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# **Responses to financial stress at life transition points**

CHRIS RYAN

**A strong and fair society for all Australians**

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# Executive summary

This paper looks at how changes in individuals' circumstances affect their reported perceptions of their own financial wellbeing or deprivation. The aim is to assess how the experience of key life 'transition' points change individuals' reported financial positions. Examples of such key changes include: forming long-term relationships, starting a family, purchasing a house, leaving full-time education, and entering and leaving the workforce.

The research uses the responses of individuals to questions in the first eight waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey to assess the nature of any changes in their year-to-year responses to financial wellbeing assessments and deprivation experiences as their circumstances change. Two indicators of financial wellbeing are used in the research:

- The first is based on people's levels of satisfaction with their financial situation.
- The second involves how people characterise their financial situation, from prosperous through to very poor, referred to throughout the paper as their 'sense of prosperity'.

A third indicator used in this paper examines whether people report instances of a set of designated financial stress experiences.

The methodology used here involves estimation of fixed effect regressions of indicators of financial wellbeing and the experience of financial stress using HILDA panel data to identify the effects on their financial wellbeing responses as people move in and out of various states or their circumstances change.

In general, the effects of changing circumstances are quite consistent across the set of three indicators of financial wellbeing or stress considered here.

- In general, age is positively associated with financial wellbeing, even among people aged 65 years or more who are welfare recipients.
- Employment and household income are also positively associated with financial wellbeing.
- While the income effects on financial wellbeing appear quite modest in size, full-time employment most often has the largest effect on the various indicators of financial wellbeing.
- Individuals who develop long-term health conditions report lower levels of financial wellbeing, though the initial effects of these conditions appear to be relatively modest.

Various life events also have substantial impacts on financial wellbeing, including retirement (a positive effect), becoming a single parent and separating from a spouse (both negative effects).

- Individuals who report major improvements (or worsening) in their financial situation over the previous 12 months also report higher (or lower) levels of financial wellbeing and a lower (or higher) incidence of financial stress events.
- Changing jobs, being promoted at work and moving house have positive impacts on a number of indicators of financial wellbeing.
- The combination of separating from a spouse and moving house in the same year is associated with lower levels of financial wellbeing.

In general, having been retrenched from work did not have a negative impact on the financial wellbeing of individuals, provided they were employed again by the time they were surveyed. Potentially reflecting the time it took to be re-employed, those with a home mortgage who had lost a job reported lower levels of most of the indicators of financial wellbeing.

People who relied on welfare, including the age pension, for at least part of the preceding financial year, reported lower levels of financial wellbeing and experienced more financial deprivation. Given the magnitudes of the estimated parameters that are smaller for this group than for the rest of the population, marginal increases in payments are likely to do little to change this situation. For example, the income of individuals who went onto welfare would have to more than double to leave their levels of financial satisfaction unchanged, while those who lost a full-time job would need a fivefold increase in equivalised household disposable income to maintain their levels of financial satisfaction.

Since employment status tends to have a large observable effect on financial wellbeing and financial deprivation, it seems that policies that promote employment are likely to be effective in reducing the incidence of financial difficulties among the population. Of note in this regard is that the effects associated with full-time employment on financial wellbeing are as large for those with a history of income support receipt as for other members of the population.

# 1 Introduction

This paper looks at the question of how the reports of individuals regarding their financial wellbeing or their experiences of financial deprivation change as their circumstances change. The aim is to assess how the experience of financial deprivation and reported satisfaction with their financial situation change for individuals as they move through key commonly experienced lifetime ‘transition’ points, such as forming long-term relationships, starting a family, purchasing a house, leaving full-time education, entering the workforce and retirement. Other commonly experienced, if not necessarily personally anticipated events, involve negative economic, emotional and psychological shocks, such as losing a job, becoming unemployed and living on welfare, or negative wealth shocks associated with asset market fluctuations and the distress involved in marital or relationship dissolution.

These experiences can have immediate financial, social, emotional and psychological consequences for individuals, and longer-term effects if they induce changes in behaviour. For government, events that affect multiple individuals, such as mass job loss that can be part of economic downturns or wealth changes associated with asset market fluctuations, may result in calls for policy responses. The first case may require increases in government ‘business activity’ through increased welfare recipient money and more support to welfare organisations to meet their increased demand, while the second case may, for example, require adjustment to retirement policies to ensure retirees have adequate living standards.<sup>1</sup>

Part of the policy context for this research is that emergency relief agencies funded by the government reported greater numbers of individuals and a change in the demographic profile of clients associated with the global financial crisis that began in 2008. Specifically, individuals from more advantaged backgrounds than had previously been the norm began to seek help from emergency relief agencies in providing cash and in-kind assistance. This research is not intended to be a specific evaluation of that claim. Rather this paper will look at how reported financial wellbeing and the experiences of financial deprivation change as individuals’ circumstances change. To the extent that the paper looks at how these reports change with the experience of job loss or other forms of financial loss, it may be informative of how individuals experience events like a financial crisis, though it does not look at effects that influenced groups of individuals.

The research uses the responses of individuals to questions in the first eight waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey to assess how their year-to-year responses to financial wellbeing assessments and stress experiences change as their circumstances change.

Specifically, the research aims to address the following research questions:

- How do peoples’ levels of financial wellbeing and/or experiences of financial deprivation change as their circumstances change?
- What events or changes in circumstances are associated with the largest changes in reports of individual financial satisfaction or the experience of financial deprivation?
- How different are the reports of individuals relying on income support compared with the broader population?

Two indicators of financial wellbeing are used in the research (both described in more detail below). One is based on a question about people’s levels of satisfaction with their financial situation. The second involves how people characterise their financial situation, from prosperous through to very poor, referred to throughout the paper as their ‘sense of prosperity’. A third indicator used in this paper reflects whether people report instances of a set of designated financial deprivation experiences. Bray (2001), Breunig and Cobb-Clark (2005) and Marks (2007) are studies that have looked at how the characteristics of individuals and their circumstances are associated with their experience of financial deprivation, with the latter two studies involving analysis of reports of financial stress in the early waves of HILDA. However, these studies analysed the available data in a cross-sectional way. In the current study, the repeated responses by individuals to the

same questions over time are used to estimate the relationship between the financial situations of people and their broader circumstances.

There are at least two good reasons for doing this. First, repeated observations from the same individuals make it possible to allow for unobserved, but persistent differences in the way survey respondents reflect their perceptions of wellbeing. This matters because people with the same ‘objective’ circumstances may differ in their psychological outlook and in the responses they make to survey questions about their situation. A second advantage of using panel data is that it is possible to examine any dynamic processes of wellbeing change in response to changing circumstances by the same individuals, rather than relying on estimates of differing individuals whose circumstances also happen to be different. It is possible to see directly how the wellbeing responses change as the circumstances of the same individuals change.

The methodology used here involves estimation of fixed effect regressions of indicators of financial wellbeing and the experience of financial hardship using HILDA panel data to identify the effects as people move in and out of various states or their circumstances change on their financial wellbeing responses.

The remainder of the paper is structured in the following way. The next section, Section 2, summarises the conceptual framework used here to interpret the various indicators as dimensions of financial wellbeing. Section 3 contains a brief review of the literature relevant to this topic. Section 4 contains a description of the methodology and data used here, with the more formal results presented in Section 5. The last section, Section 6, concludes and sets out some of the implications of the paper for policy.

## Terminology

A note on terminology used in the paper: the term ‘deprivation’ or ‘financial deprivation’ is used throughout the report to capture negative experiences or perceptions of individuals in general about their financial position. The term ‘financial stress’ is used to refer specifically to the seven-item battery of questions asked in the HILDA self-completion questionnaire about their experience of specific ‘events’ (while noting that these events might be experienced without inducing psychological stress among individuals) and ‘financial hardship’ refers to the four-item subset of questions classified as such by Bray (2001).



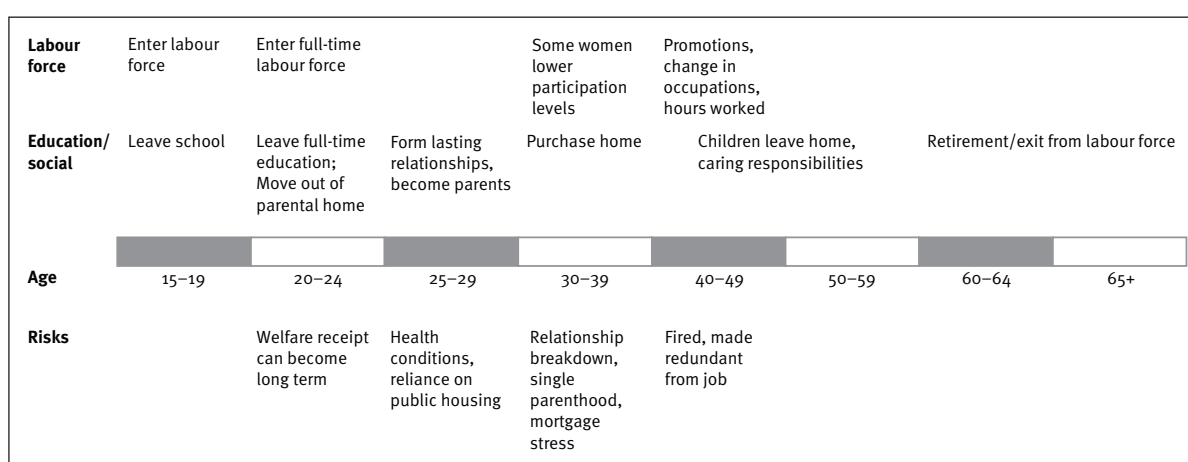
## 2 Conceptual framework

The framework for analysing financial wellbeing in this paper is as follows: individuals face some chance of experiencing an ‘event’ that involves a disruption to their lives in any year, which may result in them reporting that they experienced some financial deprivation in that same year. Whether the event has such an effect depends on the individual’s own observed characteristics (these can mitigate or extenuate the detrimental impact of ‘events’), and factors unobserved by researchers that reflect the ability of individuals to cope in differing circumstances. These may be ‘permanent’ factors like personality that help people cope in situations and over time, or more temporary or changeable factors. In turn, the experience of financial deprivation affects the reports by people of their financial wellbeing. These reports may also be influenced by observed personal characteristics and psychological factors that affect the way people experience events as stressful, translate stress into how they picture their financial situation and report on that situation. Again, these factors may include both permanent tendencies and the impact of transitory or temporary phenomena. For example, some individuals may always exhibit a tendency to be optimistic or pessimistic, while the impact can also be influenced by other factors. These other factors include their financial or money-management skills (or ‘financial literacy’) and the strategies or behaviours they employ, which may be amenable to change (ANZ 2008).

