Expenditures and financial well-being*

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This version: March 2016

ABSTRACT

We provide evidence that the most frequent reason for a deterioration in households' financial situation is higher expenditures. We show that these expenditure increases are persistent and linked to: (i) fluctuations in the prices of goods that make a large proportion of households' budget: food, energy, mortgage payments; (ii) life events: birth of the first child, divorce, health changes; (iii) emotions: feeling depressed, inability to face problems; and (iv) behaviors: saving, use of expensive debt. A worse financial situation reduces psychological well being, which in turn increases the probability of a further deterioration in the finances. Good financial management can reduce the probability of this happening. Our results highlight the importance of expenditures as a source of background risk and of expenditure management in financial education.

JEL classification: G21, E21.

Keywords: Financial situation, expenditures, psychological well-being, background risk, financial education.

*We would like to thank John Y. Campbell, Adair Morse, Arthur van Soest and seminar participants at BI Oslo, Copenhagen Business School, HEC Montreal, University of Lausanne, University of Southern Denmark, and the Netspar International Pension Workshop for comments.

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1 Introduction

When deciding how much to consume and save individuals take into account their financial situation. The study of the factors that affect it is therefore important for understanding consumption and savings behavior. In addition it has implications for portfolio choice and asset prices as emphasized in the background risk literature (see for instance the early contributions of Kimball (1990), Gollier and Pratt (1996), Guiso, Jappelli, and Terlizzese (1996) and Heaton and Lucas (1996)).[1]

The measurement of the risks associated with a household's financial situation is not an easy task. One possible approach is to first calculate net worth as the difference between assets and liabilities, and then evaluate changes in net worth and the factors that lead to such changes over time (Guiso, Haliassos, and Jappelli (2002)). An alternative approach is to measure flow variables directly, such as earnings, and how they change from year to year. This is the approach taken by a large literature that estimates the level and risk characteristics of earnings processes (Low, Meghir, Pistaferri (2010), and Guvenen, Ozkan, and Song (2014) are recent examples). Both of these approaches have generated important insights. However, they contain limited information on the extent to which households have found it difficult to meet some of their expenditures, whether they had to cutback on other consumption in order to do so, and their expectations of their future financial situation.

In this paper we use almost two decades of U.K. household panel data to study the determinants of changes in financial situation. In each year individuals in the survey are asked whether their financial situation is significantly better, worse, or about the same than it was a year ago. For those who report being better off or worse off, the interviewer asks individuals to report on the main reason for the change. One important advantage of using a survey question is that the data measures the changes as perceived by the households themselves, based on all information available to them, and on which their consumption and portfolio decisions are based.

Interestingly, we find that the main reason why individuals report being significantly worse off financially is higher expenditures. The proportion of individuals who report being worse off due to higher expenditures is twice as high as the proportion of individuals who report being worse off due to lower earnings (0.52 compared to 0.24, respectively). In contrast, and as expected, the main reason why individuals report being better off financially is higher earnings. Furthermore we document that expenditure risks are as persistent as earnings risks. About one third of those individuals who report being currently better off

[1] See also Heaton and Lucas (2000) for a survey of some of the papers in this literature or Gollier (2001) for a textbook treatment.

(worse off) due to an increase in earnings (expenditures), also report being better off (worse off) for the same reason the following year. In other words, increases in both earnings and expenditures have similar persistence in growth rates. If instead we consider persistence in levels, namely how long does it take for these individuals to report that the initial increase has reversed itself, we actually find slightly higher persistence for expenditures. Thus, in the data the risk of higher expenditures seems to be of first order importance for the majority of households and an important source of background risk.[2]

With this observation in mind, we use the richness of our data to study the sources of expenditure risk. A complex picture emerges, with cost of living measures, life events, emotions, and behaviors all contributing to a higher probability that individuals become worse off financially due to higher expenditures. First, we show that households who spend a larger fraction of their income on energy or food are more likely to report that they are worse off due to higher expenditures in those years with higher energy or food price inflation. Increases in the ratio of mortgage expenses to income are also a contributing factor. These results highlight the importance of the cross-sectional dispersion in consumption baskets.[3] Second, we find that individuals who have recently divorced or separated and individuals who have recently had their first child are more likely to become financially worse off as a result of higher expenditures. Third, individual psychological characteristics matter: those who report having difficulty facing problems are significantly more likely to end up in a worse financial situation due to higher expenditures. Finally, those who do not save regularly and make use of credit card debt are also more likely to find themselves in such situation.

Importantly, we find evidence of a strong link between changes in financial circumstances and psychological well-being. Individuals who are worse off due to higher expenditures have significantly higher probabilities of feeling depressed and of losing sleep due to worry. This increase is estimated after controlling for the direct impact on well-being of the other previously documented factors that led to the expenditure increase, such as the fact that the individual has recently become divorced or separated.

Our data includes responses to a question in which individuals are asked to look ahead and to report on the *expected* changes to their financial situation. More precisely, they are asked whether they expect to be significantly better off, worse off, or about the same in a one year time. We use the information contained in this question to distinguish between

[2]In a recent paper Fagereng, Guiso and Pistaferri (2015) use an instrumental variables approach to estimate the size of background risk arising from human capital to be a small value. Our results point to the importance of expenditures as an alternative source of background risk.

[3]Given this heterogeneity, even if wages were to go up with inflation every year, unless inflation was the same across all goods there would still be households that would find themselves worse off in any given year.

expected and unexpected changes in financial situation, and to study how they affect future expectations and psychological well-being. We find that individuals view expected changes as being more persistent than unexpected changes, and that the impact of expected and unexpected changes on well-being is comparable. In other words, the shock of an unexpected change appears to be counter-balanced by the fact that households expect such changes to be less persistent.

In the final part of our paper we ask what can individuals do to mitigate the risk that they become financially worse off due to higher expenditures. We find evidence that a measure of self-assessed good financial management reduces such risk. Lusardi and Mitchell (2007) and van Rooij, Lusardi and Alessie (2012) investigate the role of financial planning education for optimal retirement savings decisions. Our results emphasize instead the importance of teaching individuals about expenditure management, which so far has received limited attention in the financial literacy literature (Lusardi and Mitchell (2014) provide an excellent survey of this literature).

In addition to the previously cited literatures on background risk and financial literacy, our paper is related to several others. The models of Hubbard, Skinner and Zeldes (1995), Palumbo (1999), De Nardi, French and Jones (2010) and Yogo (2013) focus on the risks that individuals face from changes in health status and uncertain medical expenditures that they must meet, and we borrow their framework to guide us in the empirical analysis. However, our analysis shows that there are several important sources of expenditure risk beyond the medical expenditures considered in their papers, making it quantitatively important for a large cross-section of individuals. Some of our results are also related to the behavioral economics literature, and in particular to the hyperbolic discounting model of Laibson (1997). We show that individuals who have more difficulties facing problems and who make use of expensive credit card debt are more likely to become financially worse off due to higher expenditures.

Our paper is also related to Taylor, Jenkins and Sacker (2011) who document a link between financial capability and psychological well-being, and Bridges and Disney (2010) who focus on the relation between financial indebtedness and depression. Praag, Frijters and Ferrer-i-Carbonell (2003) relate different aspects of life, including financial situation, to subjective well-being. Brown and Taylor (2014) analyse the relationship between financial decision-making (unsecured debt and financial assets) and the 'big five' personality traits, while Xu, Briley, Roberts and Brown (2016) investigate the relative importance of genetic and environmental factors for this relationship.

The paper is organized as follows. Section 2 provides a simple framework to guide our

empirical analysis. It also includes a description of the data and summary statistics. Section 3 uses regression analysis to study the determinants of individuals becoming worse off due to higher expenditures. In section 4 we relate the changes in financial situation and other events to psychological well-being. In section 5 we use individual expectations of their future financial situation to distinguish between expected and unexpected changes. Section 6 studies the role of financial management. The final section concludes.

2 Economic Framework and Data

2.1 A simple framework

We provide a simple framework to guide and interpret the empirical analysis. Consider an individual i who chooses date t real consumption c_{it} so as to maximize the present discounted value of his/her utility. Assuming a within period preference specification similar to Palumbo (1999) and De Nardi, French, and Jones (2010), where h_{it} denotes period t health status (that can either be good, $h_{it} = 1$, or bad, $h_{it} = 0$), the individual solves:[4]

$$V(Z_{it}) = \underset{\{c_{it}\}}{MAX} \left\{ (1 + \delta_i h_{it}) \frac{c_{it}^{1-\gamma_i}}{1-\gamma_i} + E_{it} \beta_i V(Z_{i,t+1}) \right\} \tag{1}$$

where V denotes the value function, Z denotes the vector of state variables of the problem, γ is the coefficient of relative risk aversion, δ is a preference parameter that determines the impact of health status on utility, and β is the discount factor. We will consider a broad definition of health status that takes into account both physical and psychological health.

The equation describing the evolution of *nominal* cash-on-hand (X) is:

$$X_{i,t+1} = (X_{it} - p_{it} c_{it})(1 + R_{i,t+1}) + B_{i,t+1} - M_{i,t+1} + Y_{i,t+1}, \tag{2}$$

where p_{it} is the date t price of the consumption basket of individual i, $R_{i,t+1}$ is the return on his/her portfolio of assets, and $B_{i,t+1}$ denotes government transfers and other benefits. $M_{i,t+1}$ captures other expenditures that the individual must meet, such as out-of-pocket medical expenditures, car repairs, mortgage payments, among others. This is similar to the approaches of De Nardi, French and Jones (2010) for medical expenditures and Fratantoni (2001) for mortgage payments. However, we would like to emphasize that we think of them as including not only these two sources of expenditure risk, but also others such as those arising from divorce, children, among others. Finally $Y_{i,t+1}$ denotes income.

[4] Yogo (2013) considers a more general specification in a model where health status is endogenous.

In the previous equation all variables except consumption are written in nominal terms. One can also write the real counterpart of that equation as:

$$x_{i,t+1} = (x_{it} - \frac{p_{it}}{p_t} c_{it})(1 + r_{i,t+1}) + b_{i,t+1} - m_{i,t+1} + y_{i,t+1}, \tag{3}$$

where lower case letters denote the real counterpart of the nominal variables, and p_t denotes the date t price level.

The above equation is useful because it allows us to think of the different channels through which households can be made better or worse off. In addition to lower investment returns ($r_{i,t+1}$), an important channel that has been the focus of the literature on background risk is *real* earnings ($y_{i,t+1}$). But households can also be worse off (lower cash-on-hand) because of lower net government transfers (net of taxes, $b_{i,t+1}$), higher real expenditures (m_{it}), or because of a higher price for the goods that form his/her consumption basket (p_{it}). When this consumption basket is similar to the consumption basket that is used to compute the price level p_t equals p_{it} and the two cancel out. When that is not the case, the evolution of the individual's financial situation will depend on the evolution of the prices of the goods that make a larger part of their expenditures.

Individuals may also choose a too high level of consumption (c_{it}) because of poor financial planning (e.g. Lusardi and Mitchell (2007) or van Rooij, Lusardi and Alessie (2012)), leaving them with too little savings going forward and in a worse financial situation. Alternatively individuals may lack self-control (as in Harris and Laibson (2001), Laibson, Repetto and Tobacman (1998) or Laibson (1997)), which leads them to spend more than they can afford and to make use of expensive credit card debt or payday loans (Melzer (2011), Morse (2011), Bhutta, Skiba and Tobacman,(2015)).

Our data allows us to quantify the importance of the different channels through which individuals can be better or worse off financially (earnings, investment income, benefits, expenditures). But the primary focus of our study are the different channels through which individuals can be worse off due to higher expenditures (cost of living, life events, emotions, and behaviors). This choice is motivated by two observations. First, most of the existing literature has thus far explored mainly the other channels, and second higher expenditures is the main reason why households report being financial worse off in our sample.

Finally our data also allows us to study the impact of a change in financial situation on psychological well-being. In terms of the above equations, a drop in earnings or an increase in expenditures will lead to lower cash-on-hand and these events may also affect utility through the term h_{it}, if the worse financial situation makes individuals depressed. De Nardi, French, and Jones (2010) estimate δ equal to -0.36, so that the health preference parameter shifter

implies a higher marginal utility of consumption when health status is bad. Note that, ceteris paribus, this implies that individuals will increase their consumption when depressed, which in turn may lead to a further deterioration in their financial situation.[5]

2.2 Data sources

Our main data source is the British Household Panel Survey (BHPS), which is a representative panel of U.K. households. The sample starts in 1991 and there is annual data available until (and including) 2008. After 2008 the BHPS became part of a new survey entitled Understanding Society, but at this time several of the questions that are crucial for our study were dropped from the survey, so that we focus on the data contained in waves 1 through 18. The nature of the data, both in terms of the data collection process and the information available, is similar to that in the U.S. Panel Study of Income Dynamics (PSID).

Each year individuals are asked a wide range of questions about their circumstances including income, financial situation, demographic variables, expenditures, psychological well-being, among others. The first wave contains information for around 5,500 households. In subsequent years more households were added to the survey bringing the total number to around 9,000. Not all households appear in each of the eighteen waves, so that we use an unbalanced panel. Furthermore, similar to the PSID, the data lacks detailed yearly information on household wealth. However, it is fairly rich in terms of income, both labor and asset income (interest, dividends, etc.), housing, mortgage debt, and other information. The retail price indices data that we use are from the U.K. Office of National Statistics.

