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JEL Codes: I31, I32, D60
Keywords: Financial improvement, financial worsening, time profiles, well-being, HILDA

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Living in the Shadow of the Past: Financial Profiles and Well-Being*

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Abstract. We here consider the link between individual financial profiles over time and well-being, as measured by life satisfaction. We in particular look at annual self-reported financial worsening and improvement information for over 25,000 individuals in Australian panel data from 2002 to 2017. We first find that satisfaction falls (rises) with a contemporaneous major financial worsening (improvement), with worsening having the larger influence. Second, the experience of these financial events in the past continues to be linked to current well-being. Last, only the order of financial-improvement spells relates to well-being: a given number of past years where finances deteriorated has the same association with current well-being whether the deterioration occurred in one continuous spell or was interrupted. We last show that these associations are heterogeneous over the distribution of well-being.

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1 Introduction

The last few decades have witnessed a fast-growing economic research literature on the causes and consequences of various measures of subjective well-being (Di Tella and MacCulloch, 2006; Dolan et al., 2008; Lane, 2017; Clark et al., 2018). Particular attention has been focussed on the role of individual income, both within and across countries and in cross-section and time-series data (Easterlin, 1995; Clark and Oswald, 1996; Blanchflower and Oswald, 2004; Ferrer-i Carbonell, 2005; Luttmer, 2005; Clark et al., 2008). This well-established literature has produced two main conclusions (Clark et al., 2016): (i) within each country at a given point in time, richer people are more satisfied; and (ii) on average, individuals living in richer countries are more satisfied with their lives than are their counterparts in poorer countries. How rising average income within country over time relates to life satisfaction is less conclusive. Some work has concluded that increasing average income over time is generally not associated with rising well-being within a country (see, for example, Figure 2.3 in Clark et al., 2018), while others find a positive relationship between growth and well-being (Stevenson and Wolfers, 2013). A useful summary of this literature is provided by Easterlin (2017).

However, as Brown and Gray (2016) acknowledge, only a limited number of contributions have looked at the effect of monetary factors beyond income on individual well-being. Headey and Wooden (2004) have shown that life satisfaction is positively related to household net wealth. On this point, see also D'Ambrosio et al. (2009) and D'Ambrosio et al. (2020). Regarding debt, Keese and Schmitz (2014) find that this is negatively related to mental well-being, and Brown et al. (2005) emphasise the role of unsecured, as opposed to secured, debt in this respect. Bridges and Disney (2010) explore the link between self-reported depression and both objective and subjective debt measures, concluding that it is the latter rather than the former that are the most associated with depression. Frijters et al. (2011) examine life-satisfaction dynamics around major financial events (and other life events). They find that satisfaction falls (rises) with a major contemporaneous financial worsening (improvement) and that there is partial adaptation of well-being to financial shocks after two years. Brown and Gray (2016) also show that well-being is positively associated with net wealth and assets, but negatively correlated with both total and unsecured debt. They further find evidence of comparisons, with

the financial situation of households in a reference group also being correlated with individual life satisfaction and financial well-being.

This extant research on financial situation and subjective well-being is however mostly resolutely atemporal, with contemporaneous financial measures being correlated with current well-being. We here instead focus on the time profiles of both major financial improvements (e.g. having won a lottery or received an inheritance) and major financial worsening (e.g. having gone bankrupt) in determining life satisfaction, using longitudinal data from the Household Income and Labour Dynamics in Australia (HILDA) Survey. In contrast to most existing research on contemporaneous correlations with financial variables, our analysis is intertemporal.[1] Although where individuals are now (financially) is important, how they got there is also key in understanding their current well-being. Conditional on the present, the past matters here for a number of reasons. The first is the scarring effect of past negative events, which can continue to affect current well-being even conditional on the current situation in the absence of full adaptation: this has been demonstrated for both past poverty (Clark et al., 2015) and past unemployment (Clark et al., 2001; Clark and Lepinteur, 2019). An analogous 'anti-scarring' effect may well be at play for past positive effects. Second, the sum of previous financial events can provide us with some measure of wealth. Last, the order of financial events may also matter, with the experience of an additional consecutive event being lived differently by the individual, in a sense that we will clarify below.

Our analysis of HILDA data contributes to the literature by investigating the associations between major financial shocks and individual subjective well-being, not only contemporaneously but also relating well-being at time t to both individual variables at the same point in time (t) and their past values up to time t–1. We will first consider evidence for adaptation to one single past financial worsening or improvement, as in the existing adaptation literature, before turning to two parametric measures that allow for multiple shocks. These latter come from the recent literature on economic

[1] Cobb-Clark and Schurer (2013) consider the relationship between both current and past financial worsening and improvement and the individual's current locus of control, using the same HILDA data as we do. They show that external locus of control (believing that life's outcomes are mainly due to external factors) increases with contemporaneous financial worsening but falls with financial improvement. In their analysis of past events, they group together a variety of elements into three life domains: financial worsening is in the employment/income-related domain, together with retirement, being fired and episodes of unemployment; they find no relationship between past negative events and current locus of control.

inequality: (i) the *chronicity* index of Foster (2009) (which measures the frequency of financial shocks) and (ii) the *persistence* index in Bossert et al. (2012) (which considers the continuity of financial-shock spells). These will reveal how well-being is related to both current financial events and the past history of financial shocks. Last, we consider the link between financial profiles and well-being over the entire distribution of the latter in a quantile analysis. Existing work on the role of income and other financial variables has almost exclusively dealt with average effects by focussing on the mean of the subjective well-being distribution. However, these average effects likely conceal considerable heterogeneity. From the policy perspective, the distributional analysis of subjective well-being can also help policy-makers to develop policies that target specific groups, rather than the entire population, which is arguably a more efficient use of resources. In this context the distribution of well-being may well itself be a policy goal.[2] We here employ the panel data quantile regression model with fixed effects developed by Canay (2011). This allows us to provide a complete picture of the relationship between financial profiles over time and the entire distribution of well-being, controlling for individual fixed effects.

The remainder of the paper is organised as follows. Section 2 describes the HILDA data and variables. Section 3 introduces our empirical analytical approach, and the results appear in Section 4. Last, Section 5 concludes.

2 Data, variables and descriptive statistics

2.1 The HILDA data

We use panel data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. Beginning in 2001, HILDA is a nationally-representative household panel survey in Australia that collects annual information on economic well-being, income, life events and labour-market dynamics. As the first wave (2001) does not include information on financial improvement or worsening over the past year, we concentrate on the remaining 16 HILDA waves (2002–2017).

[2] Clark et al. (2016) underline that growing GDP per capita over time in a country does not change average satisfaction, but does reduce its variance.

We focus on individuals who are aged over 16. We also impose an upper age bound of 65, which is the current qualifying age for the Australian Age Pension. After dropping observations with missing information on the core variables our final sample comprises 174,722 observations on 25,205 Australians.

2.2 Variables

We use life satisfaction as the main measure of subjective well-being (Di Tella and MacCulloch, 2006; Clark et al., 2008). In each wave, HILDA respondents are asked the following question: "*All things considered, how satisfied are you with your life?*". The answers are on a scale of 0 to 10, where 0 refers to Not Satisfied at All and 10 to Completely Satisfied.