In this paper both reports over time of indicators of financial hardship or deprivation and of financial satisfaction or wellbeing are analysed. The framework sketched above leads naturally to a focus on the impact of ‘events’ and the role of psychological factors that induce people to view their situations and the impact of events in particular ways, including the impact of permanent factors that lead people to always report their situation in the same way (Diener et al. 1999). The use of panel data allows the impact of the permanent tendencies to be removed from reports of financial wellbeing and the incidence of deprivation to instead focus on the impact of external events on individuals. What ‘events’ do we have in mind?

Figure 1 contains a ‘stylised’ depiction of the common, if not universal, experiences of individuals through their lives after childhood in contemporary Australia.<sup>2</sup> While the ages at which individuals experience some of these events vary, the early period of moving into full adulthood involves leaving full-time education, moving into the labour force, moving out of the parental home and searching for partners for long-lasting relationships. Many people become parents, with the raising of children involving interruptions to people’s careers, especially for women. Home ownership is a goal of a large proportion of Australian society. Workers’ careers then develop in divergent ways, with some people experiencing promotion at work, and others changing careers and occupations at different points. Others take on care responsibilities for aged relatives and grandchildren.

**Figure 1: Stylised lifeline with key transition points**



All of these transitions involve the risk that some people may not navigate them successfully. Some do not leave their initial education with all the skills they require and find the transition to the labour force difficult. The continuing success of others can be fragile, easily buffeted by unpredictable events. Those supported by welfare in their difficulties may find it hard to re-establish their independence. Underlying health conditions may manifest themselves at this point or be exacerbated by such setbacks. Not all attempts at forming long-term relationships are successful and some people find themselves living as single parents; there is also another group of people who became parents without long-term partners. The fragility in people's lives also comes through the type of work they have—some workers are at greater risk than others of being fired or made redundant. Eventual retirement can be a positive experience for those whose retirement was planned, but less so for those for whom it was 'forced' and its timing unexpected.

These and other experiences are captured in the HILDA data. As set out above, this stylised picture of the lives of individuals is consistent with the 'life-course' view of people's lives. The life-course approach was summarised by Hill and Milewski (2007) as reflecting the view that 'an individual's life is composed of a series of transitions or life events, which are embedded in trajectories or careers (or status passages) that give them a distinct form and meaning (Elder 1985, p. 31; Elder 1994, p. 5; Marshall & Mueller 2003, p. 18). The life-course approach examines life trajectories of individuals with the aim of explaining their movements between various statuses and roles'. While focusing on individual life events and patterns of life trajectories, the purpose is to 'explain and understand social change and social phenomena' (Mayer & Tuma 1990, pp. 4–5).

Martin (2007) contains an analysis of changing life-course patterns in Australia from 1981 to 2001, using Australian Censuses to do so. While he finds some evidence of changes in life-course patterns, particularly involving increased participation in non-conventional statuses among those aged 30 to 49, he also finds considerable stability in many established life-course patterns over the period. Breusch and Gray (2005) summarise some of the research findings associated with the life-course approach in Australia, as well as describing a specific longitudinal data set, the Life Course Survey, designed to collect information on how Australians 'negotiate employment, family formation and domestic responsibilities across their lifetimes' (Breusch & Gray 2005, p. 111).

Many of the events identified in Figure 1 clearly have financial implications for people, such as job loss, while others may be especially detrimental for individuals where the events are unexpected, as in the case of relationship breakdown. They may have other implications for people's lives and how people view their lives, but since government is most often called on to alleviate people's poor financial situation, we focus our analysis on the financial consequences of these events. Our empirical approach is designed to see whether and how the experiences of these events change the way people report their financial situation, with a view to providing a better evidence base for the development of policy.

### 3 Literature

There are four questions of relevance to look at from the existing literature for the analysis conducted here. First, what is encompassed by the concept of financial wellbeing and how is it related to the experience of financial stress? Second, what are the determinants of financial wellbeing or satisfaction? Third, are these the same as the determinants of the experience of financial stress? Fourth, how should the data, mostly involving repeated subjective reports by individuals of their experiences or financial situations, be analysed? The first three of these questions are addressed in this section, with the last left to the discussion in the methodology section (Section 4).

First, what is encompassed by financial wellbeing? Joo and Grable (2004) argue that the general consensus among researchers is that financial satisfaction is a sub-construct or domain of general wellbeing (Campbell 1981; Diener et al. 1999; Easterlin & Sawangfa 2007). Financial satisfaction involves a state of being happy and free from financial worry (Zimmerman 1995). In describing their financial wellbeing scale, Prawitz et al. (2006) highlight the range of approaches used to study the financial situation of individuals in the psychological literature.

Even the terms used to name constructs describing feelings about one's financial condition have been varied, including perceived economic well-being (Walson & Fitzsimmons, 1993), personal financial wellness (Joo & Garman, 1998), financial satisfaction (Joo & Grable, 2004; Kim, 1999), perceived income adequacy (Danes & Rettig, 1993), financial strain (Aldana & Liljenquist, 1998), financial stress (Bailey, Woodiel, Turner, & Young, 1998; Freeman, Carlson, & Sperry, 1993; Kim & Garman, 2003), debt stress (Drentea, 2000), economic strain (Mills et al., 1992), and economic distress (Voydanoff, 1984). While some have approached the construct from a positive perspective using terms such as well-being (Walson & Fitzsimmons), and satisfaction (Joo & Grable; Kim), others have examined it using negative terminology: strain (Aldana & Liljenquist), stress (Bailey et al.; Drentea; Freeman et al.; Kim & Garman, 2003), and distress (Voydanoff; Garman, Leech, & Grable, 1996). (Prawitz et al. 2006, p. 35)

Second, what are the determinants of financial wellbeing? Easterlin and Sawangfa (2007) estimate that financial wellbeing increases with age and education and contributes to overall subjective wellbeing. Joo and Grable (2004) note positive associations with income, education and age. Further, they identify financial stressors from three sources that affect financial wellbeing: personal, family and financial situations. Personal stressors include investment losses, injuries, disabilities, accidents, illnesses and wage changes. Family stressors include major life-cycle events, such as marriages, births, retirement, job loss, divorce, death and so on. Financial stressors also include high levels of consumer debt, moving, large, unexpected expenditures such as having to pay for household and vehicle repairs, and bankruptcy, legal problems and the like. These types of stressors tend to increase total stress levels, as well as financial stress levels, which in turn tend to lead to a lower level of financial satisfaction (Freeman et al. 1993). A common feature of all of these events is that they may require substantial amounts of money to resolve or remedy, adding to pre-existing financial problems, and hence may be negatively related with financial satisfaction (Bailey, Woodiel, Turner & Young 1998).

Hsieh (2001) analysed financial satisfaction of those aged 45 years or over in the US using a set of explanatory variables which have been identified as major correlates of global subjective wellbeing or life satisfaction. These variables included gender, race, age, marital status, education, income, perceived health condition, residence, civic organisation memberships, attendance of religious services, comparison of income with others, comparison of current financial situation with past, and poverty status. The dependent variable allowed three responses to the satisfaction question—'pretty well satisfied', 'more or less satisfied' and 'not satisfied'. Tests indicated that the effects of both age and log income on financial satisfaction did not vary across their distributions (so moving from age 24 to 25 had the same effect on financial satisfaction as moving from age 64 to 65). Age (+ effect), income (+), employment status (+ effects for full-time, part-time work, retired and home makers), religious (+), and positive comparisons of income against others, and with the past (both +) were all significant, as was being married (+) and living in a metropolitan area (–).

Pudney (2008) analyses a question from the British Household Panel Survey ‘How well would you say you yourself are managing financially these days?’ with five responses, from ‘Finding it very difficult’ through to ‘Living comfortably’. The responses increased with age, education and income, and were higher among those employed, married and who owned their house (and the level of home equity). The responses were lower among the newly divorced and people who had recently lost jobs or become long-term sick (people who indicated they were not working because of long-term illness or incapacity), but not among the newly retired or those who had recently had children. A focus of the Pudney (2008) paper is on the dynamic impact of the subjective responses of individuals to their changed circumstances, with not all of the impact of changes in circumstances occurring in the relevant year.

Research also shows that financial wellbeing is related to the financial skills of individuals, which in turn are correlated with age (an inverse-U relationship), gender (males tend to have higher skills), education and socioeconomic status (both positive relationships), location (urban dwellers have higher skills) and employment status (see, for example, The Social Research Centre 2008). To the extent that these characteristics are associated with the human capital of individuals, which contributes to their financial skills, it seems likely they will contribute to better financial wellbeing outcomes through the better savings and investment behaviours practised by those with good financial skills.