2.3 Changes in financial situation

In the survey individuals are asked about changes in their financial situation. More precisely, in each year they are asked whether they are significantly better off, about the same, or significantly worse off financially than they were a year ago. In Panel A of Table I we report the number and the proportion of responses for each category, for all years in the sample. Thus the unit of observation is household/year (we use the responses of the household head). Roughly half of the responses are for about the same, and the remainder are equally split

[5]One potentially important aspect of individuals' financial situation that is not directly reflected in the equations above are changes in the value of housing. However, changes in housing value does not appear as one of the categories in the survey. There is a residual category of other reasons, but it is not quantitatively very important. One possible explanation is that individuals do not think of fluctuations in the value of their house as making them financially better or worse off since they must live in the house, so that they are implicitly hedged against fluctuations in its value (Sinai and Souleles (2005)).

between better off and worse off. Although not immediately visible in Panel A of Table I there is considerable individual time-series variation in the data.

[Table I here]

To show this variation in Panel B we report the probability of year t responses conditional on year $t-1$ responses by the same individual. Out of those who reported being better off in year $t-1$ than in year $t-2$ (first row of Panel B), 44% reported being better off at t than at $t-1$, 39% reported being about the same, and the remainder 17% reported being worse off. In Panel B of Table I the main diagonal always has the highest value, so that in the data there is persistence in *changes* in financial situation, with some households benefiting from consecutive years of improvement, and others facing consecutive years of deterioration in their finances. In addition to this persistence, the probabilities off the main diagonal are economically large, so that there is meaningful time series variation in the responses of each individual.

2.4 Reasons for the change in financial situation

From 1993 onwards, those participants who responded that they were significantly better off or worse off than in the previous year were asked to provide the main reason for the change.

2.4.1 Unconditional univariate results

In Panel A of Table II we tabulate the answers for better off individuals. Unsurprisingly, the main reason is higher earnings (54%). The second highest category is lower expenses, with a response rate of 15%. Interestingly, five percent of the responses are for good financial management, an issue which we investigate later in the paper. In the first two columns of Panel B we tabulate the answers for those individuals who report being worse off than a year ago. Strikingly, the main reason is higher expenditures (52%), a reason that is given twice more often than lower earnings (24%).[6]

[Table II here]

There is a vast literature that estimates the properties of individual earnings, how they change over the life-cycle, and the nature of the earnings shocks that different individuals

[6]The number of observations for the reasons why individuals are better off and worse off in Table II add to 51,838 whereas in Table I they add to 55,585. The main reason is that, as previously mentioned, the question on "why the change in financial situation" is only available from 1993 onwards.

face (more recently, for example, Guvenen, Ozkan and Song (2014), and Low, Meghir, and Pistaferri (2010)). While earnings fluctuations are clearly important, the data in Panel B of Table II suggests that more attention should be given to the expenditure part of the budget equation, since in the data it is the main reason for a worse financial situation, explaining 52% of such occurrences. Multiplying the latter value by the probability that individuals are financially worse off reported in Table I (24%), gives a value of 12.5%. This means that, in a typical year, an average individual in our sample had a 12.5% probability of being worse off due to higher expenditures. This probability is likely to be higher for some individuals than for others, the determinants of which we will study in the regression analysis.

The permanent income model of consumption (Friedman (1957)) and the buffer-stock consumption models (Deaton (1991), Carroll (1997), Gourinchas and Parker (2002)) treat expenditures as a choice variable of consumers who choose them in response to fluctuations in earnings. In these models there is no risk arising from the expenditure side. This assumption is relaxed in the models of Hubbard, Skinner and Zeldes (1995), Palumbo (1999), De Nardi, French, and Jones (2010) and Yogo (2013) in which fluctuations in out-of-pocket medical expenditures that consumers must meet introduces expenditure risk. In these models large medical expenditures affect the resources available for other consumption through the budget constraint.

This channel is likely to be at work in our data but given the large proportion of individuals who cite higher expenditures as the reason for being financially worse off, medical expenditures alone are unlikely to be the explanation. We will document this more formally later but in the last two columns of Table II we provide some initial evidence. We report the reasons for being worse off in year t, but now restricting the sample only to those individuals who are in excellent health both in years t-1 and t. Their responses are quantitatively similar to the full sample of individuals, suggesting that health related expenditures are only part of the reasons.[7]

2.4.2 Persistence

In Table III we report the persistence in changes in financial situation, by reason given for the change. We focus on the two largest categories, namely earnings and expenditures increases/decreases.[8] The first row reports the transition probabilities for individuals who in

[7]We do not observe medical expenditures in our data, but we have detailed information on health status. In addition, due to the features of the National Health Service, out-of-pocket medical expenditures are likely to be less significant in our data than in U.S. data.

[8]Detailed information on the transition probability matrix across all different events is provided in the Appendix, Table AI.

year t reported being better off than in year $t-1$ due to higher earnings. Out of these, 36% report being better off at $t+1$ than at t again due to higher earnings, so that they benefit from consecutive years of earnings increases. Furthermore, we find that 16% are better off due to an earnings increase for three years in a row. The persistence of an earnings decrease is smaller: only 18% report an additional decrease at $t+1$, and this proportion drops to 4% when we condition on an earnings decrease for three consecutive years of the survey.

[Table III here]

Interestingly, for changes in expenditures we observe exactly the opposite picture, with increases being much more persistent than decreases. Of those individuals who in t are worse off due to an increase in expenditures, 33% of them face a further deterioration in their financial situation at $t+1$ for the same reason. And 15% are hit by this event yet again two years later. On the other hand, being better off due to a decrease in expenditures is an event that is much less likely to repeat itself in consecutive years. Overall these results show that the main factors driving both improvements and declines in financial situation (increases in earnings and increases in expenditures, respectively) often compound themselves over time, i.e. have significant persistence in growth rates.

In Panel B of Table III we measure the expected duration of the changes or, alternatively, their persistence in levels. For example, in the first row we report the probability that an increase in earnings at time t is not reversed in year $t+1$, by year $t+2$, or by year $t+3$. Since we are not able to identify precisely when the reversal has taken place, we report two estimates that provide an upper and lower bound.[9] The probability that an earnings increase is not reversed in the following year is between 0.83 and 0.93. Even three years later, the probability that the initial change in earnings is still there is at least 0.61 and as high as 0.82. Thus these events are extremely persistent and, similarly to what we found for growth rates, increases in the level of earnings are more persistent than decreases.

When we consider changes in the level of expenditures the asymmetry is less pronounced than for growth rates, but it still is the case that increases in expenditures are more persistent than decreases. In summary, the events most commonly cited for both improvements and deterioration in households' financial situation are very persistent. Furthermore a significant

[9]The lower bound is obtained by considering that a reversal has taken place only if the individual responds that he/she is worse off because of lower earnings. This represents a lower bound because it is possible that in some other instances the individual is worse off for multiple reasons, one of them being a lower earnings, but in the survey he/she reports another reason. The survey asks for the main reason why the individual is worse off. The upper bound is computed by taking all events with a "worse off" response regardless of the listed reason.

fraction of increases in both earnings and expenditures are followed by subsequent increases. We can therefore conclude that it is not just the case that changes in expenditures are common, they also have similar time-series properties to those of changes in earnings.

2.4.3 Sample attrition and cross validation

Like other similar surveys the sample in the BHPS was chosen so as to be representative of the overall population. Nevertheless, one potential concern with these surveys is that sample attrition might not be random. For example, maybe those individuals who become financially worse off are more or less likely to drop out from sample. We can test for this by computing the probability that an individual is no longer in the data set in year t, conditional on being there in year $t-1$, both for the whole sample and conditional on specific events. Across the full sample this probability is 8.5%. For all four of our major categories the attrition rates are very similar. For those reporting that they are worse off due to an increase (decrease) in expenditures (earnings) the attrition rate is 8.2% (8.1%). For those that report being better off due to an increase (decrease) in earnings (expenditures) the corresponding number is 8.4% (8.6%). These results indicate that selection due to attrition is not a particular concern for our analysis.

Since our dataset includes information on earnings we can use it to try to gain some insights on the quantitative magnitudes behind the qualitative answers. More precisely we have computed the average percentage change in income for individuals who report a change in financial situation due to a change in earnings. We find that those who report being better off (worse off) due to an earnings increase (decrease) in had an average 8.7% (-7.4%) change in income during the year.[10]

2.5 Explanatory Variables

The outcome variables in our study are changes in financial situation and the reasons given for the change, and we use several variables available in the BHPS data to explain such outcomes. Part of the variation in our data is driven by changes in individual specific circumstances, such as a deterioration in health status, while the other part is driven by aggregate economic fluctuations, which are also reflected in individual level variables (e.g. earnings). In our regressions we include year fixed effects among the explanatory variables to capture the effects that aggregate economic fluctuations have on the outcome variable.

[10]Those that report being in the same financial situation as last year had on average an earnings increase of 2.4%.

Therefore the remaining variables in the regressions are capturing cross-sectional variation across individuals. We explore the macro effects captured by the year dummies in more detail later on in the paper.

The remaining explanatory variables that we include can broadly be classified into four categories: demographic information and life events, cost of living, psychological variables, and variables capturing behaviors.

In Table IV we report means for several of these variables over the full sample and for particular sub-samples of interest. The second column reports means across all observations in our sample, the third and fourth columns consider observations in which individuals report being better off and better off due to an earnings increase, respectively. Finally the last two columns consider individuals who report being worse off and worse off due to higher expenditures. Thus the observations in the higher earnings and higher expenditures categories correspond to a subset of those who are better off and worse off, respectively. We should also add that the number of observations reported in the first row of Table IV correspond to observations for which we have information on whether there has been a change in financial situation. For some of the other variables there is sometimes missing information, which reduces the number of observations available for the regression analysis.

[Table IV here]

Demographics and life events

Panel A reports demographic information. There are some interesting differences in mean values across the different groups. Individuals who report being better off are on average much younger than those who report being worse off. A large proportion of individuals are better off due to higher earnings, and earnings profiles are on average steeper earlier in life. The proportion of married individuals is lowest amongst those who report being worse off due to higher expenditures.

The next five rows of Table IV report the average values for dummy variables for different health status, from excellent health to very poor health. Individuals who report being better off financially are on average healthier than the sample mean, more so when compared to those who report being worse off. For example, 73% of those who report being better off have excellent or good health. The corresponding value for those who report being worse off is only 61%. A worse health status may affect the ability of individuals to work and generate earnings, and there may be medical expenses that they need to meet.

On average, households who are better off tend to have more children. This may be because as we have seen there is some persistence in the households who report being better

off, and those who expect to be better off financially may decide to have more children. Alternatively, this may simply be a reflection of the fact that those individuals who are better off are on average younger, and at a stage when children have not left the household.

Cost of living and income

Panel B reports information on household budgets and cost of living measures. The data contains information on the amount the household has spent in some categories, including food and energy. We compute measures of the relative importance of each of these categories by scaling them by household income. Households who spend a higher fraction of their income in food and in energy are more likely to report that they are financially worse off due to higher expenditures. And households on a tighter budget may potentially be more sensitive to fluctuations in the prices of food and/or energy. There is significant heterogeneity in the data in the income shares of energy and food. The average food-to-income ratio is 20.3% but the 25th percentile is only 9.89% while the 75th percentile 25.3%. Similarly, while the average energy-to-income ratio is 5.0%, the 25th percentile is only 2.02% while the 75th percentile is 6.51%.

The next two rows suggest that this channel seems to be, at least partly, at work in our data. They report average values for food inflation and energy inflation in our sample. In any given year, the values for food (and energy) inflation are the same for all individuals. Therefore, any variation in means across the different columns in Table IV is driven by differences in the year in which households report being better or worse off. Consistent with the above hypothesis, across the four groups, the average inflation values are highest for individuals who report being worse off due to higher expenditures.

Our measure of income is obtained by adding the labor income, social security income, and asset income of the head of the household and his/her partner, if present. We use the retail price index to convert nominal variables into their real counterparts. In order to mitigate the influence of outliers we winsorize income (and other continuous variables) at the 5th and 95th percentiles of their respective distributions.

Psychological variables

The survey includes information on respondents' well being. Each year individuals are asked about the way they have been feeling over the last few weeks, including whether they have been finding it difficult to face problems, whether they have been feeling depressed or unhappy, and whether they have been losing much sleep over worry. The answer to these questions has four possible categories: better than usual, same as usual, more than usual,

much more than usual. For each of these variables we construct a dummy variable that takes the value of one if the household head answers more than usual or much more than usual and zero otherwise.

It is hard to know exactly what respondents mean by usual. Some individuals respond more and much more than usual more often than others. This may either be the result of more in sample negative events that make individuals more often depressed or, alternatively, the result of individual specific traits that lead them to be more adversely affected by negative events or to have different views of what is the usual. To control for the latter possibility we include individual fixed effects in some of our regressions.

Panel C of Table IV reports the average values for these dummy variables. For one in ten (one in five) observations individuals report having difficulties facing problems (or are depressed). These proportions are significantly larger among those who also report that they are worse off financially: one in five have difficulties facing problems and almost one in three are unhappy or depressed. One should be careful interpreting these differences, though. The worse financial situation may be the result, for example, of individuals feeling depressed and spending money to try to overcome it, or even of another life event such as a divorce that leads to individuals feeling both depressed and being financially worse off. Furthermore, the summary statistics in Table IV are all based on univariate comparisons, thus ignoring the correlation amongst the different variables.