Starting in 2002, HILDA respondents are asked at each wave which major life events from a list of 21 have occurred to them over the past 12 months. Two of these 21 refer to financial events: (i) "*a major improvement in the financial situation, including having won a lottery or having received an inheritance*" (which we will denote by MIF_{it}); and (ii) "*a major worsening in the financial situation, including having gone bankrupt*" (denoted by MWF_{it}). The two key financial variables in our analysis MIF_{it} and MWF_{it} are thus dummies generated based on self-reported events. Ideally, we would want to construct these measures based also on actual financial information. However, the HILDA wealth module only appears in waves 2002, 2006, 2010 and 2014. We will therefore only use the subjective financial events available from 2002 onwards in our panel estimations. We can use the information in the HILDA wealth module to assess the average magnitude of the self-reported major financial improvement and worsening. To this end, we take the four HILDA waves with wealth information and carry out a regression of household financial wealth (in $2016) on MIF_{it} and MWF_{it}, controlling for individual fixed effects: self-reported major financial improvements are associated with $18,683 higher household wealth on average, and financial worsening with a fall of $20,311, corresponding to about 9 and 10 percent of average household financial wealth in Australia respectively, which is 212,306 Australian Dollars (and 19 and 21 percent of average annual household disposable regular income).

Both MIF_{it} and MWF_{it} are contemporaneous, in that they take place in the same year as the individual reports their subjective well-being. In addition to the current financial situation, financial profiles over time (i.e. past values of MIF_{it} and MWF_{it}) may also affect individual well-being conditional on their current values. We explicitly include time in a number of different ways when considering financial profiles. We first calculate two dummy variables for ever having had a major financial improvement or major financial worsening in the $past$ observational period (up to time t–1) covered by the HILDA data (which we denote by $Past_{it}^{MIF}$ and $Past_{it}^{MWF}$), and then consider adaptation to a past financial shock.

We also distinguish *chronic* financial improvement (or worsening) from what we think of as being in a state of *persistent* financial improvement (or worsening). In the recent literature on economic inequality (Bossert et al., 2012; Clark et al., 2015) the former refers to the frequency of occurrence, while in the latter the financial events occur in periods that are more linked together, conditional on their frequency. Using financial improvement as an example, *chronicity* applies to a situation in which an individual experiences financial improvement for a certain proportion of the time periods under consideration, without paying any attention to the durations of *unbroken* financial-improvement spells. On the contrary, *persistence* explicitly takes the continuity of financial-improvement spells into account. We use a simple example to illustrate the importance of accounting for persistence. Assume that two individuals experience a major financial improvement this year, but the first also experienced this last year (but not the year before), while the second did not last year but rather in the year before that. It is clear that the intertemporal financial improvements are not the same for the two individuals. Both individuals experienced financial improvement twice, but the first in two consecutive periods while the second did not. The *chronicity* and *persistence* indices for financial improvement and worsening allow us to uncover the relationship between financial profiles and well-being in an intertemporal context, which is largely absent from the previous literature.[3]

Our empirical analysis will first consider the *chronicity* measure of Foster (2009), which is simply the average financial improvement (or worsening) that an individual has experienced over time. That

[3] Clark et al. (2019) analyse both the Foster and BCD indices in the context of past exposure to crime and current sleep quality using HILDA data.

is:

$$Foster_{it}^{MIF} = \frac{1}{t}\sum_{\tau=1}^{t} MIF_{i\tau} \tag{1}$$

where $Foster_{it}^{MIF}$ is the chronicity measure of major financial improvement up to date t, with $MIF_{i\tau}$ being the dummy for a major financial improvement for individual i in period τ. The chronicity index of major financial worsening, $Foster_{it}^{MWF}$, is defined analogously. Chronicity may matter for well-being via the accumulation or erosion of wealth, or for scarring reasons.

We measure *persistence* in major financial improvements using the index proposed by Bossert et al. (2012), which weighs each spell by its length (denoted by l_τ). The BCD_{it}^{MIF} index is the weighted average of major financial improvements up to date t, with the weight being given by the length of the spell to which the period belongs:

$$BCD_{it}^{MIF} = \frac{1}{t}\sum_{\tau=1}^{t} l_\tau MIF_{i\tau}. \tag{2}$$

The persistence index for major worsening in finances, BCD_{it}^{MWF} is constructed analogously. The underlying idea behind persistence is that individuals may need time between negative financial events to recover, and consecutive negative financial shocks may impair this recovery. By a similar logic, positive financial events repeatedly taking place in two consecutive time periods may enhance people's subjective well-being more than those in separate time periods.

We use the following sequence of $MIF_{i\tau}$ to show how the chronicity and persistence measures are calculated. The contiguous sequence (1, 1, 0, 1, 1) indicates that this person experienced a major financial improvement in periods 1, 2, 4 and 5, but not in period 3. The *chronicity* index is calculated as $Foster^{MIF}$=$\frac{1}{5}$(1+1+0+1+1)=$\frac{4}{5}$=0.8, which measures the relative frequency of a positive financial event during in periods 1–5. The *persistence* index BCD^{MIF}=$\frac{1}{5}$[2(1+1)+1(0)+2(1+1)]=$\frac{8}{5}$=1.6. Here the BCD^{MIF} index is larger than $Foster^{MIF}$ as the MIF in each period is now weighted by the length of the continuous spell in which the respondent reports a major financial improvement. On the contrary, for an individual with the contiguous sequence (1, 0, 0, 1, 0), the values of $Foster^{MIF}$ and BCD^{MIF} are the same, as no financial-improvement spell is of length greater than one.

In the empirical analysis we will always use lagged values of $Foster$ and BCD, so that these

do not include contemporaneous (i.e. period-t) values of MWF or MIF. Note also that $Foster$ and BCD are not necessarily automatically correlated. The addition of a singleton "one" value to a spell will always weakly increase the $Foster$ score, but can easily reduce that of BCD.[4]

As can be seen from the comparison of Equations [1] and [2], the BCD persistence index mechanically includes chronicity. In order to disentangle the two in our following regression analysis, we will introduce both the lagged $Foster$ index ($Foster_{it-1}$) and the difference between the two terms (BCD_{it-1}–$Foster_{it-1}$) as explanatory variables. This second term then picks up persistence conditional on any effect of the chronicity of the financial situation.

2.3 Summary statistics

The descriptive statistics of our main sample appear in Table 1. Our 174,722 observations correspond to 25,205 individuals, who are thus observed on average for between six and seven years each. Table 1 shows that, on average, each year slightly over three percent of individuals report a major improvement in finances, with the same percentage experiencing a major worsening in finances. Moreover, around 15 percent of Australians reported at least one major financial improvement over the 2002–2016 period (as we only consider past shocks up to $t-1$), with an analogous figure of 13 percent for major financial worsening. Last, the *chronicity* index of Foster (2009) and the *persistence* index of Bossert et al. (2012) are also calculated to have similar values for financial improvements and financial worsening. The *chronicity* index turns out to be fairly similar to the *persistence* index for both major improvements and worsening in finances. As expected, the pairwise correlation coefficients between the two indices are high (at 0.89 for financial improvements and 0.82 for financial worsening). While there are not that many cases where *persistence* is different from *chronicity*, our empirical results in Section 4 suggest that we do have sufficient variation to separately identify the relationships between well-being and financial profiles with a reasonable level of statistical precision.

With respect to subjective well-being, the average value of life satisfaction in Table 1 is close to eight on the zero to ten scale, corresponding to the very typical left-skew found in many well-being

[4]Calculating the lagged values, this occurs at observation four of the first example we gave in the text. Moving from (1, 1, 0) to (1, 1, 0, 1) increases Foster from $\frac{2}{3}$ to $\frac{3}{4}$, but reduces BCD from $\frac{4}{3}$ to $\frac{5}{4}$.

measures. About 47 percent of observations come from men and 53 percent from women, and the average years of education is 12. Most observations come from the married (65 percent) or never married (25 percent). Around 74 percent of observations come from the employed, 4 percent from the unemployed and the remaining 22 percent from those not in the labour force. About 22 percent of individuals in our sample have a long-term health condition. The income measure we use for our analyses is real annual household disposable regular income, which is over A$98,000 in 2016 Australian dollars. Last, around 63 percent of observations come from individuals who live in a major Australian city.