What factors influence whether individuals report experiences of financial stress and are these the same factors that influence reports of financial wellbeing? A series of Australian studies have looked at the prevalence of experiences of financial deprivation or stress, using indicators that reflect whether subjects experienced specific events. Bray (2001) and Breunig and Cobb-Clark (2005) distinguished between indicators that reflect ‘financial hardship’ (missing meals, pawning assets, inability to heat the home and applying for welfare) and those that reflect ‘cash flow’ problems (inability to pay rent/mortgage or utilities, and borrowing from friends). In analysing the characteristics of individuals who experienced both types of deprivation in the Household Expenditure Surveys, however, Bray (2001) found a common set of influences on each. These factors included being in a low net equivalised income quintile, a private renter, a public renter, sole parent households, welfare recipients, those part-time or not employed relative to those full-time employed, those with low educational qualifications and people with disabilities, especially those involving work or education restrictions.

Breunig and Cobb-Clark (2005) analysed the determinants of experiencing the same types of deprivation using data from early waves of HILDA and found that a similar set of characteristics to those found in Bray (2001) were associated with deprivation. However, there were some differences. Cash flow problems were experienced by people higher up the income distribution, and by families, than were experiences of financial hardship. Cash flow problems were more common among young people than old. Also of interest were some of the characteristics that were not associated with the experience of either type of deprivation, including being Indigenous, being an immigrant, the number of dependent children and the region of Australia in which people lived.

Marks (2007) analysed the same data, defining an experience of financial stress as involving the experience of two or more of the stress indicators in any year. His results indicate that the experience of financial stress was associated with many of the characteristics identified by the earlier authors, but that it was also associated with the number of dependent children in a household, rose with time spent unemployed since leaving full-time education, fell with time spent working since leaving full-time education and was higher among people in poor health. It was not associated with educational attainment, being an immigrant or being Indigenous.

Marks (2007) used the sense of prosperity question in HILDA, also used here, to construct an indicator of ‘subjective poverty’, which was equal to one for those people who considered themselves ‘poor’ or ‘very poor’.<sup>3</sup> He also analysed what factors were associated with the incidence of subjective poverty (as well as relative income poverty, those whose equivalised household disposable income was less than 50 per cent of the median, with alternate indicators before and after taking account of housing) and analysed how closely related the alternative indicators of financial deprivation were. This subjective indicator was associated with fewer characteristics, but may have been higher among males, was negatively associated with income and wealth, was associated positively with the time spent unemployed since leaving full-time education

and was lower among married people. Marks (2007) concluded that the relationships between the three financial disadvantage indicators were lower than expected, and that the extent of persistence of experience for the indicators was not high between the first and second waves. He concluded by arguing the three indicators were conceptually distinct, and that income poverty is defined by and reflects the experience of low income and is associated with the characteristics that determine income, while subjective poverty was a psychological judgement more closely associated with wealth than income. He found that the experience of financial stress was more a problem of a shortage of cash and the imbalance between income and unexpected expenditures. Despite Marks's conclusions that the correlations between the three indicators were low and his argument that they were conceptually distinct, it was still clear that those classified as poor using any one indicator were those most likely to be classified as poor by any of the others, so there remained considerable overlap between the three indicators.

## 4 Methodology and data

### 4.1 Methodology

Two of the alternate dependent variables used in this study involved the responses of individuals to questions that are ordinal in nature. This is most obvious in relation to the sense of prosperity question which allowed responses ranging from ‘prosperous’ through to ‘poor’ and ‘very poor’. The financial satisfaction question asked for responses on a scale from 0 to 10, with 10 meant to convey higher levels of satisfaction. While the set of responses involves numbers, such responses are not typically given a cardinal interpretation by economists. Other dependent variables involve binary variables, such as whether an individual experienced some particular financial stress event. While there are commonly used techniques for cross-sectional data to deal with these kinds of discrete variables with multiple outcomes (Wooldridge 2002), their use with panel data is more problematic. One response in this literature has been to convert them to binary outcomes, so values above some threshold are given the value 1 and those below it 0 (Winkelmann & Winkelmann 1998; Hamermesh 2001).

Ferrer-i-Carbonell and Frijters (2004) point out that this involves a loss of both variation and information, since only changes across the threshold contribute to estimates of the parameters. They propose a fixed effects ordered logit model that uses all of the available information. This estimator has been used in Frijters, Haisken-DeNew and Shields (2004) and Booth and van Ours (2009), among other papers looking at the determinants of life satisfaction. Ferrer-i-Carbonell and Frijters (2004) analysed the German equivalent of the HILDA panel, the German Socio-Economic Panel (GSOEP), whose life satisfaction question was on the same 0 to 10 scale as that used here for the financial satisfaction question from HILDA. One aspect of their results, important for this study, was that it mattered less whether the dependent variable was treated as cardinal or ordinal than whether the estimation procedure allowed for fixed effects. That is, the estimated parameters for key variables were almost identical between the specification using ordinary least squares (OLS) and the ordered logit procedure, provided fixed effects were incorporated in the estimates. Generally, they found that among the significant effects, the magnitudes of the estimated parameters from a simple logit equation ignoring the panel structure of the data were much larger than the fixed effect estimators. Ferrer-i-Carbonell and Frijters (2004) concluded that it was much more important to take account of the individual fixed effects than to worry whether the dependent variable was treated as a cardinal or an ordinal variable. We adopted this approach here, estimating the regression equations by OLS for simplicity and ease of interpretation, while allowing for fixed individual effects as set out below. While the results in Ferrer-i-Carbonell and Frijters (2004) suggest this may be acceptable in the case of financial wellbeing, where the dependent variable may take 11 values, it is less clear that it is satisfactory for the binary situation. Therefore, we checked to see if using OLS results in any problems with inference by also estimating a conditional logit equation, which is the standard approach for repeated observations on a binary dependent variable.

We conducted an analysis of the financial wellbeing of individuals over time. This involved regression analysis of the financial wellbeing and deprivation variables over the first eight waves of the HILDA survey. The regression equation is specified as

$$W_{it} = X_{it}\beta_1 + Z_{it}\beta_2 + \alpha_i + \varepsilon_{it} \quad (1)$$

where  $W_{it}$  is an indicator of the financial wellbeing (or experience of financial deprivation) of individual  $i$  in wave  $t$ ; the  $Z$ s and the  $X$ s are a set of explanatory variables that vary across time, and  $\beta_1$  and  $\beta_2$  are their associated parameter vectors;  $\alpha_i$  are individual fixed effects that are constant over time; and  $\varepsilon_{it}$  is a random error term. It is useful to distinguish the set of time varying variables into two groups—one which reflects changes in the ‘standard’ set of individual demographic characteristics (the  $X$ s) and the other ‘life’ events that most people experience at some stage in their lives that may be important for financial wellbeing (the  $Z$ s). Both sets of variables are described in more detail in the data section below (Section 4.2).

The  $\alpha_i$  variable reflects any unobserved characteristics of individuals that result in them providing similar assessments of their financial situation (or unobserved factors that result in them experiencing financial deprivation) from one period to the next. These factors will include both ‘real’ phenomena whose impact changes little over the relevant time period, such as wealth or relative status, as well as psychological factors that may cause some individuals to always answer such questions positively and others negatively.<sup>4</sup>

With the specification of such fixed effects, the parameters of equation (1) are only estimated by the instances where the  $Z$  and  $X$  values of individuals change in the data over the relevant time period. That is, the parameters are only estimated by observations where individuals change state—from being single to becoming married, from commencing a family, to being fired and to retiring from the workforce, for example. However, they should be interpreted as measuring the impact of a change in the  $Z$  and  $X$  variables on the dependent variables. Strictly, they measure the effect of both the levels of the  $X$ s on the levels of the dependent variables and the representative change in the dependent variables arising from a change in the  $X$ s, but are identified in the fixed effects setting by the changes that occur where individuals change state (their  $X$ s change).

## 4.2 Data

The data used in this study are taken from the Household Income and Labour Dynamics in Australia (HILDA) survey (see Watson 2010). It is a household-based longitudinal survey, which aims to track members of an initial sample of households, and individuals who join those initial households, over an indefinite life. The initial sample of 7682 households was drawn in 2001 as a sample of households from 488 non-remote Census Collection Districts in Australia. The sample was intended to be nationally representative of the Australian population aged 15 years or more living in non-remote regions at that time. Some 13,969 respondents from those 7682 households were interviewed in the first wave of HILDA. Those interviewed were asked detailed questions about: their current and past living arrangements; current and previous labour market participation; current income; and their current circumstances, including their finances and general life satisfaction. Subsequent waves, which have been collected on an annual basis, contain broadly similar numbers of observations and cover similar topics. An ‘unbalanced’ panel is used in the regression analysis, so individuals do not need to respond to every survey to be used in the analysis, though the fixed effects approach adopted means that they need to respond at least twice.

There are three financial wellbeing or deprivation indicators from the HILDA survey used in this paper. The first is a response to a question in the main interview of HILDA where individuals are asked about their levels of satisfaction with aspects of their lives, including with their financial situation. This indicator is provided on a scale between 0 and 10, with higher values indicating higher levels of financial satisfaction.

The wording for some of the relevant financial stress questions in the HILDA self-completion questionnaire is listed below.

For the financial wellbeing question (personal interview questionnaire), respondents are each asked to pick a number between 0 and 10 to indicate their satisfaction with aspects of their life, with higher numbers intended to convey higher levels of satisfaction. One of the aspects rated was ‘Your financial situation’.