Saving behavior

In each year individuals in the survey are asked whether they are saving regularly. The last row of Table IV reports the mean for this variable. The average values are significantly lower for those individuals who report being worse off than for those who report being better off. Saving behavior is of course endogenous and expenditure shocks may make it difficult for individuals to save. This is something that we must keep in mind in the next section where we consider a more formal regression analysis.

3 Determinants of higher expenditures

The majority of households who are financially worse off give higher expenditures as the reason. We use regression analysis to study the determinants of this event. We first discuss our choice of econometric model and then present the results.

3.1 Econometric approach

We use a standard binary choice model. The outcome variable y_{it} is equal to one if individual i in year t reports being financially worse off due to higher expenditures (and zero otherwise). Later on we will consider a more general model with several outcomes (higher/lower earnings and higher/lower expenditures), but the results for being worse off due to higher expenditures are similar. We model the:

$$Prob(y_{it} = 1|\mathbf{x}_{it}, u_i) = F(\mathbf{x}_{it}, u_i) \tag{4}$$

where $\mathbf{x}_{it}$ is a vector of observable covariates and u_i is an unobserved individual specific effect. Let y_{it}^* be a latent variable determined by the model:

$$y_{it}^* = \mathbf{x}_{it}\beta + u_i + \epsilon_{it} \tag{5}$$

where ϵ_{it} is the residual. Whether individual i in year t is worse off due to higher expenditures depends on the value of this latent variable

$$y_{it} = 1 \quad if \quad y_{it}^* > 0 \tag{6}$$

$$y_{it} = 0 \quad if \quad y_{it}^* \leq 0 \tag{7}$$

One common approach to modeling the unobserved individual heterogeneity (u_i) is the random effects model. The key assumptions are that: (i) the covariates $\mathbf{x}_{it}$ and the individual effects u_i are independent; (ii) the covariates $\mathbf{x}_{it}$ are exogenous; (iii) u_i has a normal distribution with mean zero and variance σ_u^2; and (iv) the outcomes $y_{i1}, y_{i2}, ..., y_{iT}$ are independent conditional on $\mathbf{x}_{it}$ and u_i. We designate this traditional random effects model by **RE1**.

The assumption that the covariates are independent of the individual effects can be relaxed using the Mundlak-Chamberlain approach. In particular we can assume that:

$$u_i = \phi + \overline{\mathbf{x_i}}\gamma + \varepsilon_i \tag{8}$$

where $\overline{\mathbf{x}_i}$ is an average of $\mathbf{x}_{it}$ over time for individual i, and ε_i is assumed to be uncorrelated with γ. This more general random effects model can be estimated by including the average of the covariates alongside the covariates among the explanatory variables. We designate this more general model by **RE2**.

An alternative approach to modeling individual heterogeneity that does not require us

to make assumptions on how the individual effects are related to the covariates $\mathbf{x}_{it}$ is the fixed-effects model:

$$y_{it}^{*} = \alpha_i + \mathbf{x}_{it}\beta + \epsilon_{it} \tag{9}$$

where α_i denotes the individual fixed-effects. This model cannot in general be estimated due to the incidental parameters problem. When T is small the estimates of the fixed effects α_i are inconsistent and through the estimation procedure they contaminate the estimates of the β. One important exception for which it is possible to obtain consistent estimates is the logit model where we specify the function F(.) as the cumulative density function (cdf) for the logistic distribution:

$$F(\mathbf{x}_{it}\beta + u_i) = \frac{exp(\mathbf{x}_{it}\beta + u_i)}{1 + exp(\mathbf{x}_{it}\beta + u_i)}. \tag{10}$$

The functional form of the cdf for the logistic distribution allows us to eliminate the α_i from the estimating equation. Under this specification the identification relies on the specific functional form of the logistic distribution and uses only the individuals who change state. In other words, the fixed-effects are removed from the estimation to avoid the incidental parameters problem, and the analysis is thus conditional on the unobserved u_i which are not estimated. We designate this conditional fixed-effect model by **FE**.

The fixed-effects logit estimator of β gives us the effect of each element of $\mathbf{x}_i$ on the log-odds ratio:

$$Ln\left[\frac{Prob(y_{it}=1|\mathbf{x}_{it}=x^{''})}{Prob(y_{it}=0|\mathbf{x}_{it}=x^{''})}/\frac{Prob(y_{it}=1|\mathbf{x}_{it}=x^{\prime})}{Prob(y_{it}=0|\mathbf{x}_{it}=x^{\prime})}\right] = \beta(x^{''}-x^{'})$$

But since we do not know the values for α_i/u_i and their distribution is unrestricted we cannot estimate the individual probabilities or marginal effects.

We consider these three alternative specifications and use a Hausman test to choose between them. More precisely we separately estimate the three models and compare the conditional **FE** model with each of the two random effects models, **RE1** and **RE2**. Under the null of each of the **RE** models the **FE** estimator is still consistent but inefficient. We reject both the null hypothesis that $\widehat{\beta}_{RE1} = \widehat{\beta}_{FE}$ and the null hypothesis that $\widehat{\beta}_{RE2} = \widehat{\beta}_{FE}$ with values for the Hausman statistic of 216.80 and 57.19 respectively. Thus we can conclude that the random effects estimators are inconsistent and therefore use the conditional FE logit model. As a further alternative way to control for persistence in unobserved individual characteristics we estimate a dynamic logit model. In all the estimations we cluster the standard errors by individual.

Among the set of explanatory variables we include variables that characterize the household at time $t-1$ and variables that capture changes between time $t-1$ and t. The former tell us about the beginning of period household characteristics that make it more likely that households become worse off. The latter capture the changes that have taken place during the year that make it more or less likely that households become financially worse off due to higher expenditures. The inclusion of variables that refer to changes from time $t-1$ to t creates a potential endogeneity problem in the regression, if some of those changes have been caused by the increase in expenditures and not the other way around. We address this potential concern below.

3.2 Logit regressions

Table V shows the estimation results. The second column reports the results for a pooled logit regression and the third and fourth column for (conditional) fixed effects logit models. We include year fixed effects and a second order polynomial in age in all regressions and report t-statistics clustered by individual below the estimated coefficients.

Income

In the first two rows of Table V we report the estimated coefficients for log real income at $t-1$ and changes in log real income between $t-1$ and t. These are included as controls. The estimated coefficients on lagged log real income are negative, so that those with lower income are more likely to become worse off due to higher expenditures, possibly because they face a tighter budget. However, the estimated coeffients on this variable are mostly statistically insignificant. And, as expected, increases in earnings between $t-1$ and t reduce the likelihood of households becoming worse off at time t due to higher expenditures.[11]

[Table V here]

Cost of living: food, energy and mortgage payments

The next group of explanatory variables measures expenditures in important categories, such as food, energy, and mortgage payments. Our choice of these categories is motivated by their importance and by restrictions on data availability. The second and third columns report the results for a regression with both energy and food expenditure shares. In the fourth column we exclude the former due to the high collinearity between the variables and

[11] As mentioned above we will discuss and try to address potential endogeneity concerns below.

the fact that information on energy expenditures is not available for all years in the survey.[12]

A significant positive coefficient on the beginning of period ratios of food expenditure to income and mortgage payments to income tells us that households who allocate a higher fraction of their income to these categories are more likely to become financially worse off due to higher expenditures. All the statistically significant coefficients in the regressions are indeed positive. Some are not significant, but there is naturally significant collinearity between these variables. For example, the correlation between the ratio of energy expenditure to income and the ratio of food expenditure to income is 73%. Households who spend a higher fraction of their income in these categories are likely to face a tighter budget. And those on a tight budget are more likely to become significantly worse off when such expenditures increase.

To test this more explicitly we include in the regression measures of food and energy price inflation between time $t-1$ and t interacted with the ratios of food expenditure and energy expenditure to total income at time $t-1$, respectively.[13] The coefficients on the interaction terms are both positive so that those households who at the beginning of the period spent a higher fraction of their income in these goods are more likely to be affected by increases in their prices. Likewise households whose mortgage payments increase more relative to their income during the year are more likely to become worse off due to higher expenditures.[14] In the third column the interaction term between the ratio of food expenditure to income and the RPI food is not statistically significant, but this maybe the result of multicollinearity.[15] In column four we exclude the energy expenditure variables from the regression and the estimated coefficients on the food expenditure variables are both statistically significant.

Life events: health status, marital status and number of children

The next set of explanatory variables capture the effects of life events, including health status, children, and marital status. For health status, and as before, we consider both the

[12]Excluding the energy variables allows us to significantly increase the sample size. The much lower number of observations for the fixed effects logit regressions than the pooled regressions is due to the fact that the former only uses information for those individuals whose outcome variable changes over the sample.

[13]Recall that we have year dummies so that we cannot include food and energy price inflation in the regression.

[14]The results in this regression are qualitatively identical and quantitatively almost the same if we exclude from the sample the years in which households are taking a new mortgage. Thus our results are not driven by the mortgage choices made by these individuals. Mortgages in the U.K. are mostly adjustable-rate, which have higher cash-flow risk than the fixed-rate mortgages that are more common in the U.S.

[15]In addition during our sample period energy price inflation was considerably more volatile than food price inflation. The standard deviation of the RPI Energy index was 7.62% compared with 2.33% for the RPI Food index.

effects of beginning of period health status and changes in health status during the year. We use dummies for the different health status at time $t-1$. Omitted from the table is the dummy for the base case of excellent health, so that the others should be interpreted as the additional effect on the probability that the household becomes financially worse off due to higher expenditures relative to this base case. Across all specifications, the estimated coefficients are positive and statistically significant. Furthermore, they tend to increase as health status becomes worse, although the monotonicity is less pronounced for the fixed effects regressions than the pooled logit regression (possibly because health status is persistent and its effect is captured by the individual fixed effect).

Changes in health status between $t-1$ and t are also important. The next two rows in Table V show the estimated coefficients for dummy variables that take the value of one if between $t-1$ and t there is an improvement (deterioration) in health status, and zero otherwise. The estimated negative (positive) coefficients mean that an improvement (deterioration) in health status reduces (increases) the probability of households becoming financially worse off due to higher expenditures. An explanation for these results is that health status affects medical expenditures. Unfortunately our data does not contain information on their value so that we cannot test this channel explicitly. Therefore we cannot rule out other possibilities, such as those in poorer health increasing expenditures in other categories, perhaps in an attempt to make them feel better.

To assess the effects of household composition we consider variables that measure marital status (and changes in these). The estimated coefficient on a dummy for married at $t-1$ is not always statistically significant, but for the specification where it is, the estimated negative coefficient tells us that married individuals are less likely to become worse off due to higher expenditures.

In contrast, a dummy variable that takes the value of one if the individual separated or divorced between $t-1$ and t is positive and statistically significant. Its economic magnitude is large: the estimated log-odds in the fixed effects regression is as high as 0.3.

For children related variables, in Table V we report the results for a variable that captures the first child born between $t-1$ and t. This variable has a large impact on the probability of households becoming worse off due to higher expenditures: the estimated log-odds ratio in the fixed effects regression are around 0.6. Although not reported in Table V, we have tried the number of children and a dummy variable that takes the value of one if there is an additional child born between time $t-1$ and t, regardless of whether or not it is the first child. The estimated coefficient on these variables was statistically insignificant. This suggests that there is something about the first child, either because expenses are relatively

higher for the first child (since younger siblings typically use prams, clothes, etc. of older siblings) or because parents are less prepared for the required expenditure than when having subsequent children.[16]

Psychological variables: depression, ability to face problems and loss of sleep

The next set of explanatory variables capture psychological characteristics. The first is a dummy variable that takes the value of one if at time $t-1$ the individual reports that he/she has been having difficulties facing problems more than usual or much more than usual, and zero otherwise. We estimate a positive log odds ratio of 0.1 in the logit FE regressions.

Since the question in the survey is fairly general, and it does not ask specifically about what sort of problems individuals have been having difficulty facing, there are at least two possible explanations for the positive and statistically significant estimated coefficient. First, individuals may be dealing with a personal problem that they have difficulty facing, and they spend more to make them feel better. Second, stressed household finances are themselves the source of the problem, and individuals who have difficulty facing them and take a passive attitude are more likely to become financially worse off due to higher spending than what they can afford.

The second variable is also a binary indicator, identifying those individuals who report being more depressed/unhappy than usual. And the last psychological variable takes the value of one if at time $t-1$ the individual reports that he/she has been losing more sleep over worry than usual, and zero otherwise. These two regressors may capture the impact that a low psychological condition has on individuals' ability to manage their finances. Alternatively, these individuals may feel the need to spend money in an attempt to make them feel better, leading to a worse financial situation. Although it is hard to identify the precise channel, the positive and statistically significant coefficients that we estimate on these variables show that emotions play an important role. The only exception is for the variable depressed which is no longer statistically significant when we control for individual fixed effects (this suggests that its effect on expenditures may act mainly as an individual trait).