Table 2 sets out the frequencies of major financial shocks over the 2002–2017 period. About 84 percent of Australians experienced no major financial improvement, with a slightly higher figure for major financial worsening. Over the same period one major financial improvement was reported by 11.7 percent of respondents and one major financial worsening by 9.9 percent. The analogous figures for two financial shocks are 2.9 percent and 2.4 percent respectively, and for three or more shocks 1.2 percent and 1.9 percent.

3 Empirical approach

We assume that subjective well-being can be described by the following equation

$$WB_{it} = FP'_{it}\beta + X'_{it}\gamma + \mu_i + \epsilon_{it} \tag{3}$$

where WB_{it} is the life-satisfaction of individual i in period t, which we standardise to have a mean of zero and a standard deviation of one for ease of interpretation. FP_{it} is a vector of individual-level financial-profile variables and X_{it} a vector of time-varying explanatory variables, including age (five age groups: 16–25, 26–35, 36–45, 46–55 and 56–65), years of education, marital status (married, single, divorced, widowed and separated), labour-force status (employed, unemployed and not in the labour force), having a long-term health condition, number of children in the household, number of adults in the household, the log of (one plus) annual household regular disposable income, a dummy

for living in a major city, and State and wave dummies. The μ_i term here is the individual fixed effect, which picks up any time-invariant unobserved heterogeneity. Last, ϵ_{it} is the idiosyncratic error term.

We first establish the relationship between contemporaneous financial events and well-being; we then explicitly introduce time, and ask whether past financial events continue to affect current well-being. Last, we consider the role of persistence, whereby the order of spells matters: For a given number of years of financial improvement (worsening), is well-being higher (lower) when these years are joined together?

We introduce four different sets of financial-profile variables in our analysis: (i) contemporaneous financial improvement and worsening (MIF_{it}, MWF_{it}); (ii) contemporaneous financial events (MIF_{it}, MWF_{it}) and dummies for having had a financial shocks up to the previous year ($Past_{it}^{MIF}$, $Past_{it}^{MWF}$); (iii) contemporaneous financial shocks (MIF_{it}, MWF_{it}) and their lags of up to five years (considering only one shock at a time and tracing out adaptation profiles); and (iv) current financial shocks (MIF_{it}, MWF_{it}), the lags of the Foster (2009) indices ($Foster_{it-1}^{MIF}$, $Foster_{it-1}^{MWF}$) and the lagged differences between the Bossert et al. (2012) and Foster (2009) indices (BCD_{it-1}^{MIF}–$Foster_{it-1}^{MIF}$, BCD_{it-1}^{MWF}–$Foster_{it-1}^{MWF}$), with the last two terms capturing persistence conditional on any effect of the chronicity of financial shocks.

The presence of μ_i in equation (3) indicates that we will use fixed effects (FE) panel estimation, which is preferred to OLS due to its ability to deal with any bias from unobserved individual heterogeneity. The FE estimates are identified from within-subject changes in the variables of interest over time. β, the coefficient vector on FP_{it}, is thus identified from the different subjective well-being scores for the same individual over time as their financial-profile variables change: no comparisons between individuals are used to identify the coefficients. The time dimensions of our financial variables helps to alleviate the bias when estimating equation (3). Respondents report their *current* level of well-being at the time of survey, but whether a positive or negative financial event occurred *over the past 12 months*. The financial shocks may then be considered to largely pre-date the measure of the dependent variable. Also, the main focus of our work here is on the relationship between *past* financial profiles (*chronicity* and *persistence*, measured up to time t–1) and *current* subjective well-being (measured at time t). Despite our efforts to ameliorate the bias in our estimates, we

are unable to rule out the possibility that our estimated coefficients are affected by confounding time-varying unobserved factors. As such, the estimations we perform should still be considered as a correlational analysis.

4 Results

4.1 The contemporaneous and past associations between financial shocks and well-being

We start with the contemporaneous relations between major financial improvement/worsening and well-being. Life satisfaction is the dependent variable, and robust standard errors clustered at the individual level appear in parentheses. Column (i) of Table 3 reports the estimation results, controlling for individual fixed effects (FE). Contemporaneous major financial improvements (MIF_{it}) are associated with a 0.09 standard deviation increase in life satisfaction; a major financial worsening (MWF_{it}) is associated with lower life satisfaction of 0.39 of a standard deviation. It is worth noting that all of these correlations are estimated holding the current level of household disposable regular income constant, so that we are not just picking up here the simple income consequence of financial shocks.

The control variables in the regressions attract estimated coefficients that are standard in the literature: the full table of results is relegated to Appendix Table A1. Controlling for income, education is negatively correlated with life satisfaction.[5] Those who marry are more satisfied, while widowhood and separation are associated with lower well-being, as compared to the same individual when they were married or never married. In addition, compared to being employed, unemployment is associated with lower levels of life satisfaction, although being out of the labour force is not.

We then introduce time, and ask whether past financial events continue to be associated with current well-being. We do so by first including two additional dummies in the regression: these indicate whether an individual has experienced major financial improvement and/or major financial

[5] In general, the relationship between education and subjective well-being is ambiguous (see Chapter 3 of Clark et al. 2018), with education improving some outcomes but also being associated with greater expectations.

worsening in the past observational period (up to time t–1) of the data. The results appear in Column (ii) of Table 3. Conditional on current financial events, past financial worsening is associated with a reduction in current life satisfaction, whereas past financial improvements continue to relate positively to well-being. Broadly speaking, well-being is associated with past exposure to a financial change to a smaller extent than the current experience of the same change (p-value = 0.003 for the null hypothesis that the coefficients on MIF_{it} and $Past_{it}^{MIF}$ are the same; p-value = 0.000 for the analogous test for MWF_{it} and $Past_{it}^{MWF}$). The size of the estimated coefficient of past improvement is around 60 percent of that of current improvement, with the analogous figure for worsening being much smaller at just under one quarter. These results suggest partial adaptation to financial shocks. Even so, both of the past financial-change variables are significant. Financial events are not then ephemeral but have relations with well-being that extend beyond their contemporaneous associations.

In addition to looking at the simple existence of a past event, as in Column (ii) of Table 3, we can also explicitly carry out an impulse-response analysis. This shows the reaction of well-being over time to a past shock. We consider one shock only, and lags of up to five years. This is the type of analysis that most of the adaptation literature has used (Clark et al., 2008; Frijters et al., 2011), as it traces out the response to one specific shock for those who do not experience repeated shocks: from Table 2 these latter account for about 70% of those who have ever experienced a shock.