The HILDA ‘prosperity’ questions (self-completion questionnaire) are worded as follows:

- ▶ Given your current needs and financial responsibilities, would you say that you and your family are:
  - Prosperous
  - Very comfortable
  - Reasonably comfortable
  - Just getting along
  - Poor
  - Very poor



HILDA financial stress questions (self-completion questionnaire) are worded:

- ▶ Since January (survey year) did any of the following happen to you because of a shortage of money?
  - Could not pay electricity, gas or telephone bills on time
  - Could not pay the mortgage or rent on time
  - Pawned or sold something
  - Went without meals
  - Was unable to heat home
  - Asked for financial help from friends or family
  - Asked for help from welfare/community organisations

Frequencies of the responses to this last question over the first eight annual waves of HILDA are provided in the top panel of Table 1. The most common responses are values of the order of 5 through 8, with an average value of around 6.5. Over time, the responses to this financial situation question have increased, with the average rising by half a point, from 6.1 to 6.6 between 2001 and 2008.<sup>5</sup>

**Table 1: Distribution of HILDA financial wellbeing responses, waves 1 to 8 (2001 to 2008)**

	2001	2002	2003	2004	2005	2006	2007	2008	Average
Financial satisfaction									
Reported score	Distribution (per cent)								
0	3.0	2.6	1.5	1.4	1.5	1.3	1.4	1.4	1.8
1	2.9	2.7	2.0	1.8	1.9	1.7	1.4	1.2	2.0
2	4.2	4.6	3.8	3.4	3.2	3.6	3.0	3.1	3.6
3	5.8	5.6	5.0	5.3	4.8	4.4	4.0	4.0	4.9
4	6.3	7.0	6.2	5.3	5.8	6.3	5.0	5.0	5.9
5	16.3	16.0	14.4	14.0	13.6	14.2	13.6	12.9	14.4
6	12.0	12.3	12.2	13.0	13.1	13.5	12.8	13.6	12.8
7	16.6	17.3	18.9	19.9	20.4	18.4	20.7	21.5	19.1
8	16.3	16.5	19.3	19.5	19.9	20.5	20.8	21.2	19.2
9	7.6	7.7	8.9	8.7	9.2	8.8	10.0	9.7	8.8
10	9.0	7.5	7.9	7.6	6.6	7.3	7.3	6.3	7.5
<b>Average score</b>	<b>6.1</b>	<b>6.1</b>	<b>6.4</b>	<b>6.4</b>	<b>6.4</b>	<b>6.4</b>	<b>6.6</b>	<b>6.6</b>	<b>6.4</b>
Prosperity									
1—Very poor	0.7	0.6	0.7	0.6	0.5	0.7	0.7	0.6	0.6
2—Poor	3.5	3.1	2.8	2.9	2.3	2.4	2.3	2.9	2.8
3—Just getting along	30.1	30.9	28.3	28.7	27.3	28.2	25.6	27.1	28.3
4—Reasonably comfortable	51.4	51.2	51.8	52.7	53.2	52.7	53.3	53.1	52.4
5—Very comfortable	12.7	12.9	14.9	13.7	15.0	14.1	15.9	14.5	14.2
6—Prosperous	1.6	1.2	1.5	1.4	1.6	1.9	2.3	1.7	1.7
<b>Average score</b>	<b>3.7</b>	<b>3.7</b>	<b>3.8</b>	<b>3.8</b>	<b>3.8</b>	<b>3.8</b>	<b>3.8</b>	<b>3.8</b>	<b>3.8</b>

Estimates based on all survey responses in any year, ranging from around 12,500 observations in 2001 to just over 10,000 in 2008.



The second indicator used in this study comes from the self-completion questionnaire, provided in each survey to all subjects, which contains a question about the subject's current financial situation, given their current needs and financial responsibilities. The exact wording of the question appears above. Once more the frequencies of responses over the first eight waves of the survey appear in Table 1. These show a slight improvement in the wellbeing of respondents to the survey over the eight-year timeframe, at least in terms of reported prosperity. Most respondents (more than 50 per cent each year) indicate that they are 'reasonably comfortable', given their current needs and financial responsibilities.

The third indicator is taken from series of questions, also contained in the self-completion questionnaire, designed to ascertain the extent to which individuals face financial stress. Respondents are asked whether, 'because of a shortage of money', they undertook any of a number of actions since the beginning of the survey year as described above. For the analysis undertaken here, we construct a variable taking the value 1 if the individual indicates they experienced any of the financial stress indicators considered here.<sup>6,7</sup>

Frequencies of the responses to the series of questions over the first eight waves of HILDA are provided in Table 2. Most respondents in HILDA, 78 per cent, report no instances of financial stress in any year, with 22 per cent reporting one or more financial stress-related events. Slightly more than half of those reporting any event report more than one event in any year. Like the financial situation responses, the responses to the stress questions indicate that there has been an improvement in the financial situation of respondents over time, since the proportion indicating either one or more financial stress-related incidents fell from 29 per cent to 17 per cent between 2001 and 2008 (or indeed, any number of events—see the representative numbers for three, five or seven events in Table 2).<sup>8</sup>

**Table 2: Proportions (per cent) reporting financial stress events in HILDA, waves 1 to 8**

	No events	One event	Three events	Five events	Seven events	Multiple events	Any event
2001	71.5	12.0	4.6	1.2	0.3	16.5	28.5
2002	75.4	10.7	3.6	0.8	0.3	13.9	24.6
2003	76.7	10.3	3.5	0.8	0.2	12.9	23.3
2004	78.7	9.7	2.8	0.6	0.2	11.6	21.3
2005	79.2	9.3	3.2	0.7	0.1	11.5	20.8
2006	80.9	9.0	2.8	0.6	0.2	10.0	19.1
2007	80.4	9.0	3.0	0.7	0.1	10.6	19.6
2008	83.3	8.1	2.7	0.7	0.1	8.6	16.7
<b>Average</b>	<b>78.1</b>	<b>9.8</b>	<b>3.3</b>	<b>0.8</b>	<b>0.2</b>	<b>12.1</b>	<b>21.9</b>

Note: Estimates based on all survey responses in any year, ranging from around 12,500 observations in 2001 to just over 10,000 in 2008.

HILDA respondents are also asked about their experience of important 'life events' each year in the self-completion questionnaire. Many of these phenomena reflect the experiences set out in Figure 1, those common, if not universal, events experienced by individuals over their lives after childhood in contemporary Australia. A subset of the full list of 21 events is used in this study to determine whether the events have an impact on the way people view their financial wellbeing. The items used are listed in Table 3. These include events such as gaining or losing a job or a spouse, having children, moving house and being promoted at work. The list of events also includes the experience of adverse or advantageous financial shocks. Whether these 'shocks' affect how people view their financial wellbeing is an empirical matter we test through the regression analysis conducted below.

**Table 3: Wording of the HILDA 'Life events' questions**

We now would like you to think about major events that have happened in your life over the past 12 months.

For each statement . . . indicate whether each event happened during the past 12 months. . . .[Also] indicate how long ago the event happened or started.

The list of statements included

	Mean	Standard deviation (SD)
Fired or made redundant by an employer	0.028	0.166
Retired from the workforce	0.025	0.157
Changed jobs (i.e. employers)	0.133	0.340
Got married	0.026	0.160
Separated from spouse or long-term partner	0.038	0.192
Got back together with spouse or long-term partner after a separation	0.010	0.100
Partner or I gave birth to, or adopted, a new child	0.032	0.177
Pregnancy/pregnancy of partner	0.047	0.213
Major improvement in financial situation (e.g. won lottery, received an inheritance)	0.030	0.170
Major worsening in financial situation (e.g. went bankrupt)	0.029	0.168
Changed residence	0.140	0.347
Promoted at work	0.064	0.246
Total number of observations	79,198	

Note: Other statements included in the HILDA list, but not analysed in this paper, included the death of spouses, children and other relatives, personal and relative incarceration, and being subject to theft or physical violence.

Other features of the HILDA data provide a rich set of demographic characteristics for individuals, including the impact of changes in circumstances on the financial wellbeing of individuals. The descriptive statistics for the sample analysed here are set out in Table 4.

**Table 4: Descriptive statistics**

Variable	Mean	Standard deviation (SD)
Male	0.487	0.500
Age	44.1	18.2
Aged 15 to 24	0.171	0.376
Aged 25 to 34	0.173	0.378
Aged 35 to 44	0.189	0.392
Aged 45 to 54	0.177	0.382
Aged 55 to 64	0.136	0.343
Aged 65 or more	0.154	0.361

Variable	Mean	Standard deviation (SD)
Australian-born	0.749	0.434
Born overseas, English speaking country	0.103	0.304
Born overseas, non-English speaking country	0.148	0.355
Indigenous	0.024	0.152
Owns or paying off home	0.738	0.440
Private renter	0.182	0.386
Public housing	0.041	0.197
Living with parents	0.165	0.371
Other housing	0.036	0.186
Single person	0.119	0.324
Single parent	0.103	0.304
Couple with children	0.453	0.498
Other living arrangements	0.325	0.468
Post-graduate qualification	0.074	0.261
Degree	0.122	0.327
Year 12 and post-school qualification	0.105	0.307
Year 12 but no post-school qualification	0.161	0.367
No Year 12 but post-school qualification	0.182	0.386
No Year 12 and no post-school qualification	0.356	0.479
Full-time post-school student	0.044	0.205
Studying at school	0.050	0.218
Employed full-time	0.427	0.495
Employed part-time	0.197	0.398
Long-term health condition	0.260	0.439
Self-reported health—excellent	0.117	0.322
Self-reported health—very good	0.344	0.475
Self-reported health—good	0.347	0.476
Self-reported health—fair	0.140	0.347
Self-reported health—poor	0.034	0.182
Health change last 12 months—much better	0.050	0.217
Health change last 12 months—better	0.120	0.325
Health change last 12 months—same	0.679	0.467
Health change last 12 months—worse	0.122	0.328
Health change last 12 months—much worse	0.015	0.120

