[0.25]	−0.069	[0.25]
Other higher qual.	−0.112	[0.56]	−0.113	[0.57]	−0.109	[0.55]
A-Levels or equiv	0.015	[0.06]	−0.012	[0.06]	0.015	[0.07]
GCSE or equivalent	−0.124	[0.57]	−0.124	[0.57]	−0.119	[0.55]
Other qualification	0.160	[0.59]	0.160	[0.59]	0.154	[0.57]
Housing tenure						
Own outright	0.001	[0.01]	−0.001	[0.01]	−0.005	[0.06]
Local authority tenant	0.144	[1.41]	0.141	[1.38]	0.140	[1.37]
Private tenant	−0.025	[0.25]	−0.028	[0.28]	−0.030	[0.30]
House value/£100000	−0.022	[0.70]	−0.022	[0.71]	−0.023	[0.75]
Labour market status						
Part-time employee	0.205	[2.61]	0.201	[2.55]	0.196	[2.48]
Self-employed	−0.013	[0.11]	−0.018	[0.15]	−0.024	[0.20]
Unemployed	0.355	[3.37]	0.344	[3.27]	0.309	[2.93]
Retired	0.205	[2.03]	0.196	[1.94]	0.177	[1.75]
Inactive not like job	0.466	[6.09]	0.459	[6.00]	0.439	[5.74]
Inactive like job	0.586	[6.50]	0.578	[6.41]	0.555	[6.14]
Seasonal/casual job	−0.030	[0.27]	−0.032	[0.28]	−0.037	[0.32]
Fixed term contract	−0.231	[1.63]	−0.231	[1.63]	−0.229	[1.61]

Notes: Estimates from fixed effects (conditional) logit regressions with whether suffers a health problem related to anxiety or depression as the dependent variable. All models also include region and time dummies to capture macro-economic effects. Absolute ratio of coefficient to standard error in brackets.