The adaptation results appear in Table 4. In Column (i), we compare individuals with one financial improvement shock to those who have not had a shock of any kind. As in Frijters et al. (2011) there is some evidence of adaptation to a financial improvement, with the estimated coefficients from 3–4 years on no longer being statistically significant. It is worth underlining, however, that the estimated coefficients from 3–4 years on are not significantly different from those in the first three years. Column (ii) then compares individuals with one financial worsening to those without shocks. Here there is substantial adaptation, with the correlation fading away after two years. Last, column (iii) looks at both financial worsening and improvement at the same time, which has no material effect on the conclusions from the first two columns. In Table 4, the correlation with current financial worsening is three times larger than that with current financial improvement, with estimated coefficients that are

very similar to those in column (i) of Table 3.[6]

Table 4 considered adaptation to one specific financial shock, and Appendix Table A2 considered multiple past financial shocks. The past shock variables here are assumed to be independent of each other. However, a shock at t–2 may matter less (or more) for well-being if another shock of the same type occurred at t–4, for example. One way of addressing this interdependence is to add interactions between all possible past financial shocks to the regression. There are obviously many different combinations here (64, =2^6, over the past five years) many of which will have only very small cell sizes. We did consider only level-2 interactions in addition to the main effect of the shocks (including MWF_{it} interacted with all of MWF_{it-1} through MWF_{it-5}, and so on). There are no significant estimated coefficients on these level-2 interaction terms in our FE regressions (results available upon request).

We address the issue of the sparse cell sizes from all possible combinations by appealing to two parametric indices of past exposure to financial shocks, each of which reduces the variety of past financial shocks to one number. The first of these is the Foster (2009) *chronicity* index, $Foster_{it-1}$ in equation [1]): this may matter for well-being via the accumulation or erosion of wealth, or for scarring reasons. The second is the Bossert et al. (2012) *persistence* index, BCD_{it-1} in equation [2]: this asks whether well-being is higher (lower) when years of multiple shocks are joined together, for a given number of years of financial improvement (worsening). The idea behind persistence is that individuals may need time between negative financial events to recover, and consecutive negative financial shocks may impair this recovery. By a similar logic, positive financial events taking place in two consecutive time periods may enhance subjective well-being more than those in separate time periods.

Both of these indices are calculated over all of the past years excluding the current year. As the BCD persistence index mechanically includes chronicity, to disentangle the two, we include both

[6]Individuals may of course have multiple financial shocks of the same type, and we can estimate well-being at time t as a function of the lagged incidence of all financial shocks at times t–1 through t–5. For those with only one shock, this will produce the adaptation profile of Table 4; for individuals with more than one shock, this will plot out a mixture of the adaptation to the different shocks plus the times at which these multiple shocks occurred. The results correspond to those from our Foster index, presented in Table 5 below, but with unequal weights for the different time periods over which the index is calculated. The results of this analysis appear in Appendix Table A2 and are very similar to those in Table 4. The correlation with both financial improvements and financial worsening experienced more than four years ago is zero. Introducing both worsening and improvement together in column (iii) of Appendix Table A2 does not overly change the results in the first two columns.

$Foster_{it-1}$ and the difference between the two terms (BCD_{it-1}–$Foster_{it-1}$) as explanatory variables. This second term then captures the relationship with persistence conditional on the chronicity of the financial shocks. If past persistence in financial improvement reflates positively to current well-being, we expect to find a positive estimated coefficient on the difference variable (BCD^{MIF}_{it-1}–$Foster^{MIF}_{it-1}$). On the contrary, if past persistence in financial worsening has a negative association with well-being, we will find a negative estimated coefficient on (BCD^{MWF}_{it-1}–$Foster^{MWF}_{it-1}$).

The FE results in column (i) of Table 5 clearly show that the chronicity of financial situation, as measured by the lagged Foster index, is associated with current well-being, with a positive estimated coefficient on chronic financial improvements and a negative one on chronic financial worsening. It is not only contemporaneous financial shocks that matter, but also the proportion of past years in which there was a financial shock.

Column (ii) of Table 5 shows that the estimated coefficient on the (BCD^{MIF}_{it-1}–$Foster^{MIF}_{it-1}$) variable is positive, as expected: sequences matter, with consecutive years of financial improvement being better than the same number of years when interrupted. We do not however find this result for consecutive years of financial worsening: a given number of years where finances deteriorated has the same association with current well-being whether the deterioration occurred in one continuous spell or was interrupted. A natural question here is why persistence only matters for major financial improvements but not worsenings. One potential explanation is the social safety net. Persistently improved financial situations may well enhance life satisfaction (perhaps as they allow for investment, or due to reduced feelings of insecurity - see Bossert et al., 2019). However, the mirror image of persistent worsening financial situation may be attenuated by the system of social-welfare payments in Australia for those undergoing severe financial hardship, including the Special Benefit (received when in severe financial need) and a number of allowances and supplements (for example, Rent Assistance, Utilities Allowance, and Low Income Supplement).[7] As such, the persistence of negative financial shocks may not play a role for subjective well-being.

[7]Details of these benefits and payments can be found at the website of the Australian Government Department of Human Services: https://www.humanservices.gov.au/individuals/services/centrelink.

4.2 The associations between financial profiles over time and well-being distribution

One limitation of the above fixed-effects (FE) panel estimation is its restriction to mean well-being effects, without considering correlations at different points of the subjective well-being distribution. Binder and Coad (2011) underline the importance of moving beyond average correlations in the context of happiness research, allowing for the possibility of heterogeneity.

We apply the panel data quantile regression model with fixed effects (QR–FE) developed by Canay (2011). The life-satisfaction variable in HILDA is discrete on an eleven-point Likert scale (0–10), and can be considered as approximately continuous and so used in quantile regressions. The QR–FE model considers the individual fixed effects as location-shift variables (i.e. variables that affect all quantiles in the same way).[8] This approach is implemented in Canay (2011) via the following two-stage estimation:

(i). Estimate equation (3) via FE panel regression to obtain consistent estimates of the coefficients ($\widehat{\beta}$, $\widehat{\gamma}$), and then calculate the unobserved fixed effect for each individual as

$$\widehat{u}_i = \frac{1}{T}\sum_{t=1}^{T}(WB_{it} - FP'_{it}\widehat{\beta} - X'_{it}\widehat{\gamma}). \tag{4}$$

(ii). Estimate the conditional quantile regression model of Koenker and Bassett (1978), using ($\widehat{WB}_{it}$=$WB_{it}-\widehat{u}_i$) as the dependent variable, where WB_{it} is the standardised life-satisfaction measure. Namely, we solve the following minimization problem

$$(\widehat{\beta}_\tau, \widehat{\gamma}_\tau) = arg \min_{(\beta_\tau,\gamma_\tau)} \frac{1}{NT}\sum_{i=1}^{N}\sum_{t=1}^{T}[\rho_\tau(\widehat{WB}_{it} - FP'_{it}\beta_\tau - X'_{it}\gamma_\tau)] \tag{5}$$

where $\rho_\tau(u)$=$u[\tau-I(u<0)]$ and I is an indicator function. The estimated coefficient vector $\widehat{\beta}_\tau$ measures the influence of financial-profile variables on the τ-th percentile of the conditional distribution of well-being, controlling for individual fixed effects. Canay (2011) proves that this two-step estimator is consistent and asymptotically normally-distributed under regularity conditions.

[8]This assumption has also been made in other quantile approaches for panel data (Koenker, 2004; Lamarche, 2010).

Table 6 displays the QR–FE results at the 10th, 25th, 50th, 75th and 90th percentiles of the conditional distribution of life satisfaction. Panel A shows that the associations between negative financial shocks and subjective well-being are very heterogeneous along the well-being distribution. The size of the detrimental association of contemporaneous financial worsening falls monotonically as we move up the subjective well-being distribution. The QR–FE estimate of this correlation at the 10th percentile is twice the FE estimate, while that at the 90th percentile is only about one-third of this latter figure. A focus on the average estimated coefficient then conceals substantial heterogeneity in the link between negative financial shocks and life satisfaction. The estimated coefficients on a major contemporaneous improvement in finances are positive and significant at the different points of the life-satisfaction distribution and vary less than those for financial losses, with the estimates suggesting a 0.073–0.100 standard deviation rise in life satisfaction.