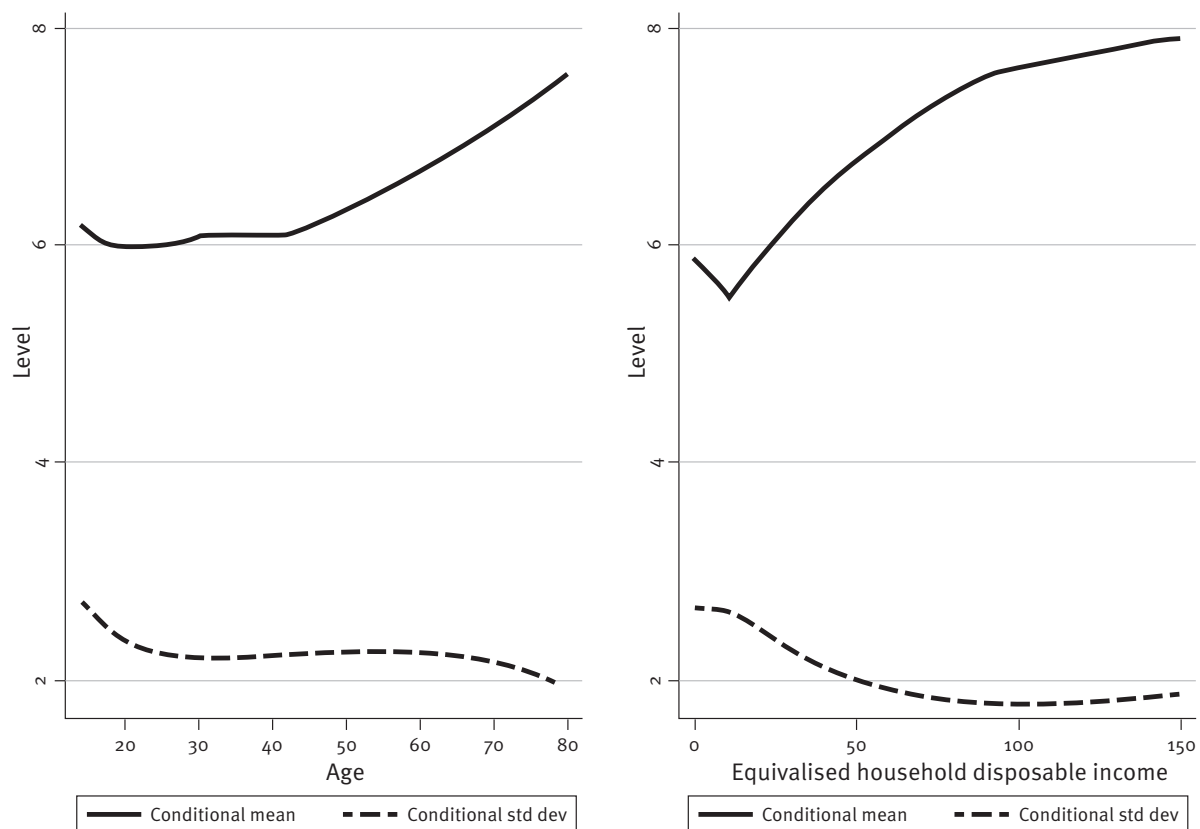
Variable	Mean	Standard deviation (SD)
Received Newstart previous financial year	0.034	0.181
Received Disability Support Pension previous financial year	0.040	0.196
Received Parenting Payment previous financial year	0.040	0.196
Received welfare previous financial year	0.268	0.443
Household received welfare previous financial year	0.376	0.484
Person's financial year income	30.4	36.3
Person's current income	29.9	33.7
Household's financial year income	38.0	31.1
Household's current income	37.7	29.9
Equivalised household disposable income	37.9	24.5
SF-36—physical functioning	81.0	26.4
SF-36—role-physical	76.9	37.8
SF-36—bodily pain	72.6	25.8
SF-36—general health	67.0	23.6
SF-36—vitality	59.8	20.5
SF-36—social functioning	81.7	23.9
SF-36—role-emotional	80.5	35.2
SF-36—mental health	73.2	18.6
Decile SEIFA relative socio-economic advantage/disadvantage index	5.7	2.9
Decile SEIFA education and occupation index	5.7	2.9
Weekly hours worked—all jobs	37.0	15.8
Weekly hours worked—main job	36.2	15.7
Occupational SES status (AUSLo6—range 0–100)	47.4	23.3
Past year—Fired or made redundant	0.028	0.166
Past year—Retired	0.025	0.157
Past year—Changed jobs	0.133	0.340
Past year—Got married	0.026	0.160
Past year—Separated	0.038	0.192
Past year—Got back together with spouse	0.010	0.100
Past year—Birth/adoption of new child	0.032	0.177
Past year—Pregnancy	0.047	0.213
Past year—Major improvement in finances	0.030	0.170
Past year—Major worsening in finances	0.029	0.168
Past year—Changed residence	0.140	0.347
Past year—Promoted	0.064	0.246
<b>Total number of observations</b>	<b>79,198</b>	

### 4.3 Descriptive analysis

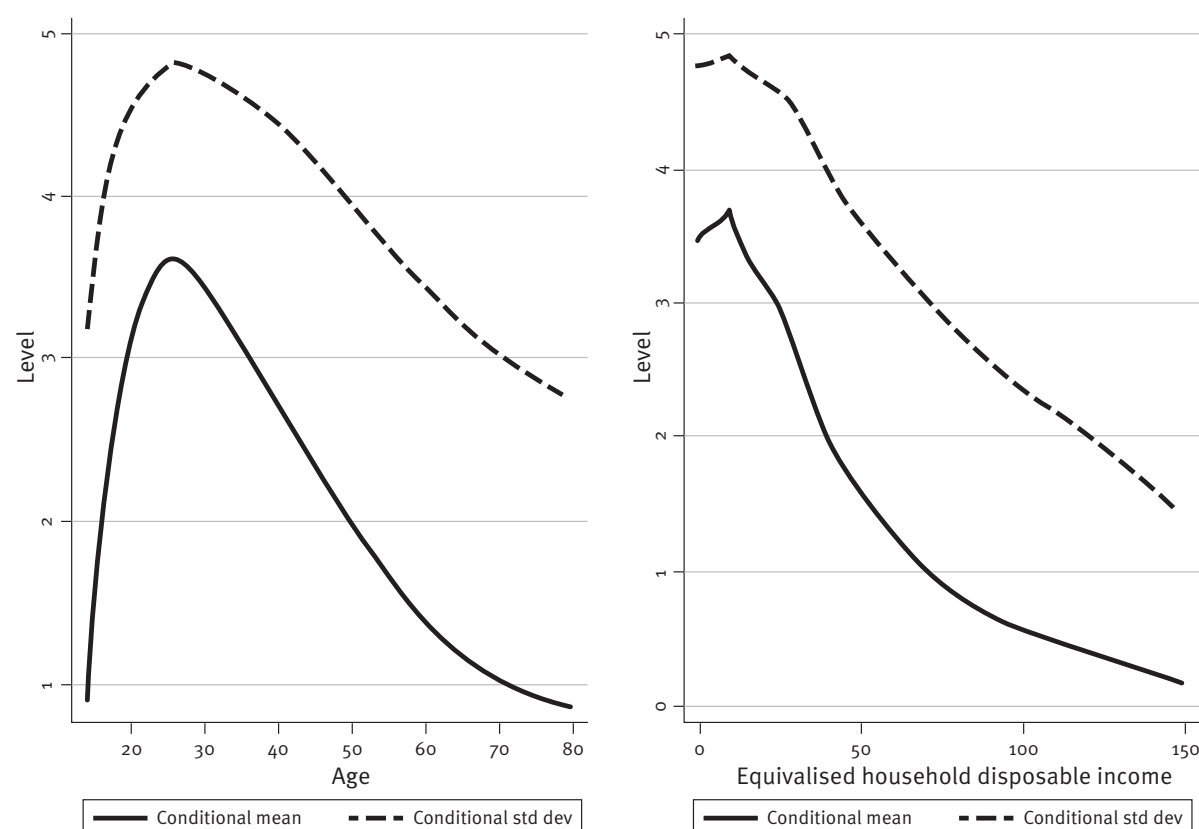
While three indicators of the financial situation of individuals are analysed throughout the paper—financial satisfaction, experience of any financial stress event and sense of prosperity—often only the first two are reported and discussed in any detail. This is because the results for the sense of prosperity variable are qualitatively identical to (reversed for) those of the financial satisfaction (any financial stress event) variable.

Figures 2 and 3 summarise some simple features of the financial satisfaction and experience of any financial stress event variables. They show the relationship between these variables and age in the first panel of each figure, and equivalised household disposable income in the second panel, ignoring the role of any other factors.<sup>9</sup> The figures show both how the average responses vary with age and income and how spread-out the distribution around the average is, summarised by the conditional standard deviation, across all age and income values. The figures are presented for pooled data from all eight waves of the HILDA survey.

**Figure 2: Financial satisfaction and age and income—means and standard deviations**



**Figure 3: Any stress event and age and income—means and standard deviations**



In Figure 2 (and Table 1), the average over all ages for the financial response question is around 6.4. The average response clearly increases with age, at least after about age 50.<sup>10</sup> Moreover, the distribution becomes more compressed with age, since the conditional standard deviation falls. This means older people are more uniform in providing high responses to this financial satisfaction question. Generally, the financial satisfaction responses also increase with household disposable income. Once more, the responses to this question become more compressed (more consistently high) at higher levels of income.