Saving Behavior

The last explanatory variable captures the impact that saving behavior has on the probability that the individual becomes financially worse off due to higher expenditures. The estimated negative coefficient in the second column (logit regression) shows that those who

[16]Love (2010) solves a life-cycle model of consumption and portfolio choice which explicitly considers the impact of demographic shocks and studies how these variables empirically affect observed household portfolio allocations.

were saving at time $t-1$ were less likely to become worse off due to higher expenditures at t. While this may not be surprising, it is interesting to note that once we include fixed effects in the regression the saving behavior variable is no longer statistically significant. This points towards saving behavior and its importance for expenditure risk being an individual trait. We study this channel further below, where we conduct cross-sectional tests.

Predicted probabilities

The estimated coefficients in the fixed effects logit regressions are the log-odds ratios and therefore tell us something about the economic importance of the different explanatory variables (in the fixed effects logit we cannot estimate the traditional marginal effects). In order to have additional economic magnitude measures we calculate predicted probabilities. We do so for both the pooled logit model and the FE logit model. More precisely, we use the estimated regression coefficients and the realized values for the explanatory variables to calculate for each individual/year the estimated probability that the individual is worse off due to higher expenditures. We then compute the mean predicted probabilities for individuals in different groups: high and low real labor income, high and low energy expenditure relative to income, whether separated between time t-1 and t, and so on.[17] The second (third) column of Table VI reports the difference in average predicted probabilities across the two groups for the pooled logit (FE logit) model. The fourth (fifth) column reports this difference scaled by the unconditional mean of the dependent variable.

[Table VI here]

The differences in predicted probabilities are generally economically very meaningful, particularly when one considers the value of this difference relative to the mean of the outcome variable. The largest difference is for those households who had a first child. One should be careful, though: the predicted probabilities do not keep the other variables constant. In addition, both the pooled logit and FE logit predicted probabilities have shortcomings. The former model does control for unobserved heterogeneity. The latter model does not recover the distribution of the individual fixed effects, so that we have to ignore them when calculating the predicted probabilities.[18]

[17] For the continuous explanatory variables the low (high) group corresponds to those in the percentiles 20 to 30 (70 to 80) of the distribution of the respective explanatory variable.

[18] This explains why there is a statistically significant difference in predicted probabilities between those who reported saving in year $t-1$ and those who did not, when the corresponding estimated coefficient in the FE regressions was not statistically significant.

3.3 Dynamic logit and persistence

We have seen that an individual who is in a worse off financial situation due to higher expenditures at time t is more likely to find himself/herself in the same situation at time $t+1$. An alternative approach to the fixed effects model to capture this persistence is to include the lagged dependent variable in the regression. The results for this dynamic logit model are reported in the last column of Table V. As before, we cluster the standard errors by individual.

The estimated coefficient on the lagged dependent variable is positive and highly statistically significant (t-stat of 42). This reflects the degree of persistence in our outcome variable. Most explanatory variables remain significant as before, but the magnitude of the estimated coefficients and/or t-statistics of some are more affected than others. This is likely to reflect the persistence of these explanatory variables, and the extent to which it leads to persistence in the outcome variable itself. For those that do, the inclusion of the lagged dependent variable among the explanatory variables may lead to them being less important in the regression.

To investigate this issue further in Table VII we report information on the persistence of our explanatory variables. For the continuous variables we report the first order autocorrelation coefficients. The table shows that the ratios of mortgage payments, energy and food expenditures are fairly persistent.

[Table VII here]

For the discrete variables we report the probability of a repeat event: the probability that an individual who is depressed at t is also depressed at $t+1$ (similarly for the other variables). Among the several variables considered, the highest value is for saves. Again this suggests that saving is more of an individual trait (some individuals save every year and others do not), and it is consistent with the saves variable not being statistically significant in the FE logit regressions.

3.4 Cross-sectional analysis of individual traits

To study the role of individual traits in more detail we move away from the fixed effects panel specification and calculate for each individual the average over the sample for the dummy variable that takes the value of one if the individual is worse off due to higher expenditures in that year (and zero otherwise). This is our dependent variable in the regressions. In a similar way we calculate for each individual the average over the sample of the saves dummy

variable and his/her average income growth. For three of the waves (years) the BHPS has supplementary information on whether the individual owes money, whether he/she made use of credit cards to borrow, and on total debt (that we use to calculate the ratio to income). While the limited information on these debt related variables means that we could not include them in our main regressions without sacrificing most of our observations, we use them in our cross-sectional tests, by calculating their average value over the three years that we observe them.

Our hypothesis is that individuals who more frequently make use of debt, and in particular expensive credit card debt, are more likely to have high discount rates or self-control problems, and thus are more likely to be worse off financially due to high expenditures. Of course the use of debt might also be the result of optimal consumption smoothing in the presence of an increasing income profile, and to control for this we include average income growth among the set of explanatory variables.[19] The results for the Tobit regression are reported in Table VIII.

[Table VIII here]

The results in the second column confirm the previous results that those who save more regularly and those who have higher income growth are less likely to be worse due to higher expenditures. In the third column we also include the debt variables in the regression. Both the variables "owe money" and "credit card use" show up as strongly significant. This confirms the hypothesis that individuals who make more use of debt, and in particular credit card debt, face a higher probability of being worse off due to higher expenditures. In the final regression we control for the ratio of debt to income. Consistent with the underlying hypothesis, the estimated coefficient is positive and statistically significant.

3.5 Multinomial logit

Our previous analysis focused on the determinants of individuals being worse off due to higher expenditures. In this section we study a wider set of outcomes. More precisely, we estimate a multinomial logit (**ML**) model where the outcome variable y_{it} takes one of five possible values:

$y_{it} = 1$: individual i is better off in year t due to higher earnings

$y_{it} = 2$: individual i is better off in year t due to lower expenditures

[19] In this way, even if savings behaviour or debt usage are driven by expected income growth, the estimated coefficients on these variables and their statistical significance are unaffected.

$y_{it} = 3$: individual i is worse off in year t due to lower earnings

$y_{it} = 4$: individual i is worse off in year t due to higher expenditures

The remainder observations take the value $y_{it} = 0$ and form the base outcome. The estimated coefficients in the regressions are differences relative to this base outcome and as before we cluster the standard errors by individual.

The second and third columns of Table IX report the estimated parameters for the regressions with y_{it} equal to 1 (better off due to higher earnings) and 4 (worse off due to higher expenditures), respectively. These are the two main reasons given for a change in financial situation (the complete estimation results are included in appendix Table AII).

[Table IX here]

First, the results for the coefficients in the equation for higher expenditures are very similar to those reported in Table V, for the comparable logit model without fixed effects, both in terms of statistical significance and the values of the coefficients. Therefore we focus our comments on the equation explaining the higher earnings event (second column of Table IX).

We estimate a positive coefficient on lagged income, showing that high earners are also more likely to experience further increases in income.[20] The coefficient on the ratio of food expenditure to income is negative and statistically significant which again shows that poorer households, who spend a higher proportion of their income on food, are less likely to become better off due to an earnings increase.

More interesting is the positive estimated coefficient on the ratio of mortgage payments to income. It shows that those households who devote a larger fraction of their income to mortgage payments are more likely to become better off due to higher earnings. This can be explained by those households who expect higher future income taking larger loans relative to their current income. In other words, mortgage loan amount (and payments) relative current labor income has predictive power for future income growth (as in the model of Cocco (2005)).

The dummy variables on health status are highly significant, as are the coefficients on the changes in health status, and they consistently show that households in poorer health are less likely to enjoy future increases in income. Having a first child being born during the year has a negative impact on household income growth which might be due to the fact that

[20]The coefficient on lagged income in the equation explaining worse off due to lower earnings (table AII in the appendix) is also positive, consistent with notion that high income individuals face more income risk in general (both upside and downside risk).

the labor supply of one or both members of the household is likely to have decreased during this period. As expected, a separation or a divorce has a negative effect on the likelihood of being better off due to higher earnings.

Endogeneity

Our regression estimates thus far are subject to potential endogeneity concerns since our explanatory variables include some that refer to changes from time $t-1$ to t. For example, one could argue that households who face an increase in expenditures unrelated to their health must cut back on their medical expenditures, and that it is this that leads them to suffer a decrease in their health status. Alternatively, the increase in expenditures might affect their willingness or ability to work, thus leading to a reduction in earnings.

The nature of our data and the large degree of persistence among the variables makes it very hard to make any causal statements from our analysis. In fact, it is likely that many of the effects that we discuss feed on each other, and reinforce each other. For instance it may be the case that higher stress generated by increased expenditures and a difficult financial situation lead to an increase in the probability of a divorce/separation.

Instead the focus of our paper is on understanding the nature of the events that took place between $t-1$ and t and how they relate to certain outcomes. With this said, it is also interesting to try to understand what we can explain if we remove from the regressions the variables subject to endogeneity concerns. The last two columns of Table IX report the estimation results for a multinomial logit model where we exclude all contemporaneous household-level variables.[21] Comparing the results in the two alternative multinomial logit specifications we see that they are almost identical.

3.6 Aggregate versus individual specific variation

In the previous regressions we have included year fixed effects among the explanatory variables, and these dummies capture the effects of aggregate economic conditions on the outcome variable. In this section we explore the importance of these aggregate conditions and their determinants.

As a first step, we compute the time series variation in the proportion of individuals who in any given year report being financially worse off due to higher expenditures. This

[21] We still include the RPI variable since this is an aggregate variable and the endogeneity concern does not apply. For consistency we have excluded the "change in mortgage payments between t-1 and t" and "first child born between t-1 and t" even though for these variables the endogeneity would probably imply a coefficient with the opposite sign from the one that we have estimated in the regressions.

proportion varies between 7.1% and 23.9% indicating significant time series variation. The highest value is for the last year in our sample, 2008, which corresponds to the year of the global financial crisis. The time series standard deviation of this porportion is 3.9%. For comparison, the cross-sectional standard deviation in the same variable ranges from a minimum of 25.7% (in 2002) and a maximum of 42.7% (in 2008). These values tell us about the relative importance of aggregate versus individual shocks/events (or of individual characteristics that determine differential responses to aggregate shocks) in determining the likelihood of individuals becoming worse off due to higher expenditures.[22]

In order to learn more about the drivers of the aggregate effects we have calculated time-series correlations between the fraction of the individuals who report a given event (such as being worse off due to higher expenditures) and a set of macro variables. In Table X we report correlations with real GDP growth, inflation and the unemployment rate. The p-values for these correlations are shown in parenthesis below the estimated correlations.

[Table X here]

The fraction of households who are worse off (better off) due to higher (lower) expenditures is positively (negatively) correlated with inflation and negatively (positively) correlated with real GDP growth. When inflation is high the cost of the representative consumption basket increases more, so that, ceteris paribus, a higher proportion of households are likely to face a tight budget. Periods of low real GDP growth tend to be periods of low real earnings growth, so that households are also more likely to face a tighter budget and to be negatively affected by increases in expenditures. We had previously found evidence for these two channelsin the panel regressions controlling for aggregate effects, and it is reassuring to also find them present at the aggregate level.

Looking at earnings changes we find an interesting assymetry. Years when a large fraction of individuals report being better off due to higher earnings tend to be those with high real GDP growth.[23] However, the fraction of those who report being worse off due to lower earnings is largely correlated with the unemployment rate (correlation of 0.9), and not with real GDP growth. This strongly suggests that, in our sample, individuals being worse due

[22]For example, in the regression results reported in Table V we have included among the regressors variables such as health status (individual event) and variables such as the interaction between energy inflation and the (lagged) percentage of the household's income that was spent on energy (an aggregate shock that has a differential impact across households, depending on the proportion of the household budget that is spent on energy). The aggregate events were captured by the year dummies.

[23]For the period post 2000, the Office of National Statistics also reports information on real average earnings growth. This variable has a correlation with real GDP growth of 0.8. We have decided to use real GDP growth due to the larger number of observations available.

to lower earnings is mainly unemployment spells which is also consistent with the smaller persistence of this variable relative to the one that measures earnings increases (as previously documented).

4 Psychological well-being

In the previous section we have characterized the households who are more likely to become financially worse off due to higher expenditures, and we have identified several factors that contribute to such an outcome. An increase in certain expenditures may force households to cutback on their consumption of other items, which will decrease their utility. In addition a worse financial situation may affect individuals' psychological well-being, making them even worse off in utility terms. In this section we study the extent to which households being financially worse off affects their psychological well-being.

4.1 Empirical specification

The outcome variables that we focus on are whether individual i in year t has been feeling more depressed or unhappy than usual, whether he/she has been losing more sleep than usual due to worry, and whether he/she has been having more difficulties facing problems. As before we estimate panel fixed effects logit regressions so that individual specific traits will be captured by the fixed effects.

Among the set of explanatory variables we include the previously described four dummy variable that take the value of one if the individual reports being better off (worse off) due to higher (lower) earnings or lower (higher) expenditures. A difficulty when interpreting the estimated coefficients in these regressions is that there may be factors that may be the reason for households becoming more depressed and at the same time financially worse off, such as for example a divorce or a deterioration in health status. To try to at least partly control for these factors in the regressions we include these among the explanatory variables. But naturally it is very difficult to isolate the impact of one set of variables versus the other. Several of these events are persistent (or have persistent consequences) and they are likely to interact with each other and feed on each other in complex ways. For instance, stressed household finances may lead to conflicts among married couples. Alternatively, marriage difficulties may lead to workplace difficulties or to individuals spending more in an attempt to make them feel better (or to save their marriage).

In addition to events that have taken place during the year, we include among the set

of explanatory variables some lagged controls (income, health status) that may make it more likely that the individual feels depressed or worried. We also include a second order polynomial in age among the set of explanatory variables.