Panel B of Table 6 additionally shows that past financial improvements have positive and somewhat heterogeneous relations with well-being along the life-satisfaction distribution, with the smallest correlation being at the bottom end of the distribution. As was the case for current MWF_{it}, $PastMWF_{it}$ is notably heterogeneous with the largest adverse association being for those at the lower end of the well-being distribution.

Last, the chronicity of major improvement in finances ($Foster_{it-1}^{MIF}$) has a positive significant association with well-being at all points on the life-satisfaction distribution (see Panel C of Table 6) The chronicity index of major financial worsening ($Foster_{it-1}^{MWF}$) is related to a reduction in life satisfaction, with again negative financial shocks showing a much larger adverse association at the lower end of the life-satisfaction distribution than towards the top. The chronicity of financial worsening is estimated to have a small positive correlation at the 90th percentile of the life-satisfaction distribution. It could be argued that well-being for the happiest can be used to protect against adverse life events. Financial worsening may even provide an opportunity for individuals to draw closer to family members and close friends, improving satisfaction with some important life domains. In the existing literature, individuals with high well-being scores are found not to be adversely affected by negative phenomena such as relative income comparisons (Budria, 2013) and expected declines in future household income (Fang and Niimi, 2017). Equally, research in Psychology, such as Tugade

and Fredrickson (2004) and Cohn et al. (2009), argues that the resilient can use positive emotions to bounce back from negative emotional experiences. Here, we show that individuals who are mentally well-off seem to cope with financial losses in a more positive way than those with lower subjective well-being.

The QR–FE coefficient estimates of the persistence index, (BCD^{MIF}_{it-1}–$Foster^{MIF}_{it-1}$), are positive and of similar size across the distribution of life satisfaction. On the contrary, persistence in financial losses measured by (BCD^{MWF}_{it-1}–$Foster^{MWF}_{it-1}$) has a larger negative association with life satisfaction at the bottom of the life-satisfaction distribution than at other parts.

Overall, Table 6 indicates that current negative financial shocks, past financial worsening, and the chronicity and persistence of financial losses are associated with greater well-being losses for individuals at the lower end of well-being distribution than for those who are better off. On the contrary, current positive financial shocks, past incidence of financial improvement, and the chronicity of financial gains relate to well-being in a more uniform fashion across the well-being distribution.

4.3 Robustness checks

4.3.1 Including individuals aged over 65 in the sample

Our baseline regressions above focus on individuals aged between 16 and 65 in HILDA. In this sensitivity analysis, we also include those aged over 65 in our estimations and re-perform the FE regressions. The results, in Table 7, are very similar to the baseline results in Tables 3 and 5. Apart from the contemporaneous associations, past financial shocks continue to be linked to current well-being, and past exposure to a financial change relates to well-being to a lesser extent than its current experience, indicating partial adaptation to financial shocks. The chronicity of financial changes continues to be correlated with life satisfaction, with the expected signs. Last, consecutive years of financial improvement are better than the same number of years when interrupted, while there is no evidence that persistence in financial worsening, as measured by (BCD^{MWF}_{it-1}–$Foster^{MWF}_{it-1}$), relates to current subjective well-being.

4.3.2 Controlling for lagged household income

We include X_{it} when estimating Equation (3), as major financial shocks at time t may be correlated with some of the explanatory variables at time t. By the same logic, the controls at time t–k (for k>0) may also be correlated with major financial shocks at time t–k. When we consider the relations between past financial profiles and current well-being, not controlling for lags in the controls can produce omitted-variable bias (Ferrer-i Carbonell and Van Praag, 2008; Vendrik, 2013; Kaiser, 2018). The bias in our case may especially result from omitted lags of household income.[9]

One tricky question is the determination of the appropriate number of lags (Vendrik, 2013; Kaiser, 2018). On the one hand, with more lags the estimations are less likely to suffer from omitted-variable bias; on the other hand, additional lags can significantly reduce the number of panel observations and also lead to a loss in efficiency in the estimates as current- and previous-year income are strongly correlated. We here follow the approach in Vendrik (2013): we start with a large number of lags, and then conduct a t-test of the significance of the longest lag of household income; we then remove the longest lag if the test fails to reject the null hypothesis of equality to zero. We repeat the process until we reject the null hypothesis. This approach produces an appropriate lag length of one, which is the same as that in Kaiser (2018) using panel data from the UK and Germany. We thus add a one-year lag in household income to the FE estimations of Section 4.1. The results, in Table 8, are very similar to the baseline results in Tables 3 and 5.

4.3.3 Using the sample of the employed

As can be seen in Table 1, 74 percent of observations in our baseline sample come from the employed, 4 percent from the unemployed and 22 percent from those who are out of the labour force. In this sub-section we focus on the empirical link between financial profiles over time and subjective well-being of the employed.

The FE results appear in Table 9. Panel A presents the main results for the employed only, using the same specification as in Tables 3 and 5, while Panel B adds eight one-digit occupation dummies.[10]

[9] We thank an anonymous referee for this point and the suggested robustness check.

[10] The eight occupations are: (i) managers, (ii) professionals, (iii) technicians and trades workers, (iv) community and

The estimates in Panels A and B are almost identical to each other, and are very consistent with the baseline results discussed in Section 4.1: both current and past financial events are significantly related to life satisfaction, but the order of financial change spells only matters for financial improvement.

4.3.4 Financial satisfaction as an alternative well-being measure

It may be argued that our results on the link between financial profiles over time and individual well-being partly reflect how we measure the latter. We test this proposition by using an alternative definition of well-being. In each wave of HILDA, respondents were asked to rate their satisfaction with their financial situation on a Likert scale of 0 (very dissatisfied) to 10 (very satisfied). We thus standardise the financial satisfaction variable and use it as the dependent variable in our FE and QR–FE regressions.

In general, the ensuing results in Table 10 are consistent with those in Tables 3, 5 and 6, although larger in size. This is in line with overall life satisfaction being a global conception of well-being that aggregates happiness over a number of different life domains (van Praag et al., 2003), and satisfaction with financial situation being one of the major channels via which financial profiles over time affect life satisfaction.

The main findings in Table 10 can be summarized as follows: (i) major financial shocks have contemporaneous associations with financial satisfaction of the expected sign; (ii) the experience of financial events in the past continues to be linked to current financial satisfaction: both chronicity and persistence of financial events matter for subjective financial well-being; and (iii) current financial worsening and the chronicity of financial losses are associated with greater well-being losses for those at the bottom part of financial satisfaction distribution than those at other parts. However, current and past positive financial shocks relate to individual well-being more uniformly across the distribution of financial satisfaction.

personal service work, (v) clerical and administrative workers, (vi) sales workers, (vii) machinery operators and drivers and (viii) labourers.

5 Conclusion

We have here used panel data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey to examine the link between individual financial profiles over time and life satisfaction. Our fixed effects panel regressions first highlight that satisfaction falls with a contemporaneous major financial worsening and rises with contemporaneous major financial improvement (controlling for current household income), with the former having a much larger influence than the latter. Second, past financial experiences continue to be related to current well-being. Third, both current and past negative financial shocks have comparatively stronger associations with well-being at the lower end of well-being distribution than at the top, while current and past positive financial shocks provide a much more uniform benefit. The order of financial improvement spells also matters. For example, for a given number of financial improvement years, current life satisfaction is higher when these past improvement years were consecutive. The results differ for financial worsening: a given number of years where finances deteriorated has the same association with current well-being whether the deterioration occurred in one continuous spell or was interrupted.