Similarly, the incidence of reporting any financial stress-related events tends to fall with age and with higher levels of income. However, there is a pronounced peak in reporting such events between ages 20 and 30 and at very low levels of income. Figure 3 shows that about 20 per cent of individuals report experiencing any financial stress event, but the incidence is much lower among teenagers and those aged 50 years or more.

Tables 5 and 6 are designed to mimic aspects of the fixed effects regression approach. They show whether the responses to the financial satisfaction and any stress event questions of individuals whose values of the explanatory variables changed differed from the average response of those whose values were unchanged (that is, the combined group who either always possessed the characteristic or never did).<sup>11</sup> For example, did those people who became employed full-time report differing levels of financial satisfaction compared with those whose circumstances did not change? Did those who stopped being full-time employed report any higher incidence of financial stress events? Table 7 contains the outcomes of these comparisons for discrete explanatory variables, where individuals either moved from 0 to 1 (an ‘increase’ in the variable, where individuals took on the relevant characteristic) or from 1 to 0 (a ‘decrease’ in the variable, where individuals ceased to possess the relevant characteristic). Table 5 contains the analysis of the continuous explanatory variables. In this case, it shows differences in the financial satisfaction and any stress event variables for increases or decreases in excess of 10 per cent in the relevant explanatory variable.

**Table 5: Impact of different values of continuous explanatory variables on financial satisfaction and stress reports (changes of 10 per cent or more)**

Continuous	Financial satisfaction		Any stress events		Numbers	
	increase	decrease	increase	decrease	increase	decrease
Person's financial year income	−0.1	−0.3	0.04	0.06	40,459	14,797
Person's current income	−0.1	−0.3	0.04	0.06	40,727	15,225
Household's financial year income	−0.2	−0.2	0.06	0.07	36,530	17,763
Household's current income	−0.1	−0.3	0.06	0.06	37,356	18,528
Equivalised household disposable income	−0.1	−0.2	0.04	0.05	34,969	17,831
SF-36—physical functioning	−0.5	−0.3	0.08	0.05	21,530	14,922
SF-36—role-physical	−0.6	−0.4	0.10	0.08	25,403	13,712
SF-36—bodily pain	−0.4	−0.3	0.07	0.05	31,419	24,274
SF-36—general health	−0.5	−0.5	0.07	0.06	27,514	21,205
SF-36—vitality	−0.6	−0.6	0.09	0.08	31,607	23,003
SF-36—social functioning	−0.7	−0.6	0.10	0.10	28,604	19,019
SF-36—role-emotional	−0.8	−0.7	0.14	0.13	22,232	12,246
SF-36—mental health	−0.7	−0.8	0.10	0.11	27,624	17,037
Decile SEIFA relative socio-economic advantage/disadvantage index	−0.5	−0.5	0.11	0.15	13,698	3910
Decile SEIFA education and occupation index	−0.5	−0.6	0.11	0.16	13,601	3892
Weekly hours worked—all jobs	−0.4	−0.2	0.07	0.04	50,585	9527
Weekly hours worked—main job	−0.4	−0.2	0.06	0.04	50,518	9366
Occupational SES status (AUSLo6—range 0–100)	−0.3	−0.2	0.05	0.06	44,471	6608

Note: Based on 80,618 observations in total. The balance from this number of the two columns of 'increases' and 'decreases' is the number whose value for the relevant variable did not change.

**Table 6: Regression results: Financial satisfaction**

Variables	Fixed effects	
	Without Life events	With Life events
Aged 15 to 24	omitted group	
Aged 25 to 34	0.167*** (0.047)	−0.026 (0.049)
Aged 35 to 44	0.377*** (0.061)	0.056 (0.065)
Aged 45 to 54	0.585*** (0.071)	0.179** (0.077)

Variables	Fixed effects	
	Without Life events	With Life events
Aged 55 to 64	0.981*** (0.083)	0.444*** (0.089)
Aged 65 or more	1.339*** (0.096)	0.676*** (0.103)
No Year 12 and no post-school qualification	omitted group	
Post-graduate qualification	0.528*** (0.117)	0.237** (0.118)
Degree	0.092 (0.090)	-0.092 (0.090)
Year 12 and post-school qualification	0.074 (0.089)	-0.036 (0.089)
Year 12 but no post-school qualification	-0.041 (0.057)	-0.072 (0.056)
No Year 12 but post-school qualification	0.085 (0.072)	0.028 (0.071)
Not a full-time student	omitted group	
Full-time post-school student	-0.257*** (0.042)	-0.223*** (0.042)
Studying at school	0.265*** (0.055)	0.384*** (0.055)
Home owner or purchaser	omitted group	
Private renter	-0.155*** (0.030)	-0.119*** (0.029)
Public housing	-0.122* (0.073)	-0.091 (0.073)
Living with parents	-0.127** (0.054)	0.053 (0.055)
Other housing	0.081* (0.043)	0.109** (0.043)
Couple without children aged 16 years or less	omitted group	
Single parent	-0.214*** (0.050)	-0.205*** (0.050)
Couple with children	0.117*** (0.041)	0.098** (0.043)
Other living arrangements	0.134*** (0.036)	0.132*** (0.037)
Not employed	omitted group	
Employed full-time	0.976*** (0.028)	1.011*** (0.029)
Employed part-time	0.600*** (0.025)	0.643*** (0.025)



Variables	Fixed effects	
	Without Life events	With Life events
Received welfare previous financial year	−0.184*** (0.027)	−0.165*** (0.027)
Long-term health condition	−0.043** (0.020)	−0.047** (0.020)
Equivalised household disposable income	0.242*** (0.016)	0.209*** (0.016)
Past year—Fired or made redundant		0.041 (0.032)
Past year—Retired		0.283*** (0.031)
Past year—Changed jobs		0.095*** (0.015)
Past year—Got married		0.006 (0.033)
Past year—Separated		−0.054* (0.028)
Past year—Got back together with spouse		0.032 (0.056)
Past year—Birth/adoption of new child		−0.077* (0.044)
Past year—Pregnancy		0.041 (0.033)
Past year—Major improvement in finances		0.515*** (0.028)
Past year—Major worsening in finances		−0.512*** (0.029)
Past year—Changed residence		0.115*** (0.014)
Past year—Promoted		0.065*** (0.019)
Constant	4.450*** (0.085)	4.774*** (0.087)
Number of observations	80,185	80,185

Note: \*\*, \*\*\* and \*\*\*\* indicate significance at the 10, 5 and 1 per cent levels respectively.

The first two data columns of Tables 5 and 7 show the differences in the financial satisfaction reports for those whose explanatory variables increased or decreased, respectively, compared to the average response of those whose characteristics did not change. The next two columns show the same differences for the experience of financial stress events, while the last two columns show the actual number of observations whose characteristics either increased or decreased.

There are two patterns evident in Tables 5 and 7. First, for some entirely ‘exogenous’ factors (those factors over which individuals have little control, such as the ageing process), the results show consistent patterns. For example, consider the variable ‘Aged 55 to 64’. An increase in the value of that variable from 0 to 1 means an individual moved from being aged 45 to 54 to the 55 to 64 category. A decrease from 1 to 0 means they moved out of that category to the Aged 65 or more category. If financial satisfaction is increasing with age (or ‘U’ shaped, so it is increasing in this range), both of these movements will be associated with increased financial satisfaction, so the differences compared with those who do not change characteristics should be positive. In Table 7, the differences are, indeed, positive.

Other results for variables seem harder to interpret. For example, both becoming and ceasing to be a single parent, or obtaining or losing a full-time job, are both associated with lower financial satisfaction and a higher incidence of financial stress events. Such results are common throughout Table 7 for the discrete explanatory variables, and indeed universal for changes in the continuous variables in Table 5. This suggests that those who ‘bounce’ in and out of specific characteristics or whose values for continuous variables fluctuate substantially are always likely to report lower values for their financial satisfaction.

These results support the need to compare the financial satisfaction reports of the same individuals as they move between states rather than to make comparisons between different individuals in different states. This is exactly what the fixed effects estimation regression approach does, so we now turn to those results.

**Table 7: Impact of different values of discrete explanatory variables on financial satisfaction and stress reports**

Variables	Financial satisfaction		Any stress events		Numbers	
	increase	decrease	increase	decrease	increase	decrease
Aged 15 to 24	n/a	−0.3	n/a	0.11	n/a	898
Aged 25 to 34	−0.3	−0.2	0.11	0.08	898	1351
Aged 35 to 44	−0.2	−0.3	0.07	0.02	1351	1533
Aged 45 to 54	−0.3	0.2	0.02	−0.06	1533	1161
Aged 55 to 64	0.2	0.5	−0.06	−0.10	1161	814
Aged 65 or more	0.5	n/a	−0.10	n/a	814	n/a
Owns or paying off home	−0.2	−0.3	0.06	0.10	2360	2241
Private renter	−0.6	−0.5	0.16	0.12	2354	2477
Public housing	−1.4	−0.8	0.26	0.24	289	335
Living with parents	−1.0	−0.5	0.17	0.19	275	1068
Other housing	−0.4	−0.5	0.11	0.09	1293	1216
Single person	−0.6	−0.5	0.20	0.17	1667	1075
Single parent	−1.2	−0.8	0.21	0.17	869	983
Couple with children	−0.3	−0.4	0.08	0.08	1883	2414
Other living arrangements	0.0	−0.3	0.03	0.09	2242	2189