4.2 Results

Table XI reports the results. The first panel reports the estimated coefficients for the financial situation dummies. Individuals who are financially worse off due to higher expenditures have an increased probability of being depressed, of loosing sleep due to worry, and are also more likely to report that they have difficulties facing problems. Furthermore, the increase in these probabilities is large, with estimated log-odds ratios on the higher expenditures variable varying between 0.30 and 0.44 (for the different dependent variables considered).

[Table XI here]

These results are important for two reasons. First, they reveal an important psychological channel through which households may be made worse off, in utility terms, as a result of the higher expenditure (a deterioration in psychological health, with a utility impact through the h_{it} term in equation (1)). Second, combined with the results in the previous section, which show that individuals who have more difficulty facing problems are more likely to become worse off due to higher expenditures, these estimates highlight a potential vicious circle in household finances.

The remaining dummy variables that measure the change in financial situation are also statistically and economically very significant with the expected signs. For instance, individuals who are financially better off due to higher earnings are much less likely to feel depressed or to lose sleep due to worry. Interestingly for both individuals who are better off and who are worse off, the (absolute) value of the estimated coefficients on the earnings variables are higher than those on the expenditure variables. This tells us that even though individuals being worse off due to an expenditure increase is a more common occurrence, the impact of an earnings decrease on individuals' well-being is larger.

It is re-assuring to see that many of the estimated coefficients on the life events and control variables are statistically and economically significant with the expected signs. A deterioration (an improvement) in health status has a large positive (negative) impact in the probability that individuals become depressed, lose sleep due to worry, or have difficulty facing problems. The (absolute) values of the estimated coefficients on these variables vary between 0.42 and 0.73.

The first child being born reduces significantly the probability of individuals being depressed. Perhaps surprisingly, particularly for those with children, the estimated coefficient on the first child variable in the loss of sleep regression is not statistically significant, but the survey asks specifically about loss of sleep due to worry. Divorce or separation leads to a large increase in the probability that the individual is depressed or loses sleep due to worry (log-odds ratios of around 0.8).

To obtain an alternative measure of the effects of the explanatory variables we have used the estimated regression coefficients to calculate predicted values for the different outcome variables (being depressed, losing sleep due to worry, and difficulty facing problems). As before, we calculate these predicted values using the values for the dependent variables observed in our data. In Table AIV in the appendix we report the average difference in predicted values for individuals in different groups. As before we report both raw predicted differences and differences scaled by the unconditional mean of the outcome variables for both a pooled logit model (Panel A, estimated coefficients not reported) and a FE logit model (Panel B, using the estimated coefficients reported in Table XI). As previously discussed, both of these models have shortcomings as far as the calculation of predicted probabilities is concerned. We focus the discussion on the results in Panel B, but similar conclusions can be drawn from Panel A.

The largest differences, with scaled values that vary between 50% and 66%, are between those individuals who have recently separated/divorced and those who have not. The predicted differences on the financial situation dummies, albeit smaller, are still economically meaningful. Those individuals who report being worse off due to higher expenditures have a 17% higher probability of feeling depressed, a 25% higher probability of having difficulties facing problems, and a 12% higher probability of losing sleep due to worry (for the scaled differences). Interestingly, among the financial situation variables, the one that seems to matter most is the lower earnings variable, with an impact on psychological well-being that is roughly twice as large as the higher expenditures variable. Therefore, being financially worse off due to higher expenditures is a more common occurrence than being worse off due to lower earnings, but the latter event has a more significant impact on psychological well-being. However, it is important to remember that the predicted probabilities do not keep the values for the other explanatory variables constant, so that unlike the estimated log-odds ratios, they do not try to isolated the impact of the explanatory variable on the outcome variable.

5 Expected versus unexpected changes

In the previous section we made use of the information in the survey question that asks individuals whether they were better or worse off financially than they were a year before. We have used these changes in financial situation without distinguishing between those that were expected and unexpected. Therefore, we cannot interpret them as shocks. However, in the following survey question individuals are asked to look ahead, and to report on how they think they will be financially a year from the date of the survey. The possible answers are: significantly better off, worse off, or about the same. Thus this question elicits individuals' expectations of their future financial situation. Combining the information in this question with the one we have used before allows us to distinguish between changes in financial situation that were expected the previous year and those which were not expected.

5.1 Financial situation and expectations

In Table XII we report the distribution of individuals' financial expectations at year t for year $t+1$, conditional on the year t change in their financial situation (and the reason for the year t change).

Overall, a very small proportion of those who are better off at t expect the reasons which led them to be better off to be reversed: only a small fraction of 6% expect to be worse off at $t+1$ than a t (first row of Table XII). The vast majority of individuals, equal to 94%, expect to be at least as well off at $t+1$, with a considerable proportion of 42% expecting their financial situation to improve even further in the following year.

[Table XII here]

In contrast, a more significant proportion of those who are worse off in year t than in year $t-1$ expect this worse financial situation to be a temporary event (first row of Panel B). This is particularly the case for those individuals who are worse off due to an earnings decrease: 42% of them expect to be better off in year $t+1$ than in year t (first row of Panel B1). But even for the group of individuals who are worse off at t due to an earnings decrease, the majority of them expect no change in year $t+1$ (44%) or a further worsening of their financial situation (14%). It is also interesting to note that those who are worse off due to an increase in expenditures tend to be more pessimistic going forward than those who are worse off due to an earnings decrease: the proportion of those who expect to be even worse off is 32% among the former (first row of Panel B2) and only 14% among the latter.[24]

[24] These results are broadly consistent with the results in Table III, on the persistence of the different events.

5.2 Expected and unexpected changes

Table XII also reports financial expectations for year $t+1$, conditional on the reason for the change in financial situation at t, but distinguishing between whether the change was expected or not (the second and third row of each panel, respectively). Interestingly we see that expected changes in financial situation tend to be viewed by individuals as being much more persistent in nature than unexpected changes. Of those who are better off at time t due to an earnings increases, 61% expect to be even better off at time $t+1$ when such change was expected, compared to 33% when the earnings increase was unexpected (Panel A1). Of those who are worse off at time t due to an expenditures increase, 57% expect to be even worse off at $t+1$ when the worse financial situation was expected, compared to 25% when it was unexpected (Panel B2).

These differences in expectations are consistent with the actual persistence of expected versus unexpected changes in our sample. For example, the in-sample probability of being better (worse) off due to an increase in earnings (expenditures) in two consecutive years is 0.40 (0.39) if the change was expected compared to 0.30 (0.28) for an unanticipated change, matching the pattern in table XII.[25] This is an important result because all else equal unexpected changes should have more important consequences than expected ones. Households will be less prepared for the former and thus they will probably have to cut their consumption and/or savings by more. However, the results in Table XII are telling us that the "all else equal" scenario is not appropriate here. Unexpected shocks are viewed as having lower persistence and therefore, for the same level of savings, they have a lower impact than those that were anticipated but are expected to last longer.

We have also tested whether unexpected changes in financial situation are predictable based on past unexpected changes or, in other words, whether households make systematic forecasting errors. We first construct a dummy variable that takes the value of one if the individual is in an unexpected worse financial situation at time t, and zero otherwise. We then regress this variable on its first lag. The results are reported in Table AVI of the appendix. The estimated positive coefficient in the logit regression in the second column says that individuals who are unexpectedly worse off in year $t-1$ have a higher probability of being unexpectedly worse off again in year t. This shows there is persistence in the estimation errors. However, when we control for individual fixed effects (third column) the estimated coefficient on the lagged variable becomes much smaller in absolute value and even flips sign. Therefore, the serial correlation in unexpectedly worse financial situation

In the Appendix Table AV we show the degree to which households correctly forecast future realizations.

[25] The average of those two is similar to the 0.36 (0.33) probability reported in panel A of Table III.

appears to be driven by a group of individuals who systematically expect to be better off than what they are. An alternative interpretation is that such individuals underestimate the persistence of the reasons that led them to be worse off. A similar pattern emerges for individuals who are in an unexpectedly better financial situation.

5.3 Unexpected changes and psychological well-being

In order to estimate the additional effect of the changes in financial situation on psychological well-being being unexpected, we have estimated panel fixed effects regressions similar to those in Table XI, but in which we include as additional explanatory variables the earnings and expenditures increase/decrease variables interacted with dummy variables that take the value of one in case the change in financial situation was unexpected. A priori one might expect that such changes would have a stronger effect on well-being. The estimation results in Table AVII show that this is not necessarily the case.

Most of the estimation coefficients on the interaction variables are not statistically significant, so that the change being unexpected does not have a significant additional impact on well being. One possible explanation is that as we have seen in Table XII such changes tend to be perceived by individuals as being less persistent than those changes that are expected. Thus, even though they are unanticipated, they are less likely to persist into the future, so that they do not have an additional impact in psychological well-being (compared to expected changes that materialize).

6 Financial Management

There is a small proportion of individuals who in some of the years in the sample report that they are better off due to good management (Table II). If these individuals are able to make better financial decisions/planning, then we might expect that good management *reduces* the probability that in other years these same individuals become worse off due to higher expenditures.

Naturally we do not observe those events directly in our data since there is no survey question asking individuals if they would have been worse off but were able to avoid this due to good financial management/planning. We are therefore required to estimate the likelihood of those events. In order to do so we first calculate the proportion of times that each individual in our sample reports being better off due to good management relative to the total number of years in which he/she appears in the sample ($p_i^{\text{Good Manag}}$). The higher

this number the more likely it is that the individual is particularly good at financial planning and/or managing expenditures, and therefore we call this variable "good management."

We then calculate the proportion of times that each individual is worse off due to higher expenditures. It is important to note that when doing so we remove from the calculations those observations for which the individual reports being better off due to good management. Otherwise there would be a mechanic negative relation between the two variables: the more often the individual reported being better off due to good management the smaller the proportion of times that the same individual could be worse off (due to higher expenditures or any other factor).

We regress the proportion of times that the same individual reports being worse off due to higher expenditures on our "good management" variable. Table XIII we reports the results. The unit of observation is each individual in our sample.

[Table XIII here]

The estimation results in the second column confirm that indeed good management reduces the frequency with which individuals are worse off due to higher expenditures. In the third column we consider only the cases in which the individual was *unexpectedly* worse off due to higher expenditures. Again the coefficient is negative, albeit smaller than in the previous regression, but still strongly significant. These results suggest that households with better financial/expenditure management skills are better able to prepare themselves for uncertain future events.

In the fourth column we test whether our good management indicator has predictive power for the likelihood that the individual is better off due to lower expenditures. Although also a natural prediction of our hypothesis, it might be harder to identify since in those events the individual may have already explicitly answered "good management" as the reason for why he/she is better off. Despite this our results still reveal a positive and strongly significant coefficient, confirming that some of these events might indeed be due to the financial management skills of those individuals.

For further validation of these results we perform a placebo test by asking whether good management increases the probability that individuals are better off due to higher earnings. One might argue that individuals with good management skills might also be more dedicated workers and thus one might still find an effect. But on one hand this only works against our placebo hypothesis, and even then we would still expect a weaker effect. The results are shown in the last column of Table XIII. The estimated coefficient is essentially zero and

not statistically significant, thus ruling out any potential mechanical effect in our previous results.

7 Conclusion

We have used almost two decades of household level panel data to show that higher expenditures is the main reason for a deterioration in household finances and that these increases in expenditures are persistent. These results suggest that we should re-evaluate the main sources of background risk that determine household savings behavior.

We have traced the sources of these increases in expenditures to increases in the prices of goods that constitute an important fraction of households' budget, such as food, energy and mortgage payments, and to life events, including divorce, a deterioration in health status, and the birth of the first child. We have shown that psychological variables, such as individuals' ability to face problems, also matter, and that there are important links between changes in financial situation and psychological well-being, with worse off individuals more likely to feel depressed and to lose sleep over worry. These in turn increase the probability of a further deterioration in household finances. Behaviors are important too: those who save regularly and those who do not use (expensive) credit card debt to borrow are less likely to become financially worse off due to higher expenditures.

We have analyzed individuals' expectations of their future financial situation, to show that individuals tend to perceive expected changes as being more persistent than unexpected ones, so that the two have a comparable effect on psychological well-being. Finally, we have presented evidence that self-reported measures of good financial management help to reduce the probability that individuals become financially worse off as a result of higher expenditures.

Two words of caution. First, the persistence in the variables studied and the feedback effects that we have identified mean that it is very hard to completely isolate the effects of the individuals' financial situation on psychological well-being (or vice versa). Second, our results are on individuals' financial situation and psychological well-being, and not on overall utility. In any case, our results have shown that, for many households, expenditures are an important source of background risk, and that there are important links between financial and psychological well-being. Furthermore, our results highlight the importance of expenditure management in financial education.

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Table I
Financial situation.

Panel A reports the number of observations for which individuals in year t reported that they were financially significantly better off, no significant change, and significantly worse off than in year t-1, for t=1991,...,2008. Panel B reports the probability that individuals report each of these alternatives in year t, conditional on their year t-1 answer, i.e. on whether in year t-1 they reported that they were significantly better off, no significant change, or significantly worse off than in year t-2.