These results are important for two reasons. They first provide new evidence on the empirical link between financial profiles and individual well-being, explicitly taking past experiences into consideration: both the present and the past matter, even in a rich country. Second, we show that chronicity and persistence indices developed in the theoretical literature can be applied empirically to long-run panel data to determine the most salient dimensions of financial profiles in terms of current individual well-being.

One characteristic of our analysis is that our key variables of interest (major financial improvement and worsening) are self-reported. As the HILDA question is subjective, respondents' answers may refer to changes in net worth of different sizes (even within subject). While Bridges and Disney (2010) find evidence that subjective financial measures matter more for well-being than do objective variables, it would likely be preferable to have both available in order to check the robustness of our findings. We leave this aspect for future research when suitable data become available.

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Table 1: Descriptive statistics for the main sample

Variables	Mean	S.D.	Min	Max
Measure of well-being				
Life satisfaction	7.845	1.434	0	10
Measures of financial profiles				
Major improvement in finances	0.031	0.175	0	1
Major worsening in finances	0.032	0.177	0	1
Past major improvement in finances	0.148	0.355	0	1
Past major worsening in finances	0.126	0.332	0	1
Foster index (major improvement in finances)	0.033	0.108	0	1
Foster index (major worsening in finances)	0.033	0.119	0	1
BCD index (major improvement in finances)	0.040	0.155	0	7
BCD index (major worsening in finances)	0.047	0.216	0	12
BCD–Foster (major improvement in finances)	0.007	0.076	0	6
BCD–Foster (major worsening in finances)	0.013	0.136	0	11
Socioeconomic characteristics				
Age (average)	39.709	14.060	16	65
Age: 16–25	0.209	0.407	0	1
Age: 26–35	0.200	0.400	0	1
Age: 36–45	0.214	0.410	0	1
Age: 46–55	0.209	0.407	0	1
Age: 56–65	0.167	0.373	0	1
Male	0.469	0.499	0	1
Years of education	12.396	2.135	8	17
Married	0.650	0.477	0	1
Never married	0.252	0.434	0	1
Widowed	0.013	0.111	0	1
Divorced	0.058	0.234	0	1
Separated	0.028	0.164	0	1
Employed	0.744	0.436	0	1
Unemployed	0.041	0.198	0	1
Not in the labour force	0.215	0.411	0	1
Having a long-term health condition	0.224	0.417	0	1
Number of children in household	0.821	1.130	0	12
Number of adults in household	2.067	0.859	0	8
Household disposable regular income (A$000s, 2016)	98.274	66.631	0	179.802
Living in a major city	0.632	0.482	0	1
Observations	174,722			
Individuals	25,205			

Note: Data from HILDA 2002–2017.

Table 2: The frequency of major financial shocks

	Major financial improvement		Major financial worsening	
	Individuals	%	Individuals	%
Did not happen	21,201	84.11	21,628	85.81
Once	2,960	11.74	2,484	9.86
Twice	739	2.93	604	2.40
Three times	209	0.83	247	0.98
Four times	64	0.25	119	0.47
Five times or more	32	0.15	123	0.49
Total	25,205	100.00	25,205	100.00

Note: Data from HILDA 2002–2017.

Table 3: Current and past incidences of financial shocks (FE estimates)

	Life satisfaction	
	(i)	(ii)
MIF_{it}	0.091***	0.113***
	(0.010)	(0.012)
MWF_{it}	–0.392***	–0.412***
	(0.017)	(0.019)
$Past_{it}^{MIF}$		0.070***
		(0.013)
$Past_{it}^{MWF}$		–0.089***
		(0.018)
Observations	174,722	152,824
Individuals	25,205	21,125
Overall R-Squared	0.074	0.082

Notes: The control variables include age dummies, years of education, marital status, labour-force status, having a long-term health condition, number of children in the household, number of adults in the household, the log of annual household regular disposable income, a dummy for living in a major city, State and wave dummies, and individual fixed effects. Robust standard errors clustered at the individual level appear in parentheses. The full set of estimated coefficients appears in Appendix Table A1. *** p<0.01; ** p<0.05; * p<0.10.

Table 4: Adaptation to a single occurrence of a financial shock (FE estimates)

	Life satisfaction		
	(i)	(ii)	(iii)
MIF less than one year ago	0.089***		0.091***
	(0.022)		(0.023)
MIF 1–2 years ago	0.062**		0.065**
	(0.025)		(0.026)
MIF 2–3 years ago	0.091***		0.094***
	(0.028)		(0.028)
MIF 3–4 years ago	0.048		0.052*
	(0.031)		(0.031)
MIF 4–5 years ago	0.049		0.052
	(0.034)		(0.034)
MIF over 5 years ago	0.048		0.052
	(0.034)		(0.034)
MWF less than one year ago		–0.356***	–0.359***
		(0.043)	(0.044)
MWF 1–2 years ago		–0.135***	–0.137***
		(0.044)	(0.044)
MWF 2–3 years ago		–0.071	–0.072
		(0.047)	(0.047)
MWF 3–4 years ago		–0.009	–0.009
		(0.048)	(0.048)
MWF 4–5 years ago		–0.029	–0.029
		(0.050)	(0.050)
MWF over 5 years ago		–0.031	–0.030
		(0.049)	(0.049)
Observations	58,373	53,091	66,894
Individuals	10,182	9,480	11,663
Overall R-Squared	0.030	0.054	0.051

Notes: The regressions include all of the other control variables used in column (i) of Table 3. Column (iii) includes individuals who have had either one worsening and/or one improvement, so that the sample size there is larger than that in columns (i) and (ii). Robust standard errors clustered at the individual level appear in parentheses. *** p<0.01; ** p<0.05; * p<0.10.

Table 5: Chronicity and persistence in financial shocks (FE estimates)

	Life satisfaction	
	(i)	(ii)
MIF_{it}	0.101***	0.106***
	(0.011)	(0.012)
MWF_{it}	–0.409***	–0.411***
	(0.019)	(0.019)
$Foster_{it-1}^{MIF}$	0.100***	0.079**
	(0.035)	(0.035)
$Foster_{it-1}^{MWF}$	–0.269***	–0.261***
	(0.048)	(0.048)
BCD_{it-1}^{MIF}–$Foster_{it-1}^{MIF}$		0.145***
		(0.049)
BCD_{it-1}^{MWF}–$Foster_{it-1}^{MWF}$		–0.028
		(0.039)
Observations	152,824	152,824
Individuals	21,125	21,125
Overall R-Squared	0.083	0.083

Notes: The regressions include all of the other control variables used in column (i) of Table 3. Robust standard errors clustered at the individual level appear in parentheses. The full set of estimated coefficients appears in Appendix Table A1. *** p<0.01; ** p<0.05; * p<0.10.