Variables	Financial satisfaction		Any stress events		Numbers	
	increase	decrease	increase	decrease	increase	decrease
Post-graduate qualification	0.6	n/a	−0.03	n/a	262	0
Degree	0.0	0.7	0.03	−0.03	364	210
Year 12 and post-school qualification	−0.2	0.0	0.06	0.01	343	70
Year 12 but no post-school qualification	−0.2	−0.1	−0.07	0.04	979	614
No Year 12 but post-school qualification	−0.6	−0.9	0.09	0.12	362	58
No Year 12 and no post-school qualification	−1.5	−0.3	0.18	−0.03	11	1368
Full-time post-school student	−0.7	−0.4	0.11	0.07	1370	1288
Studying at school	n/a	−0.4	n/a	0.00	0	1202
Employed full-time	−0.1	−0.5	0.09	0.08	3799	3221
Employed part-time	−0.3	−0.3	0.07	0.07	4534	4668
Long-term health condition	−0.1	−0.1	0.02	0.02	5898	5140
Self-reported health—excellent	0.5	0.3	−0.05	−0.04	3219	4037
Self-reported health—very good	0.3	0.2	−0.03	−0.02	9476	9939
Self-reported health—good	−0.1	−0.2	0.02	0.02	10,286	9601
Self-reported health—fair	−0.7	−0.6	0.09	0.08	4823	4342
Self-reported health—poor	−1.2	−1.1	0.16	0.14	1110	963
Health change last 12 months—much better	−0.1	−0.2	0.04	0.06	2350	2714
Health change last 12 months—better	−0.2	−0.2	0.05	0.05	6111	6229
Health change last 12 months—same	−0.2	−0.2	0.04	0.04	10,750	10,646
Health change last 12 months—worse	−0.5	−0.5	0.06	0.06	5867	5519
Health change last 12 months—much worse	−1.0	−0.9	0.14	0.14	763	724
Received Newstart previous financial year	−1.6	−1.3	0.35	0.25	945	1112
Received DSP previous financial year	−1.4	−0.9	0.21	0.07	480	391
Received Parenting Payment previous financial year	−1.2	−1.0	0.25	0.23	888	1131
Received welfare previous financial year	−0.7	−0.5	0.14	0.13	2792	2358
Household received welfare previous financial year	−0.6	−0.3	0.10	0.09	3699	3588
Past year—Fired or made redundant	−1.2	n/a	0.18	n/a	1616	n/a
Past year—Retired	0.0	n/a	−0.01	n/a	1391	n/a

Variables	Financial satisfaction		Any stress events		Numbers	
	increase	decrease	increase	decrease	increase	decrease
Past year—Changed jobs	−0.4	n/a	0.11	n/a	6138	n/a
Past year—Got married	−0.1	n/a	0.04	n/a	1401	n/a
Past year—Separated	−1.2	n/a	0.25	n/a	1997	n/a
Past year—Got back together with spouse	−1.3	n/a	0.29	n/a	578	n/a
Past year—Birth/adoption of new child	−0.3	n/a	0.10	n/a	2093	n/a
Past year—Pregnancy	−0.2	n/a	0.09	n/a	2204	n/a
Past year—Major improvement in finances	0.9	n/a	−0.03	n/a	1926	n/a
Past year—Major worsening in finances	−2.7	n/a	0.42	n/a	1594	n/a
Past year—Changed residence	−0.4	n/a	0.13	n/a	6949	n/a
Past year—Promoted	0.3	n/a	0.01	n/a	3151	n/a

Notes: n/a indicates not applicable. For example, since only individuals aged 15 or more are interviewed, no respondents can have been previously interviewed and become 'Aged 15 to 24'. Similarly, nobody 'Aged 65 or more' can be interviewed and stop being in that age category, while nobody with a post-graduate qualification can lose that educational attainment level. Further, the past year life events are defined only for 'increases' in the values of the variables; based on 70,953 observations in total. The balance from this number of the two columns of 'increases' and 'decreases' is the number who did not change state.

## 5 Regression results

### 5.1 Base case estimates

Regression estimates for the financial satisfaction, sense of prosperity variable and any stress event appear in Tables 8, 9 and 10, respectively. Each table includes two sets of regression estimates, both involving fixed effects regression results. The difference is that the second set of results includes the life events variables from the self-completion questionnaire.<sup>12</sup> All equations are estimated over waves 2 through 8, because the life event variables are only available after the first wave.

Rather than describe the many results in great detail, the key features of the estimates are summarised visually in Figures 4, 5 and 6, which show the magnitude of the significant effects from the second set of results from each of Tables 8, 9 and 10. That is, these are the fixed effects estimates of the results estimated including the life event variables. Further, Table 10 provides a summary of significant effects and their direction across additional indicators of the financial situation of individuals to those studied in detail in this paper. These additional indicators include distinguishing between the experience of any financial hardship or cash flow deprivation indicators, resorting to seeking help from a welfare agency because of a lack of money, and overall life satisfaction. Table 11 is included for completeness to show that the binary fixed effects estimate and conditional logit estimators give very similar results across the three binary financial deprivation indicators.

Before considering those summaries, however, it is worthwhile highlighting a few ‘regularities’ in the sets of estimated results in Tables 8, 9 and 10. First, over the common set of variables included in the equations, the estimated parameters for the first set of fixed effects results are often larger than the fixed effects estimates that include the life event variables.<sup>13</sup> This drop in coefficient magnitudes, occurring when life events are included, is particularly pronounced for the parameters on the age variables, which indicates that many of the life events are associated (positively correlated) with age, just as the ‘life course’ view of events emphasises. Second, while the magnitudes of the effects typically change, the set of significant variables across the two sets of estimates does not change very much. Hence, the results are quite robust across the alternative estimation approaches.

**Table 8: Regression results: Sense of prosperity**

Variables	Fixed effects	
	Without Life events	With Life events
Aged 15 to 24	omitted group	
Aged 25 to 34	−0.020 (0.016)	−0.030* (0.017)
Aged 35 to 44	−0.001 (0.021)	−0.007 (0.022)
Aged 45 to 54	0.010 (0.024)	0.002 (0.026)
Aged 55 to 64	0.070** (0.028)	0.043 (0.030)
Aged 65 or more	0.119*** (0.033)	0.069** (0.035)

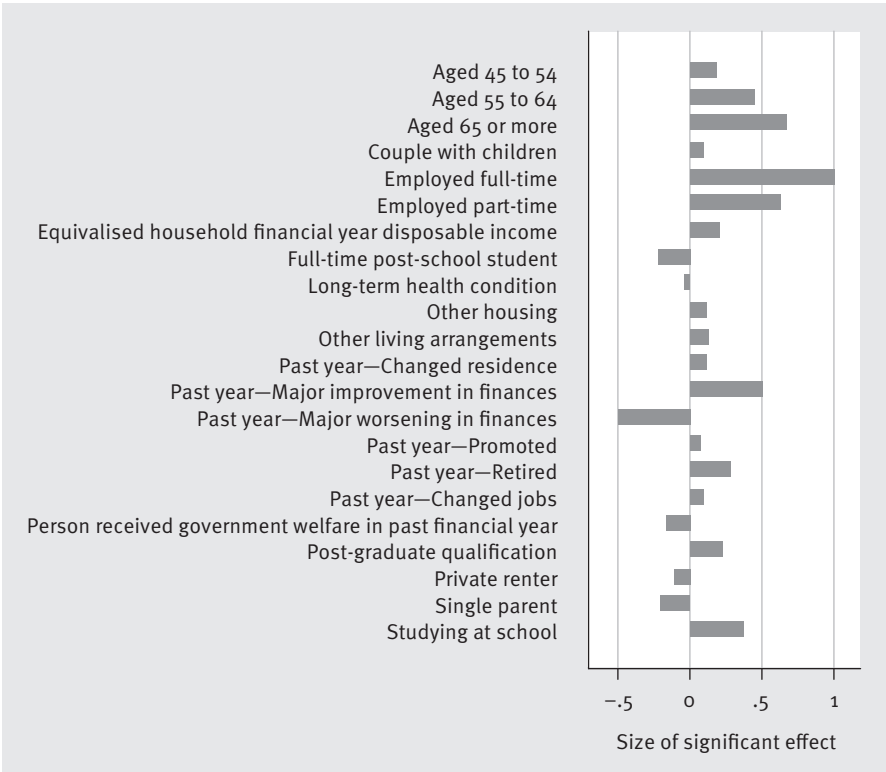
Variables	Fixed effects	
	Without Life events	With Life events
No Year 12 and no post-school qualification	omitted group	
Post-graduate qualification	0.049 (0.040)	0.023 (0.040)
Degree	0.013 (0.030)	-0.005 (0.031)
Year 12 and post-school qualification	-0.017 (0.030)	-0.019 (0.030)
Year 12 but no post-school qualification	-0.023 (0.019)	-0.025 (0.019)
No Year 12 but post-school qualification	-0.039 (0.024)	-0.031 (0.024)
Not a full-time student	omitted group	
Full-time post-school student	-0.034** (0.014)	-0.031** (0.014)
Studying at school	0.102*** (0.019)	0.112*** (0.019)
Home owner or purchaser	omitted group	
Private renter	-0.066*** (0.010)	-0.059*** (0.010)
Public housing	-0.010 (0.025)	-0.009 (0.025)
Living with parents	0.152*** (0.018)	0.164*** (0.019)
Other housing	0.012 (0.015)	0.019 (0.015)
Couple without children aged 16 years or less	omitted group	
Single parent	-0.117*** (0.017)	-0.105*** (0.017)
Couple with children	0.051*** (0.014)	0.051*** (0.015)
Other living arrangements	0.059*** (0.012)	0.047*** (0.012)
Not employed	omitted group	
Employed full-time	0.163*** (0.010)	0.164*** (0.010)
Employed part-time	0.066*** (0.008)	0.072*** (0.009)

Variables	Fixed effects	
	Without Life events	With Life events
Received welfare previous financial year	−0.080*** (0.009)	−0.074*** (0.009)
Long-term health condition	−0.004 (0.007)	−0.002 (0.007)
Equivalised household disposable income	0.084*** (0.006)	0.078*** (0.006)
Past year—Fired or made redundant		−0.028*** (0.011)
Past year—Retired		0.054*** (0.011)
Past year—Changed jobs		0.014*** (0.005)
Past year—Got married		−0.004 (0.011)
Past year—Separated		−0.038*** (0.010)
Past year—Got back together with spouse		0.035* (0.019)
Past year—Birth/adoption of new child		−0.056*** (0.015)
Past year—Pregnancy		0.009 (0.011)
Past year—Major improvement in finances		0.171*** (0.010)
Past year—Major worsening in finances		−0.176*** (0.010)
Past year—Changed residence		0.010** (0.005)
Past year—Promoted		0.015** (0.006)
Constant	3.404*** (0.029)	3.431*** (0.030)
Number of observations	79,349	79,349

Note: ‘\*’, ‘\*\*\*’ and ‘\*\*\*\*’ indicate significance at the 10, 5 and 1 per cent levels respectively.