Panel A: Financial situation in year t				
	Better off at t	No change at t	Worse off at t	Total
Number of obs.	28,830	63,695	29,755	122,280
Fraction of total	0.24	0.52	0.24	1.00
Panel B: Fin. situation in year t conditional on year t-1 response				
	Better off at t	No change at t	Worse off at t	Total
Better off at t-1	0.44	0.39	0.17	1.00
No change t-1	0.16	0.67	0.17	1.00
Worse off at t-1	0.19	0.37	0.45	1.00

Table II
Reasons for change in financial situation.

This table reports the reasons given by individuals for why they were financially better off (worse off) in year t than in year t-1. The last two columns report the reasons given by individuals in excellent health both in year t-1 and in year t for why they were financially worse off in year t than in year t-1.

Panel A	Better off		Panel B	Worse off		Worse off/excellent health	
Reason better off	# obs.	Fraction	Reason worse off	# obs.	Fraction	# obs.	Fraction
Earnings ↑	14,080	0.54	Earnings ↓	6,206	0.24	1,348	0.28
Expenditures ↓	3,883	0.15	Expenditures ↑	13,530	0.52	2,395	0.50
Benefits ↑	2,739	0.11	Benefits ↓	990	0.04	118	0.02
Inv income ↑	749	0.03	Inv income ↓	878	0.03	163	0.03
Windfall payment	781	0.03	One-off expend.	513	0.02	126	0.03
Good management	1,310	0.05					
Other reasons	2,507	0.10	Other reasons	3,672	0.14	688	0.14
Total better off	26,049	1.00	Total worse off	25,789	1.00	4,838	1.00

Table III
Persistence in changes in financial situation, by reason given for change.

Panel A reports the probability that an individual gives the same reason for change in financial situation in year t and in each of the subsequent future years until t+k, for k=1,2,3. Panel B reports the probability of the event that caused the change in financial situation at t not being reversed in year t+1, by year t+2, and by year t+3. This panel reports both a lower bound and upper bound of the estimated probabilities. The lower bound is obtained by considering that a reversal has taken place only if the individual responds in a future year that he/she is better off (having reported worse off at t) because of a similar reason (E.g. better off in a future year due to an earnings increase when at t reported worse off due an earnings decrease). The upper bound is computed by taking all future events with a "better off" response regardless of the listed reason.

Panel A: Probability of consecutive realizations			
Event at t	Repeat at t+1	Repeat at t+2	Repeat at t+3
Earnings ↑	0.36	0.16	0.07
Expenditures ↓	0.13	0.03	0.00
Earnings ↓	0.18	0.04	0.01
Expenditures ↑	0.33	0.15	0.09
Panel B: Probability of non-reversal (lower bound - upper bound)			
Event at t	Non-reversal at t+1	Non-reversal by t+2	Non-reversal by t+3
Earnings ↑	0.83 - 0.93	0.71 - 0.87	0.61 - 0.82
Expenditures ↓	0.84 - 0.92	0.73 - 0.86	0.62 - 0.78
Earnings ↓	0.76 - 0.84	0.60 - 0.72	0.48 - 0.60
Expenditures ↑	0.83 - 0.97	0.73 - 0.95	0.67 - 0.93

Table IV
Summary statistics.

This table reports the mean for several variables for both the full sample and specific subsamples. The second column reports the mean for all observations, the third (fourth) column reports the means for observations corresponding to individuals who report being better off (better off due to earnings increase) in year t than in year t-1. The fifth (sixth) column reports the means for observations corresponding to individuals who report being worse off (worse off due to expenditures increase) in year t than in year t-1.

Variable	All obs.	Better off	Earnings ↑	Worse off	Expenditures ↑
Number of obs.	126,539	28,830	14,080	29,755	13,530
Panel A: Demographics and life events					
Age	50.4	42.6	37.4	49.3	51.2
Male	0.55	0.55	0.57	0.55	0.53
Married	0.60	0.65	0.71	0.60	0.57
Excellent health	0.22	0.28	0.32	0.19	0.18
Good health	0.44	0.45	0.47	0.42	0.42
Fair health	0.22	0.19	0.17	0.24	0.25
Poor health	0.09	0.06	0.04	0.11	0.11
Very poor health	0.03	0.02	0.01	0.04	0.04
Number of children	0.54	0.63	0.72	0.55	0.51
Panel B: Cost of living and income					
Food exp./Total inc.	0.203	0.170	0.155	0.217	0.222
Energy exp./Total inc.	0.050	0.039	0.034	0.054	0.056
Food inflation	0.023	0.021	0.019	0.026	0.027
Energy inflation	0.052	0.047	0.045	0.055	0.062
Mortgage payment/Total inc.	0.059	0.076	0.093	0.064	0.060
Real total inc (pounds)	22,967	27,584	31,012	21,194	20,661
Panel C: Psychological variables					
Depressed	0.21	0.18	0.16	0.32	0.31
Diff. facing problems	0.12	0.09	0.06	0.18	0.18
Loss of sleep due to worry	0.19	0.16	0.15	0.28	0.26
Panel D: Saving behavior					
Saves regularly	0.40	0.52	0.54	0.29	0.31

Table V
Logit and (conditional) logit fixed effects panel regressions for explaining worse financial situation due to higher expenditures.

The dependent variable is a dummy variable that takes the value of one if the individual reports that he/she is financially worse off in year t than in year t-1 due to an increase in expenditures, and zero otherwise. The second column reports the estimated coefficients from a pooled logit regression. The third and fourth column report the estimated coefficients (the log-odds ratios) for panel logit regressions with individual fixed effects. The last column reports the estimated coefficients for a logit regression that includes the lagged endogenous variable among the explanatory variables. T-statistics clustered by individual are shown below the estimated coefficients. The baseline case for health status at t-1 is excellent. We include a second order polynomial in age and year fixed effects in all specifications (coefficients not reported).

Independent variables	Logit Coefficients	FE Logit Coefficients	FE Logit Coefficients	Dynamic Logit Coeff.
Log real inc_{t-1}	-0.02	-0.03	-0.06	-0.01
	(-0.60)	(-0.83)	(-2.48)	(-0.43)
Δ log real inc_t	-0.11	-0.15	-0.20	-0.12
	(-2.77)	(-3.08)	(-4.08)	(-2.93)
Cost of living				
$(\text{Energy Exp./Inc})_{t-1}$	-0.15	-0.41		-0.50
	(-0.21)	(-0.38)		(-0.78)
$(\text{Food Exp./Inc})_{t-1}$	0.17	0.55	0.64	0.22
	(0.81)	(1.85)	(2.60)	(1.09)
$(\text{Mortgage payments/Inc})_{t-1}$	0.74	0.72	0.04	0.57
	(3.97)	(1.95)	(0.13)	(3.46)
(Energy Exp./Inc) at t-1 x $\text{RPI}_t^{Energ.}$	13.58	21.17		18.14
	(1.94)	(2.19)		(2.68)
$(\text{Food Exp./Inc})_{t-1}$ x RPI_t^{Food}	17.80	5.66	15.64	14.07
	(2.37)	(0.62)	(2.01)	(1.83)
$(\Delta$ Mort. payments/Inc$)_t$	1.78	2.02	1.63	1.90
	(8.00)	(6.12)	(6.33)	(7.84)
Life events				
Good health_{t-1}	0.08	0.11	0.10	0.07
	(1.84)	(1.51)	(2.06)	(1.72)
Fair health_{t-1}	0.27	0.28	0.22	0.24
	(4.94)	(3.32)	(3.38)	(4.96)
Poor health_{t-1}	0.31	0.28	0.17	0.28
	(4.60)	(2.61)	(2.20)	(4.50)
$\text{Very poor health}_{t-1}$	0.40	0.21	0.07	0.34
	(3.98)	(1.48)	(0.56)	(3.73)
$\text{Health improvement}_{t-1,t}$	-0.11	-0.10	-0.06	-0.09
	(-2.98)	(-2.03)	(-1.67)	(-2.55)
$\text{Health deterioration}_{t-1,t}$	0.12	0.09	0.07	0.12
	(3.69)	(1.83)	(2.10)	(3.60)

(Table V continued in the next page)

Table V Continued
Logit and (conditional) logit fixed effects panel regressions for explaining worse financial situation due to higher expenditures.

Independent variables	Logit Coefficients	FE Logit Coefficients	FE Logit Coefficients	Dynamic Logit Coeff.
(Table V continued from the previous page)				
Life events				
Marital status$_{t-1}$	0.00	-0.01	-0.09	0.01
	(0.10)	(-0.13)	(-1.63)	(0.18)
Separated$_{t-1,t}$	0.12	0.26	0.27	0.13
	(1.06)	(1.41)	(2.14)	(1.04)
First child born$_{t-1,t}$	0.58	0.61	0.65	0.62
	(5.89)	(3.66)	(7.32)	(6.00)
Psychological variables				
Difficulty facing problems$_{t-1}$	0.15	0.12	0.11	0.12
	(3.04)	(1.66)	(2.36)	(2.48)
Depressed$_{t-1}$	0.14	-0.08	-0.02	0.06
	(3.39)	(-1.39)	(-0.44)	(1.46)
Losing sleep due to worry$_{t-1}$	0.21	0.11	0.10	0.17
	(5.23)	(2.30)	(2.71)	(4.33)
Saving behavior				
Saves$_{t-1}$	-0.14	0.05	-0.01	-0.07
	(-4.32)	(0.82)	(-0.42)	(-2.31)
Other variables				
Worse off due to ↑ expenditures$_{t-1}$				1.56
				(42.10)
Year fixed effects	Yes	Yes	Yes	Yes
Individual fixed effects	No	Yes	Yes	No
Second order polynomial in age	Yes	Yes	Yes	Yes
Number of obs.	61,445	27,174	47,300	61,445

Table VI
Predicted probabilities.

This table reports the impact of the different independent variables on predicted probabilities calculated using the pooled logit and the FE logit models. We first calculate the predicted probability of each individual being worse off due to higher expenditures in year t using the estimated regression coefficients and the realized values for his/her explanatory variables. We then compute the mean predicted probabilities for individuals in different groups: high and low real labor income, high and low energy expenditure relative to income, whether separated between time t-1 and t, and so on. For the continuous explanatory variables the low (high) group corresponds to those in the percentiles 20 to 30 (70 to 80) of the distribution of the respective explanatory variable. The second (third) column reports the difference in average predicted probabilities across the two groups for the pooled (FE) logit model. The third (fourth) column reports this difference scaled by the unconditional mean of the dependent variable (worse off due to higher expenditures). The last two columns report the results for T-tests of the equality of means.

	Difference High-Low (%)		Diff./Uncond. mean (%)		p-value Diff. = 0	
Independent variables	Logit	FE Logit	Logit	FE Logit	Logit	FE Logit
Log real inc at t-1	-2.4	-3.1	-21.0	-27.0	0.00	0.00
Δ log real inc at t	-0.8	-0.1	-7.1	-0.9	0.00	0.73
Cost of living						
Energy Exp./Inc at t-1	2.7	3.5	23.0	30.5	0.00	0.00
(Food Exp./Inc) at t-1	1.9	2.2	16.0	18.8	0.00	0.08
Mortgage payments/Inc at t-1	1.2	2.1	10.5	17.8	0.00	0.00
$(\text{Energy Exp./Inc})_{t-1}$ x $\text{RPI}_t^{Energ.}$	3.5	2.8	30.1	24.1	0.00	0.00
$(\text{Food Exp./Inc})_{t-1}$ x RPI_t^{Food}	2.7	4.4	23.3	37.6	0.00	0.00
(Δ Mort. payments/Inc) at t	1.0	1.2	8.6	10.1	0.00	0.00
Life events						
Good minus excel. health at t-1	0.8	-0.1	6.7	-0.8	0.00	0.63
Fair minus good health at t-1	2.5	1.8	21.2	15.4	0.00	0.00
Poor minus fair health at t-1	1.4	1.0	12.3	8.8	0.00	0.00
Very poor minus poor health at t-1	1.6	0.5	13.7	4.4	0.00	0.32
Poor minus good health at t-1	3.9	2.8	33.5	24.4	0.00	0.00
Health improvement bet. t-1 and t	0.0	0.1	-0.2	0.7	0.68	0.65
Health deterioration bet. t-1 and t	1.0	1.4	8.3	12.3	0.00	0.00
Married at t-1	-0.8	-3.1	-6.5	-26.8	0.00	0.00
Separated between t-1 and t	2.2	2.6	19.1	22.0	0.00	0.00
First child born between t-1 and t	4.9	10.6	42.3	91.4	0.00	0.00
Psychological variables						
Difficulty facing problems at t-1	5.3	2.1	45.3	18.0	0.00	0.00
Depressed at t-1	4.1	0.7	34.8	5.9		0.00
Losing sleep due to worry at t-1	4.4	1.6	37.9	13.7	0.00	0.00
Saving behavior						
Saves at t-1	-2.4	-1.2	-20.7	-10.4	0.00	0.00

Table VII
Persistence of the explanatory variables.

For the continuous explanatory variables the table reports the first-order autocorrelation and their associated p-values. For the dummy variables the table reports the probability of year t+1 repeat events (E.g. probability of being depressed at t+1 conditional on being depressed at t, probability of good health at t+1 conditional on good health at t).

Variable	First-order autocorrelation	p-value
Log real inc	0.706	0.00
Δ log real inc	-0.215	0.00
(Energy Exp./Inc)	0.704	0.00
(Food Exp./Inc)	0.666	0.00
(Mortgage payments/Inc)	0.813	0.00
	Probability of repeat at t+1	
Difficulty facing problems	0.409	
Depressed	0.471	
Losing sleep due to worry	0.434	
Saves	0.705	
Excellent health	0.581	
Good health	0.620	
Fair health	0.450	
Poor health	0.383	
Very poor health	0.369	

Table VIII
Cross-sectional Tobit regressions.