Table 6: Financial profiles over time and the well-being distribution (QR–FE estimates)

		Life satisfaction				
		$Q10$	$Q25$	$Q50$	$Q75$	$Q90$
Panel A:	MIF_{it}	0.100***	0.080***	0.073***	0.076***	0.093***
		(0.014)	(0.011)	(0.005)	(0.010)	(0.015)
	MWF_{it}	–0.747***	–0.468***	–0.344***	–0.221***	–0.155***
		(0.030)	(0.019)	(0.015)	(0.012)	(0.017)
	Observations	174,722	174,722	17,4722	174,722	174,722
	Individuals	25,205	25,205	25,205	25,205	25,205
	Overall R-Squared	0.051	0.061	0.063	0.047	0.020
Panel B:	MIF_{it}	0.119***	0.104***	0.092***	0.097***	0.114***
		(0.020)	(0.010)	(0.007)	(0.010)	(0.016)
	MWF_{it}	–0.770***	–0.508***	–0.338***	–0.251***	–0.187***
		(0.027)	(0.025)	(0.016)	(0.014)	(0.022)
	$Past_{it}^{MIF}$	0.052***	0.080***	0.076***	0.074***	0.079***
		(0.011)	(0.006)	(0.004)	(0.007)	(0.009)
	$Past_{it}^{MWF}$	–0.206***	–0.150***	–0.087***	–0.013	0.034***
		(0.014)	(0.008)	(0.006)	(0.009)	(0.012)
	Observations	152,824	152,824	152,824	152,824	152,824
	Individuals	21,125	21,125	21,125	21,125	21,125
	Overall R-Squared	0.057	0.067	0.069	0.051	0.020
Panel C:	MIF_{it}	0.110***	0.095***	0.088***	0.093***	0.111***
		(0.017)	(0.011)	(0.007)	(0.011)	(0.014)
	MWF_{it}	–0.750***	–0.504***	–0.331***	–0.243***	–0.186***
		(0.027)	(0.023)	(0.014)	(0.014)	(0.023)
	$Foster_{it-1}^{MIF}$	0.050	0.102***	0.080***	0.072***	0.074***
		(0.032)	(0.019)	(0.010)	(0.020)	(0.030)
	$Foster_{it-1}^{MWF}$	–0.545***	–0.428***	–0.267***	–0.119***	0.022
		(0.038)	(0.026)	(0.010)	(0.020)	(0.041)
	BCD_{it-1}^{MIF}–$Foster_{it-1}^{MIF}$	0.167***	0.152***	0.157***	0.160***	0.135***
		(0.051)	(0.015)	(0.019)	(0.032)	(0.028)
	BCD_{it-1}^{MWF}–$Foster_{it-1}^{MWF}$	–0.119***	–0.061	–0.022***	0.012	0.048
		(0.033)	(0.041)	(0.012)	(0.025)	(0.076)
	Observations	152,824	152,824	152,824	152,824	152,824
	Individuals	21,125	21,125	21,125	21,125	21,125
	Overall R-Squared	0.058	0.068	0.070	0.053	0.020

Notes: The regressions include all of the other control variables used in column (i) of Table 3. Robust standard errors clustered at the individual level appear in parentheses. *** p<0.01; ** p<0.05; * p<0.10.

Table 7: Including individuals aged over 65 (FE estimates)

	Life satisfaction		
	(i)	(ii)	(iii)
MIF_{it}	0.079***	0.099***	0.092***
	(0.010)	(0.011)	(0.011)
MWF_{it}	–0.382***	–0.402***	–0.401***
	(0.016)	(0.018)	(0.018)
$Past_{it}^{MIF}$		0.072***	
		(0.012)	
$Past_{it}^{MWF}$		–0.085***	
		(0.016)	
$Foster_{it-1}^{MIF}$			0.091***
			(0.033)
$Foster_{it-1}^{MWF}$			–0.270***
			(0.045)
BCD_{it-1}^{MIF}–$Foster_{it-1}^{MIF}$			0.154***
			(0.046)
BCD_{it-1}^{MWF}–$Foster_{it-1}^{MWF}$			–0.030
			(0.036)
Observations	207,237	182,776	182,776
Individuals	27,772	23,557	23,557
Overall R-Squared	0.062	0.069	0.070

Notes: The regressions include all of the other control variables used in column (i) of Table 3. Robust standard errors clustered at the individual level appear in parentheses. *** p<0.01; ** p<0.05; * p<0.10.

Table 8: Controlling for lagged household income (FE estimates)

	Life satisfaction		
	(i)	(ii)	(iii)
MIF_{it}	0.095***	0.115***	0.107***
	(0.011)	(0.012)	(0.012)
MWF_{it}	–0.385***	–0.407***	–0.404***
	(0.019)	(0.02)	(0.02)
$Past_{it}^{MIF}$		0.072***	
		(0.013)	
$Past_{it}^{MWF}$		–0.099***	
		(0.019)	
$Foster_{it-1}^{MIF}$			0.083**
			(0.037)
$Foster_{it-1}^{MWF}$			–0.300***
			(0.050)
BCD_{it-1}^{MIF}–$Foster_{it-1}^{MIF}$			0.138***
			(0.050)
BCD_{it-1}^{MWF}–$Foster_{it-1}^{MWF}$			–0.015
			(0.042)
Lagged household income	Yes	Yes	Yes
Observations	139,475	139,475	139,475
Individuals	20,179	20,179	20,179
Overall R-Squared	0.080	0.088	0.088

Notes: The regressions include all of the other control variables used in column (i) of Table 3. Robust standard errors clustered at the individual level appear in parentheses. *** p<0.01; ** p<0.05; * p<0.10.

Table 9: Focussing on the employed (FE estimates)

	Life satisfaction					
	Panel A			Panel B		
	(i)	(ii)	(iii)	(i)	(ii)	(iii)
MIF_{it}	0.085***	0.105***	0.068***	0.085***	0.104***	0.068***
	(0.011)	(0.012)	(0.014)	(0.011)	(0.012)	(0.014)
MWF_{it}	–0.384***	–0.398***	–0.335***	–0.384***	–0.398***	–0.335***
	(0.020)	(0.023)	(0.025)	(0.020)	(0.023)	(0.025)
$Past_{it}^{MIF}$		0.054***			0.054***	
		(0.013)			(0.013)	
$Past_{it}^{MWF}$		–0.059***			–0.059***	
		(0.019)			(0.019)	
$Foster_{it-1}^{MIF}$			0.180***			0.180***
			(0.060)			(0.060)
$Foster_{it-1}^{MWF}$			–0.330***			–0.332***
			(0.094)			(0.094)
BCD_{it-1}^{MIF}–$Foster_{it-1}^{MIF}$			0.109**			0.109**
			(0.049)			(0.049)
BCD_{it-1}^{MWF}–$Foster_{it-1}^{MWF}$			0.019			0.019
			(0.053)			(0.053)
Occupation dummies	No	No	No	Yes	Yes	Yes
Observations	129,973	114,387	114,387	129,973	114,387	114,387
Individuals	20,840	17,797	17,797	20,840	17,797	17,797
Overall R-Squared	0.050	0.055	0.056	0.050	0.055	0.057

Notes: The regressions include all of the other control variables used in column (i) of Table 3. Robust standard errors clustered at the individual level appear in parentheses. *** p<0.01; ** p<0.05; * p<0.10.

Table 10: Financial profiles over time and the financial-satisfaction distribution (FE and QR–FE estimates)

		Financial satisfaction					
		Mean	$Q10$	$Q25$	$Q50$	$Q75$	$Q90$
Panel A:	MIF_{it}	0.354***	0.337***	0.331***	0.333***	0.359***	0.426***
		(0.011)	(0.024)	(0.013)	(0.009)	(0.013)	(0.018)
	MWF_{it}	–0.693***	–0.825***	–0.731***	–0.688***	–0.598***	–0.490***
		(0.014)	(0.027)	(0.019)	(0.011)	(0.014)	(0.020)
	Overall R-Squared	0.088	0.297	0.308	0.298	0.258	0.239
Panel B:	MIF_{it}	0.405***	0.385***	0.375***	0.380***	0.396***	0.464***
		(0.012)	(0.018)	(0.014)	(0.011)	(0.013)	(0.018)
	MWF_{it}	–0.728***	–0.867***	–0.776***	–0.727***	–0.638***	–0.552***
		(0.016)	(0.025)	(0.021)	(0.016)	(0.017)	(0.022)
	$Past_{it}^{MIF}$	0.181***	0.197***	0.199***	0.204***	0.194***	0.190***
		(0.014)	(0.012)	(0.009)	(0.007)	(0.007)	(0.009)
	$Past_{it}^{MWF}$	–0.178***	–0.268***	–0.194***	–0.138***	–0.068***	0.001
		(0.017	(0.014)	(0.011)	(0.008)	(0.009)	(0.011)
	Overall R-Squared	0.088	0.299	0.313	0.299	0.256	0.232
Panel C:	MIF_{it}	0.384***	0.381***	0.362***	0.357***	0.379***	0.457***
		(0.012)	(0.019)	(0.013)	(0.011)	(0.012)	(0.020)
	MWF_{it}	–0.734***	–0.863***	–0.778***	–0.723***	–0.631***	–0.557***
		(0.016)	(0.030)	(0.023)	(0.016)	(0.019)	(0.020)
	$Foster_{it-1}^{MIF}$	0.336***	0.309***	0.330***	0.339***	0.338***	0.354***
		(0.037)	(0.049)	(0.036)	(0.023)	(0.020)	(0.037)
	$Foster_{it-1}^{MWF}$	–0.613***	–0.833***	–0.693***	–0.614***	–0.445***	–0.258***
		(0.045)	(0.051)	(0.038)	(0.024)	(0.028)	(0.043)
	BCD_{it-1}^{MIF}–$Foster_{it-1}^{MIF}$	0.135***	0.167***	0.161***	0.184***	0.140***	0.131**
		(0.046)	(0.021)	(0.025)	(0.046)	(0.022)	(0.062)
	BCD_{it-1}^{MWF}–$Foster_{it-1}^{MWF}$	–0.093***	–0.046	–0.045***	–0.052	–0.058***	–0.090***
		(0.034)	(0.082)	(0.008)	(0.047)	(0.005)	(0.030)
	Overall R-Squared	0.088	0.302	0.315	0.299	0.255	0.235

Notes: The regressions include all of the other control variables used in column (i) of Table 3. Robust standard errors clustered at the individual level appear in parentheses. The number of observations in Panel A is $174,659$, corresponding to $25,198$ individuals; the analogous figures in both Panels B and C are $152,773$ and $21,119$. *** p<0.01; ** p<0.05; * p<0.10.

Table A1: Financial profiles and well-being (FE estimates, full results from Tables 3 and 5)

	Satisfaction with life			
	(i)	(ii)	(iii)	(iv)
MIF_{it}	0.091***	0.113***	0.101***	0.106***
	(0.010)	(0.012)	(0.011)	(0.012)
MWF_{it}	–0.392***	–0.412***	–0.409***	–0.411***
	(0.017)	(0.019)	(0.019)	(0.019)
$Past_{it}^{MIF}$		0.070***		
		(0.013)		
$Past_{it}^{MWF}$		–0.089***		
		(0.018)		
$Foster_{it-1}^{MIF}$			0.100***	0.079**
			(0.035)	(0.035)
$Foster_{it-1}^{MWF}$			–0.269***	–0.261***
			(0.048)	(0.048)
BCD_{it-1}^{MIF}–$Foster_{it-1}^{MIF}$				0.145***
				(0.049)
BCD_{it-1}^{MWF}–$Foster_{it-1}^{MWF}$				–0.028
				(0.039)
Log of household disposable regular income	0.020***	0.018***	0.018***	0.018***
	(0.003)	(0.004)	(0.004)	(0.004)
Age: 16–25	–0.063**	–0.033	–0.033	–0.033
	(0.027)	(0.028)	(0.028)	(0.028)
Age: 26–35	–0.095***	–0.067***	–0.066***	–0.066***
	(0.022)	(0.023)	(0.023)	(0.023)
Age: 36–45	–0.113***	–0.087***	–0.088***	–0.088***
	(0.018)	(0.018)	(0.018)	(0.018)
Age: 46–55	–0.089***	–0.076***	–0.077***	–0.076***
	(0.012)	(0.012)	(0.012)	(0.012)
Years of education	–0.024***	–0.022***	–0.022***	–0.022***
	(0.004)	(0.004)	(0.004)	(0.004)
Married	0.150***	0.132***	0.133***	0.133***
	(0.012)	(0.013)	(0.013)	(0.013)
Widowed	–0.148**	–0.150**	–0.150**	–0.150**
	(0.067)	(0.071)	(0.070)	(0.070)
Divorced	–0.082***	–0.080***	–0.082***	–0.081***
	(0.028)	(0.030)	(0.030)	(0.030)
Separated	–0.259***	–0.266***	–0.265***	–0.265***
	(0.027)	(0.029)	(0.029)	(0.029)
Unemployed	–0.097***	–0.091***	–0.090***	–0.090***
	(0.014)	(0.015)	(0.015)	(0.015)
Not in the labour force	0.002	–0.002	0.000	–0.001
	(0.009)	(0.009)	(0.009)	(0.009)
Long-term health condition	–0.155***	–0.150***	–0.150***	–0.150***
	(0.008)	(0.008)	(0.008)	(0.008)
Number of children in household	–0.037***	–0.036***	–0.036***	–0.036***
	(0.005)	(0.005)	(0.005)	(0.005)
Number of adults in household	0.001	0.000	0.001	0.001
	(0.004)	(0.004)	(0.004)	(0.004
Living in a major city	–0.060***	–0.071***	–0.070***	–0.070***
	(0.013)	(0.014)	(0.014)	(0.014)
Constant	0.105	0.098	0.099	0.098
	(0.080)	(0.085)	(0.084)	(0.084)
State dummies	Yes	Yes	Yes	Yes
Wave dummies	Yes	Yes	Yes	Yes
Observations	174,722	152,824	152,824	152,824
Individuals	25,205	21,125	21,125	21,125
Overall R-Squared	0.074	0.082	0.083	0.083

Notes: Robust standard errors clustered at the individual level appear in parentheses. * $p<0.10$; ** $p<0.05$; *** $p<0.01$.

Table A2: Adaptation to multiple financial events of the same type (FE estimates)

	Life satisfaction		
	(i)	(ii)	(iii)
MIF_{it}	0.103***		0.095***
	(0.017)		(0.015)
MIF_{it-1}	0.047***		0.040***
	(0.016)		(0.015)
MIF_{it-2}	0.044***		0.040**
	(0.017)		(0.015)
MIF_{it-3}	0.023		0.024
	(0.016)		(0.015)
MIF_{it-4}	0.004		0.002
	(0.017)		(0.015)
MIF_{it-5}	–0.003		0.002
	(0.015)		(0.014)
MWF_{it}		–0.396***	–0.407***
		(0.028)	(0.025)
MWF_{it-1}		–0.136***	–0.128***
		(0.024)	(0.022)
MWF_{it-2}		–0.061**	–0.052**
		(0.025)	(0.022)
MWF_{it-3}		–0.016	–0.018
		(0.023)	(0.021)
MWF_{it-4}		–0.004	–0.010
		(0.025)	(0.021)
MWF_{it-5}		–0.021	–0.025
		(0.024)	(0.021)
Observations	68,971	64,045	79,917
Individuals	11,415	10,786	13,084
Overall R-Squared	0.054	0.084	0.082

Notes: The regressions include all of the other control variables used in column (i) of Table 3. Column (iii) includes individuals who have had any positive number of worsenings and/or improvements, so that the sample size there is larger than that in columns (i) and (ii). Robust standard errors clustered at the individual level appear in parentheses. *** p<0.01; ** p<0.05; * p<0.10.