This table reports the results of cross-sectional Tobit regressions. The dependent variable is the average over the sample for each individual of the dummy variable that takes the value of one if the individual is worse off due to higher expenditures in that year (and zero otherwise). Similarly, we calculate for each individual the average over the sample of the dummy variable for whether the individual saves and his/her average income growth. For three of the waves (years) the BHPS has supplementary information on whether the individual owes money, whether he/she makes use of credit cards to borrow, and on total debt (that we use to calculate the ratio to income). We compute for each individual the average of the latter three variables over the three years that we observe them.

Independent variables	Tobit coef. (1)	Tobit coef. (2)	Tobit coef. (3)
Saves_i	-0.106	-0.104	-0.099
	(-12.58)	(-12.26)	(-11.26)
$\Delta\text{log real inc}_i$	-0.082	-0.083	-0.098
	(-2.65)	(-2.29)	(-2.84)
Owe money_i		0.039	0.022
		(5.54)	(2.13)
Credit card use_i		0.050	0.040
		(5.51)	(3.30)
$(\text{Debt/Inc})_i$			0.164
			(4.17)
Number obs.	13,175	11,347	11,119

Table IX
Multinomial Logit Regressions.

This table reports the estimated coefficients for multinomial logit regressions for two alternative specifications. In each specification the outcome variable takes one of possible five values: (i) better off due to higher earnings; (ii) better off due to lower expenditures; (iii) worse off due to lower earnings; (iv) worse off due to higher expenditures; and (v) the remainder. The remainder is the base group. The table reports results for groups (i) and (iv), but a full set of results is included in the appendix. The specifications differ in the set of explanatory variables: for specification (2) we exclude variables that may give rise to endogeneity concerns. T-statistics clustered by individual are shown below the estimated coefficients. The baseline case for health status at t-1 is excellent. We include a second order polynomial in age and year fixed effects in all specifications (coefficients not reported).

	Multinomial logit specification (1)		Multinomial logit specification (2)	
Independent variables	Earnings ↑	Expenditures ↑	Earnings ↑	Expenditures ↑
Log real inc_{t-1}	0.08	0.01	0.08	0.01
	(3.18)	(0.38)	(3.77)	(0.55)
Cost of living				
$(\text{Food Exp./Inc})_{t-1}$	-0.79	0.11	-0.77	0.06
	(-4.48)	(0.73)	(-3.79)	(0.31)
$(\text{Mortgage payments/Inc})_{t-1}$	0.78	0.80	0.83	0.35
	(5.53)	(4.81)	(5.74)	(1.76)
$(\text{Food Exp./Inc})_{t-1}$ x RPI_t^{Food}	-15.82	17.35	-14.67	16.42
	(-2.10)	(2.84)	(-1.81)	(2.40)
$(\Delta$ Mort. payments/Inc$)_t$	-0.23	1.86		
	(-1.19)	(10.12)		
Life events				
Good health_{t-1}	-0.30	0.02	-0.21	-0.01
	(-9.28)	(0.71)	(-6.32)	(-0.33)
Fair health_{t-1}	-0.50	0.17	-0.33	0.10
	(-10.70)	(3.20)	(-7.31)	(2.24)
Poor health_{t-1}	-0.91	0.20	-0.71	0.12
	(-12.41)	(3.09)	(-9.44)	(1.90)
$\text{Very poor health}_{t-1}$	-1.09	0.28	-0.85	0.17
	(-9.76)	(3.06)	(-7.05)	(2.12)
$\text{Health improvement}_{t-1,t}$	0.23	-0.09		
	(8.23)	(-2.81)		
$\text{Health deterioration}_{t-1,t}$	-0.14	0.10		
	(-5.22)	(3.97)		
$\text{Marital status}_{t-1}$	0.18	0.02	0.16	0.03
	(4.39)	(0.55)	(4.36)	(0.81)
$\text{Separated}_{t-1,t}$	-0.70	0.17		
	(-5.53)	(2.10)		
$\text{First child born}_{t-1,t}$	-0.40	0.70		
	(-4.39)	(9.80)		

(Table IX continued in the next page)

Table IX Continued
Multinomial Logit Regressions.

This table reports the results for multinomial logit regressions.

	Multinomial logit specification (1)		Multinomial logit specification (2)	
Independent variables	Earnings ↑	Expenditures ↑	Earnings ↑	Expenditures ↑
(Table X continued from the previous page)				
Psychological variables				
Difficulty facing problems$_{t-1}$	-0.09	0.16	-0.11	0.16
	(-2.02)	(3.56)	(-2.16)	(3.61)
Depressed$_{t-1}$	-0.02	0.16	-0.03	0.16
	(-0.65)	(4.32)	(-0.99)	(4.78)
Losing sleep due to worry$_{t-1}$	0.07	0.25	0.05	0.26
	(1.87)	(9.11)	(1.25)	(7.85)
Saving behavior				
Saves$_{t-1}$	0.11	-0.15	0.12	-0.15
	(3.79)	(-5.66)	(4.02)	(-5.77)
Other variables				
Year fixed effects	Yes	Yes	Yes	Yes
Individual fixed effects	No	No	No	No
Second order polynomial in age	Yes	Yes	Yes	Yes
Number of obs.	87,694		89,693	

Table X
Correlation with agggregate variables.

The first row reports the time series correlation between the proportion of individuals who in each year report being better off due to Earnings ↑ and real GDP growth, inflation, and the unemployment rate. Below the estimated correlations we report p-values for a test that the correlation is zero. We report similar correlations and corresponding p-values for the other variables.

	Real GDP growth	Inflation	Unemp. rate
Earnings ↑	0.63	-0.57	-0.09
	(0.01)	(0.02)	(0.74)
Expenditure ↓	0.57	-0.52	-0.04
	(0.02)	(0.04)	(0.88)
Earnings ↓	0.20	0.24	0.90
	(0.46)	(0.38)	(0.00)
Expenditure ↑	-0.73	0.61	0.38
	(0.00)	(0.01)	(0.15)

Table XI
Relation to psychological well-being.

In the second column the dependent variables is a dummy variable that takes the value of one if in year t the individual reports being more depressed than usual and zero otherwise. In the third column it is a dummy variable that takes the value of one if the individual reports having more difficulties facing problems than usual. In the last column it is a dummy variable that takes the value of one if the individual reports that he/she is loosing more sleep due to worry than usual. The table reports the estimated coefficients from panel logit regressions with individual fixed effects The T-statistics shown below the estimated coefficients are clustered for individual. We include a second order polynomial in age and year fixed effects in all the specifications (coefficients not reported).

Independent variables	Depressed	Loss of sleep due to worry	Difficulties facing problems
Change in financial situation			
Earnings ↑ at t	-0.35	-0.22	-0.37
	(-9.02)	(-4.90)	(-6.52)
Expenditure ↓ at t	-0.16	-0.21	-0.13
	(-3.33)	(-3.22)	(-1.80)
Earnings ↓ at t	0.62	0.53	0.62
	(16.11)	(10.30)	(10.24)
Expenditure ↑ at t	0.44	0.30	0.36
	(12.44)	(8.32)	(7.30)
Life events			
Health improvement bet. t-1 and t	-0.53	-0.42	-0.57
	(-14.96)	(-10.71)	(-12.47)
Health deterioration bet. t-1 and t	0.65	0.51	0.73
	(21.16)	(17.41)	(19.38)
First child born bet. t-1 and t	-0.31	-0.07	-0.18
	(-4.31)	(-0.70)	(-1.34)
Separated bet. t-1 and t	0.82	0.86	0.63
	(7.60)	(11.46)	(4.95)
Lagged control variables			
Good health at t-1	0.46	0.37	0.42
	(10.38)	(10.58)	(8.88)
Fair health at t-1	0.96	0.79	1.01
	(14.49)	(13.71)	(15.25)
Poor health at t-1	1.38	1.04	1.58
	(15.31)	(13.43)	(15.16)
Very poor health at t-1	1.80	1.40	2.05
	(16.17)	(11.35)	(14.66)
Log real total inc at t-1	0.03	0.02	0.01
	(1.58)	(0.94)	(0.65)
Other control variables			
Year fixed effects	Yes	Yes	Yes
Individual fixed effects	Yes	Yes	Yes
Second order polynomial in age	Yes	Yes	Yes
Number of obs.	58,927	55,333	40,933

Table XII
Financial situation and financial expectations.

This table reports household financial expectations in year t for their financial situation in year t+1, conditional on the change in financial situation and the reason for the change in year t. The table also reports financial expectations for year t+1 conditional on whether the change in year t was expected or unexpected.

	Fin. expectations at t for year t+1		
Change in financial situation at t	Better off	Worse off	No change
Panel A: Better off at t			
Overall	0.42	0.06	0.52
Panel A1: Earnings ↑			
Overall	0.49	0.06	0.46
Expected	0.61	0.04	0.34
Unexpected	0.33	0.07	0.60
Panel A2: Expenditures ↓			
Overall	0.40	0.06	0.54
Expected	0.55	0.05	0.39
Unexpected	0.26	0.06	0.67
Panel B: Worse off at t			
Overall	0.28	0.28	0.44
Panel B1: Earnings ↓			
Overall	0.42	0.14	0.44
Expected	0.27	0.28	0.46
Unexpected	0.46	0.10	0.43
Panel B2: Expenditures ↑			
Overall	0.22	0.32	0.45
Expected	0.09	0.57	0.34
Unexpected	0.25	0.25	0.50
Panel C: No change at t			
Overall	0.14	0.07	0.79

Table XIII
Good financial management and expenditures.

The dependent variable in the second column is the proportion of times that household is worse off due to higher expenditures and in the third columns it is the proportion of times that the household is unexpectedly worse off due to higher expenditures. In the fourth column it is the proportion of times that the household is better off due to lower expenditures. In the last column it is the proportion of times that the household is better off due to higher earnings. The explanatory variable is the measure of good financial management described in the text.

	Exp. ↑	Unant. exp. ↑	Exp. ↓	Earnings ↑
Good management	-0.13	-0.04	0.04	0.00
	(-6.77)	(-3.93)	(3.68)	(-0.11)
Number of obs.	12,255	12,255	12,255	12,255

Appendix Tables

Appendix Table AI
Transition probability matrix for change in financial situation, by reason given for change.

This table reports the probability that an individual gives a certain reason for change in financial situation in year t, conditional on the reason given in year t-1. The no change category refers to those individuals who reported no change in financial situation.

	Reason for better off at t			Reason for worse off at t			No change
Reason at t-1	Earnings ↑	Expenditures ↓	Other	Earnings ↓	Expenditures ↑	Other	at t
Earnings ↑	0.36	0.05	0.08	0.07	0.07	0.03	0.35
Expenditures ↓	0.18	0.13	0.13	0.05	0.08	0.03	0.4
Better off other	0.13	0.06	0.19	0.04	0.07	0.04	0.47
Earnings ↓	0.16	0.02	0.06	0.18	0.13	0.07	0.38
Expenditures ↑	0.08	0.03	0.06	0.05	0.33	0.07	0.39
Worse off other	0.09	0.03	0.07	0.07	0.2	0.17	0.37
No change at t-1	0.07	0.02	0.05	0.04	0.09	0.03	0.69

Appendix Table AII
Multinomial Logit Regressions.

This table reports the estimated coefficients for multinomial logit regressions. The outcome variable takes one of possible five values: (i) better off due to higher earnings; (ii) better off due to lower expenditures; (iii) worse off due to lower earnings; (iv) worse off due to higher expenditures; and (v) the remainder. The remainder is the base group. T-statistics clustered by individual are shown below the estimated coefficients. The baseline case for health status at t-1 is excellent. We include a second order polynomial in age and year fixed effects in all specifications (coefficients not reported).

	Multinomial logit equation			
Independent variables	Earnings ↑	Expenditures ↓	Earnings ↓	Expenditures ↑
Log real inc_{t-1}	0.08	0.09	0.10	0.01
	(3.18)	(2.15)	(2.25)	(0.38)
Cost of living				
$(\text{Food Exp./Inc})_{t-1}$	-0.79	-1.28	-1.01	0.11
	(-4.48)	(-3.82)	(-3.43)	(0.73)
$(\text{Mortgage payments/Inc})_{t-1}$	0.78	0.25	0.31	0.80
	(5.53)	(0.98)	(1.44)	(4.81)
$(\text{Food Exp./Inc})_{t-1}$ x RPI_t^{Food}	-15.82	-29.71	-5.90	17.35
	(-2.10)	(-2.09)	(-0.52)	(2.84)
$(\Delta$ Mort. payments/Inc$)_t$	-0.23	-2.94	0.82	1.86
	(-1.19)	(-8.03)	(3.06)	(10.12)
Life events				
Good health_{t-1}	-0.30	-0.13	0.05	0.02
	(-9.28)	(-2.46)	(1.13)	(0.71)
Fair health_{t-1}	-0.50	-0.21	0.09	0.17
	(-10.70)	(-2.96)	(1.54)	(3.20)
Poor health_{t-1}	-0.91	-0.26	0.14	0.20
	(-12.41)	(-2.70)	(1.56)	(3.09)
Very poor health_{t-1}	-1.09	-0.26	0.16	0.28
	(-9.76)	(-1.71)	(1.50)	(3.06)
Health $\text{improvement}_{t-1,t}$	0.23	0.06	-0.05	-0.09
	(8.23)	(1.30)	(-1.13)	(-2.81)
Health $\text{deterioration}_{t-1,t}$	-0.14	-0.07	0.22	0.10
	(-5.22)	(-1.65)	(5.26)	(3.97)
Marital status_{t-1}	0.18	-0.05	0.45	0.02
	(4.39)	(-1.11)	(8.75)	(0.55)
$\text{Separated}_{t-1,t}$	-0.70	0.41	0.19	0.17
	(-5.53)	(3.76)	(1.75)	(2.10)
First $\text{child born}_{t-1,t}$	-0.40	-0.13	1.14	0.70
	(-4.39)	(-0.84)	(14.89)	(9.80)

(Table AII continued in the next page)

Appendix Table AII Continued
Multinomial Logit Regressions.

	Multinomial logit equation			
Independent variables	Earnings ↑	Expenditures ↓	Earnings ↓	Expenditures ↑
(Table AII continued from the previous page)				
Psychological variables				
Difficulty facing problems$_{t-1}$	-0.09	-0.06	0.12	0.16
	(-2.02)	(-0.75)	(2.07)	(3.56)
Depressed$_{t-1}$	-0.02	0.07	0.28	0.16
	(-0.65)	(1.04)	(6.25)	(4.32)
Losing sleep due to worry$_{t-1}$	0.07	0.07	0.16	0.25
	(1.87)	(1.21)	(3.49)	(9.11)
Saving behavior				
Saves$_{t-1}$	0.11	0.10	-0.04	-0.15
	(3.79)	(2.56)	(-1.15)	(-5.66)
Other variables				
Year fixed effects	Yes	Yes	Yes	Yes
Individual fixed effects	No	No	No	No
Second order polynomial in age	Yes	Yes	Yes	Yes
Number of obs.	87,694			

Appendix Table AIII
Multinomial Logit Regressions With Potentially Endogenous Variables Removed.

This table reports the estimated coefficients for multinomial logit regressions. The outcome variable takes one of possible five values: (i) better off due to higher earnings; (ii) better off due to lower expenditures; (iii) worse off due to lower earnings; (iv) worse off due to higher expenditures; and (v) the remainder. The remainder is the base group. T-statistics clustered by individual are shown below the estimated coefficients. The baseline case for health status at t-1 is excellent. We include a second order polynomial in age and year fixed effects in all specifications (coefficients not reported).

	Multinomial logit equation			
Independent variables	Earnings ↑	Expenditures ↓	Earnings ↓	Expenditures ↑
Log real inc_{t-1}	0.08	0.05	0.08	0.01
	(3.77)	(1.26)	(2.25)	(0.55)
Cost of living				
$(\text{Food Exp./Inc})_{t-1}$	-0.77	-1.34	-1.09	0.06
	(-3.79)	(-4.08)	(-4.65)	(0.31)
$(\text{Mortgage payments/Inc})_{t-1}$	0.83	1.03	0.07	0.35
	(5.74)	(4.32)	(0.31)	(1.76)
$(\text{Food Exp./Inc})_{t-1}$ x RPI_t^{Food}	-14.67	-24.60	-8.09	16.42
	(-1.81)	(-1.91)	(-0.84)	(2.40)
$(\Delta$ Mort. payments/Inc$)_t$				
Life events				
Good health_{t-1}	-0.21	-0.09	-0.02	-0.01
	(-6.32)	(-2.13)	(-0.36)	(-0.33)
Fair health_{t-1}	-0.33	-0.14	0.00	0.10
	(-7.31)	(-2.49)	(-0.05)	(2.24)
Poor health_{t-1}	-0.71	-0.17	0.02	0.12
	(-9.44)	(-2.21)	(0.36)	(1.90)
Very poor health_{t-1}	-0.85	-0.13	0.00	0.17
	(-7.05)	(-0.94)	(0.03)	(2.12)
Health $\text{improvement}_{t-1,t}$				
Health $\text{deterioration}_{t-1,t}$				
Marital status_{t-1}	0.16	-0.06	0.48	0.03
	(4.36)	(-0.98)	(9.61)	(0.81)
$\text{Separated}_{t-1,t}$				
First $\text{child born}_{t-1,t}$				

(Table AIII continued in the next page)

Appendix Table AIII Continued
Multinomial Logit Regressions With Potentially Endogenous Variables Removed.

	Multinomial logit equation			
Independent variables	Earnings ↑	Expenditures ↓	Earnings ↓	Expenditures ↑
(Table AIII continued from the previous page)				
Psychological variables				
Difficulty facing problems$_{t-1}$	-0.11	-0.06	0.14	0.16
	(-2.16)	(-0.99)	(2.56)	(3.61)
Depressed$_{t-1}$	-0.03	0.07	0.28	0.16
	(-0.99)	(1.25)	(5.83)	(4.78)
Losing sleep due to worry$_{t-1}$	0.05	0.06	0.17	0.26
	(1.25)	(1.06)	(3.87)	(7.85)
Saving behavior				
Saves$_{t-1}$	0.12	0.10	-0.04	-0.15
	(4.02)	(2.52)	(-1.15)	(-5.77)
Other variables				
Year fixed effects	Yes	Yes	Yes	Yes
Individual fixed effects	No	No	No	No
Second order polynomial in age	Yes	Yes	Yes	Yes
Number of obs.	89,693			

Appendix Table AIV
Predicted probabilities for psychological well-being.

This table reports the impact of the independent variables on the predicted probabilities of individuals feeling depressed, having difficulties facing problems, and losing sleep due to worry. The predicted probabilities are calculated using a pooleg logit model (Panel A, estimated coefficients not reported) and a FE logit model (Panel B, estimated coefficients reported in Table XI). We first calculate the predicted probability of each individual feeling depressed (having difficulties facing problems, and losing sleep due to worry) in year t using the estimated regression coefficients and the realized values for his/her explanatory variables. We then compute the mean predicted probabilities for individuals in different groups: high and low real labor income, high and low energy expenditure relative to income, whether separated between time t-1 and t, and so on. For the continuous explanatory variables the low (high) group corresponds to those in the percentiles 20 to 30 (70 to 80) of the distribution of the respective explanatory variable. The table reports the difference in average predicted probabilities across the two groups, and the difference in predicted probabilities scaled by the mean of the unconditional sample mean of the dependent dependent variable. All differences are statistically significant at the one percent level, except for the impact of first child on feeling depressed which for the FE logit model is not significantly different from zero.

Independent variables	Δdepressed (%) (percent)	(Δdep.) mean (percent)	Δdiff. face problems (percent)	Δdiff. mean (percent)	Δloss of sleep (percent)	Δloss mean (percent)
		Panel A: Logit model				
Earnings ↑ at t	-6.2	-29.3	-6.3	-52.9	-3.3	-17.9
Expenditures ↓ at t	-2.3	-11.0	-2.5	-21.2	-2.4	-12.8
Earnings ↓ at t	13.2	62.1	6.7	56.5	11.1	59.5
Expenditures ↑ at t	10.8	50.7	7.2	60.1	8.6	46.1
Poor vs good health at t-1	21.3	100.5	19.1	160.6	17.5	94.1
Health improv.$_{t-1,t}$	-1.9	-8.8	-0.9	-7.7	-0.8	-4.4
Health deterior.$_{t-1,t}$	8.3	39.2	6.1	51.1	6.6	35.6
Separated bet.$_{t-1,t}$	21.9	103.4	12.6	105.6	19.9	106.8
First child born$_{t-1,t}$	-1.4	-6.4	-2.5	-20.7	1.9	10.0
		Panel B: Fixed-effects logit model				
Earnings ↑ at t	-3.3	-15.5	-3.4	-28.7	-2.2	-11.9
Expenditures ↓ at t	-1.8	-8.5	-1.6	-13.3	-2.2	-11.8
Earnings ↓ at t	6.4	30.1	6.4	53.6	5.3	28.7
Expenditures ↑ at t	3.5	16.6	3.0	25.0	2.3	12.2
Poor vs good health at t-1	3.2	15.0	4.3	36.1	2.6	13.8
Health improv.$_{t-1,t}$	-3.0	-14.1	-3.2	-26.9	-2.3	-12.4
Health deterior.$_{t-1,t}$	5.9	28.0	6.6	55.9	4.8	25.9
Separated bet.$_{t-1,t}$	10.6	50.1	7.9	66.0	11.0	59.3
First child born$_{t-1,t}$	0.0	0.2	1.1	9.4	2.0	10.7

Appendix Table AV
Financial expectations and realizations.

The first three rows of the table report the household financial situation in year t+1, conditional on their expectations in year t for this same financial situation. The fourth row reports the number of observations for individuals who at time t+1 had a change in financial situation that they did not expect in year t. The last row of the table reports the proportion of individuals who had an unexpected change in their financial situation.

	Financial situation at t+1		
Fin. expectations at t for t+1	Better off	Worse off	No change
Expect to be better off at t+1	0.45	0.20	0.35
Expect to be worse off at t+1	0.12	0.53	0.35
Expect to be same at t+1	0.17	0.20	0.63
# unexpected at t+1	12,532	17,267	12,246
Proportion unexpected at t+1	0.54	0.74	0.23

Table AVI
Persistence in unexpected changes in financial situation.

In the second and third columns the dependent variable is a dummy variable that takes the value of one if the household reported an unexpected worse financial situation in year t, and zero otherwise. The independent variable is the first lag of this variable. In the last two columns the dependent variable is a dummy variable that takes the value of one if the household reported an unexpected better financial situation in year t, and zero otherwise. The independent variable is the first lag of this variable. The table reports estimation results for logit and conditional fixed effects panel logit regressions.

	Logit	Logit FE	Logit	Logit FE
Independent variables	Unexp. worse at t	Unexp. worse at t	Unexp. better at t	Unexp. better at t
Unexp. worse fin. sit. at t-1	0.817	-0.175		
	(37.01)	(-7.12)		
Unexp. better fin. sit. at t-1			0.628	-0.380
			(30.77)	(-13.94)
Number obs	81,295	64,084	81,295	56,766

Appendix Table AVII
The effects of unexpected changes in financial situation on psychological well-being.

In the second column the dependent variables is a dummy variable that takes the value of one if in year t the individual reports being more depressed than usual and zero otherwise. In the third column it is a dummy variable that takes the value of one if the individual reports having more difficulties facing problems than usual. In the last column it is a dummy variable that takes the value of one if the individual reports that he/she is loosing more sleep due to worry than usual. The table reports the estimated coefficients from panel logit regressions with individual fixed effects The T-statistics shown below the estimated coefficients are clustered for individual. We include a second order polynomial in age and year fixed effects in all the specifications (coefficients not reported).

Independent variables	Depressed	Loss of sleep due to worry	Difficulties facing problems
Change in financial situation			
Earnings ↑ at t	-0.39	-0.28	-0.39
	(-9.84)	(-5.35)	(-6.11)
Expenditure ↓ at t	-0.21	-0.26	-0.29
	(-2.18)	(-2.63)	(-2.32)
Earnings ↓ at t	0.53	0.33	0.59
	(5.4)	(3.03)	(4.86)
Expenditure ↑ at t	0.41	0.19	0.37
	(6.23)	(3.69)	(5.59)
Unanticipated change in financial situation			
Unant. Earnings ↑ at t	0.05	0.13	0.04
	(0.74)	(1.68)	(0.44)
Unant. Expenditure ↓ at t	0.06	0.08	0.24
	(0.42)	(0.71)	(1.53)
Unant. Earnings ↓ at t	0.11	0.26	0.04
	(1.15)	(2.31)	(0.29)
Unant. Expenditure ↑ at t	0.03	0.15	-0.02
	(0.42)	(2.43)	(-0.25)
Life events			
Health improvement bet. t-1 and t	-0.54	-0.42	-0.59
	(-15.67)	(-13.11)	(-12.30)
Health deterioration bet. t-1 and t	0.65	0.51	0.72
	(20.45)	(17.90)	(17.36)
First child born bet. t-1 and t	-0.30	-0.07	-0.18
	(-3.21)	(-0.84)	(-1.31)
Separated bet. t-1 and t	0.87	0.92	0.70
	(11.92)	(8.29)	(6.39)

(Table AVII continued in the next page)

Appendix Table AVII Continued
The effects of unexpected changes in financial situation on psychological well-being.

Independent variables	Depressed	Loss of sleep due to worry	Difficulties facing problems
(Table AVII continued from the previous page)			
Lagged control variables			
Good health at t-1	0.47	0.38	0.43
	(8.49)	(8.66)	(7.30)
Fair health at t-1	0.98	0.81	1.03
	(14.61)	(14.74)	(12.74)
Poor health at t-1	1.40	1.04	1.59
	(17.57)	(13.19)	(15.76)
Very poor health at t-1	1.80	1.46	2.08
	(15.67)	(14.00)	(15.29)
Log real total inc at t-1	0.03	0.02	0.02
	(1.49)	(0.84)	(0.98)
Other control variables			
Year fixed effects	Yes	Yes	Yes
Individual fixed effects	Yes	Yes	Yes
Second order polynomial in age	Yes	Yes	Yes
Number of obs.	55,557	52,074	38,144