Table 6 contains the regression results for the financial satisfaction variable. The results of the fixed effects estimate for this dependent variable are summarised visually in Figure 4, which shows the significant variables, the direction of their effect and their magnitude. Positive effects are shown in the bars pointing to the right and negative effects are shown in the bars pointing left, with the size of the bars indicating the broad magnitude of the parameter estimate. Since the log of equivalised household disposable income is included in all regression equations, the estimated effects for other variables are net of that effect. Therefore, any effects that are also associated with high or low incomes, such as full-time employment or welfare receipt, measure the impact of those states on the reports of financial satisfaction, independent of the high or low incomes associated with them. Not surprisingly, the largest effect on reports of people’s financial satisfaction is associated with movements into and out of full-time employment, with the part-time employment effect not far behind. There are also substantial age effects associated with financial satisfaction. The reported life events in HILDA contribute substantially to changes in people’s financial satisfaction, with both reported worsening and improvements in people’s financial situation translating directly into changes in financial satisfaction, along with significant positive effects from job promotions, job changes, moving house and retirement. People in receipt of welfare report lower levels of financial satisfaction, while satisfaction generally increases with household disposable incomes. Being a single parent or a private renter are associated with lower levels of financial satisfaction.<sup>14</sup>

**Figure 4: Magnitude and direction of significant effects on financial satisfaction—fixed effects specification, life events included in equation**



With one exception, all of the explanatory variables used in the regression equations are dummy or indicator variables. Hence, the magnitudes of the estimated parameters in Figure 4 can be compared directly. They show how much reports of financial satisfaction change with a move from 0 to 1 in any of the variables. The exception is equivalised household disposable income, which is here included in its log form, as is common in the literature (for example, Frijters et al. 2004). A one-unit change in log values means the parameter estimate for this variable depicted in Figure 4 shows how financial satisfaction changes when equivalised household disposable income is doubled. This is a convenient form for making comparisons between effects and calculating what income compensation might be necessary for people whose circumstances change for



the worse. For example, the income of individuals who went onto welfare would approximately have to double to leave their levels of financial satisfaction unchanged. Those who lost a full-time job would need a fivefold increase in equivalised household disposable income to maintain their levels of financial satisfaction.

A feature of note from the results in Table 6 is that the experience of job loss per se has no significant impact on the reported financial satisfaction of individuals (as reflected in the insignificant 'Past year—Fired or made redundant' variable), but to have lost a full-time job and not replaced it by the time of the next survey has a big effect (as reflected in the large, significant 'Full-time employment' variable, identified via changes in employment status). So permanent job loss, rather than a temporary period without work after losing a job, matters for financial satisfaction.

**Figure 5: Magnitude and direction of significant effects on sense of prosperity—fixed effects specification, life events included in equation**

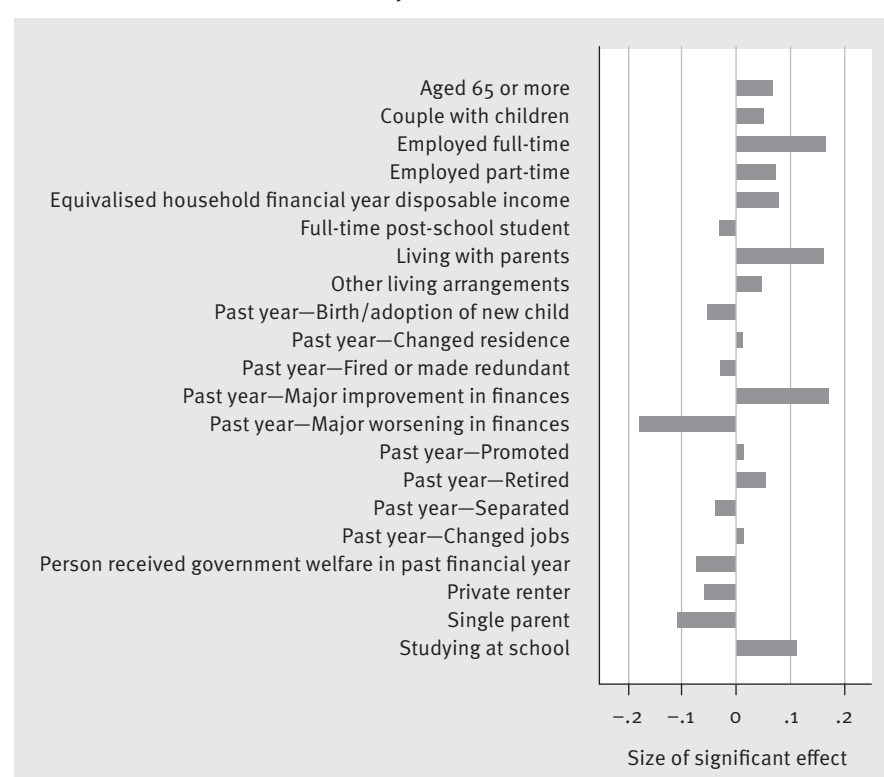


Table 8 and Figure 5 provide the same information for reports by individuals of their sense of prosperity. Fewer variables are significantly different from zero, but those that are tend to have the same qualitative effect as those significant in the financial satisfaction equation. Changes in employment status, negative and positive financial shocks, welfare receipt, single parenthood and being a private renter have similar effects on people's reported sense of prosperity. Most of the life events have similar impacts on prosperity to that of financial satisfaction, but a few others are also significant, including negative effects from becoming separated and being fired or made redundant.

**Table 9: Regression results: Any stress events**

Variables	Fixed effects	
	Without Life events	With Life events
Aged 15 to 24	omitted group	
Aged 25 to 34	−0.063*** (0.010)	−0.027*** (0.010)
Aged 35 to 44	−0.118*** (0.012)	−0.059*** (0.013)
Aged 45 to 54	−0.158*** (0.014)	−0.083*** (0.016)
Aged 55 to 64	−0.201*** (0.017)	−0.107*** (0.018)
Aged 65 or more	−0.250*** (0.020)	−0.139*** (0.021)
No Year 12 and no post-school qualification	omitted group	
Post-graduate qualification	−0.049** (0.024)	−0.001 (0.024)
Degree	−0.014 (0.018)	0.013 (0.018)
Year 12 & post-school qualification	−0.016 (0.018)	0.003 (0.018)
Year 12 but no post-school qualification	0.012 (0.011)	0.017 (0.011)
No Year 12 but post-school qualification	−0.041*** (0.015)	−0.031** (0.015)
Not a full-time student	omitted group	
Full-time post-school student	0.026*** (0.009)	0.021** (0.009)
Studying at school	−0.109*** (0.011)	−0.125*** (0.011)
Home owner or purchaser	omitted group	
Private renter	0.022*** (0.006)	0.015** (0.006)
Public housing	−0.024 (0.015)	−0.031** (0.015)
Living with parents	−0.102*** (0.011)	−0.137*** (0.011)
Other housing	−0.014 (0.009)	−0.019** (0.009)

Variables	Fixed effects	
	Without Life events	With Life events
Couple without children aged 16 years or less	omitted group	
Single parent	0.052*** (0.010)	0.051*** (0.010)
Couple with children	-0.016** (0.008)	-0.010 (0.009)
Other living arrangements	-0.031*** (0.007)	-0.028*** (0.007)
Not employed	omitted group	
Employed full-time	-0.060*** (0.006)	-0.064*** (0.006)
Employed part-time	-0.024*** (0.005)	-0.030*** (0.005)
Received welfare previous financial year	0.065*** (0.005)	0.062*** (0.005)
Long-term health condition	0.009** (0.004)	0.010** (0.004)
Equivalised household disposable income	-0.044*** (0.003)	-0.038*** (0.003)
Past year—Fired or made redundant		-0.008 (0.007)
Past year—retired		-0.035*** (0.006)
Past year—Changed jobs		-0.006* (0.003)
Past year—Got married		-0.019*** (0.007)
Past year—Separated		0.021*** (0.006)
Past year—Got back together with spouse		-0.029** (0.011)
Past year—Birth/adoption of new child		0.004 (0.009)
Past year—Pregnancy		0.006 (0.007)
Past year—Major improvement in finances		-0.046*** (0.006)

Variables	Fixed effects	
	Without Life events	With Life events
Past year—Major worsening in finances		0.055*** (0.006)
Past year—Changed residence		−0.025*** (0.003)
Past year—Promoted		−0.030*** (0.004)
Constant	0.555*** (0.017)	0.494*** (0.018)
Number of observations	80,203	80,203

Note: ‘\*’, ‘\*\*’ and ‘\*\*\*’ indicate significance at the 10, 5 and 1 per cent levels respectively.

**Figure 6: Magnitude and direction of significant effects on experience of financial stress—fixed effects specification, life events included in equation**

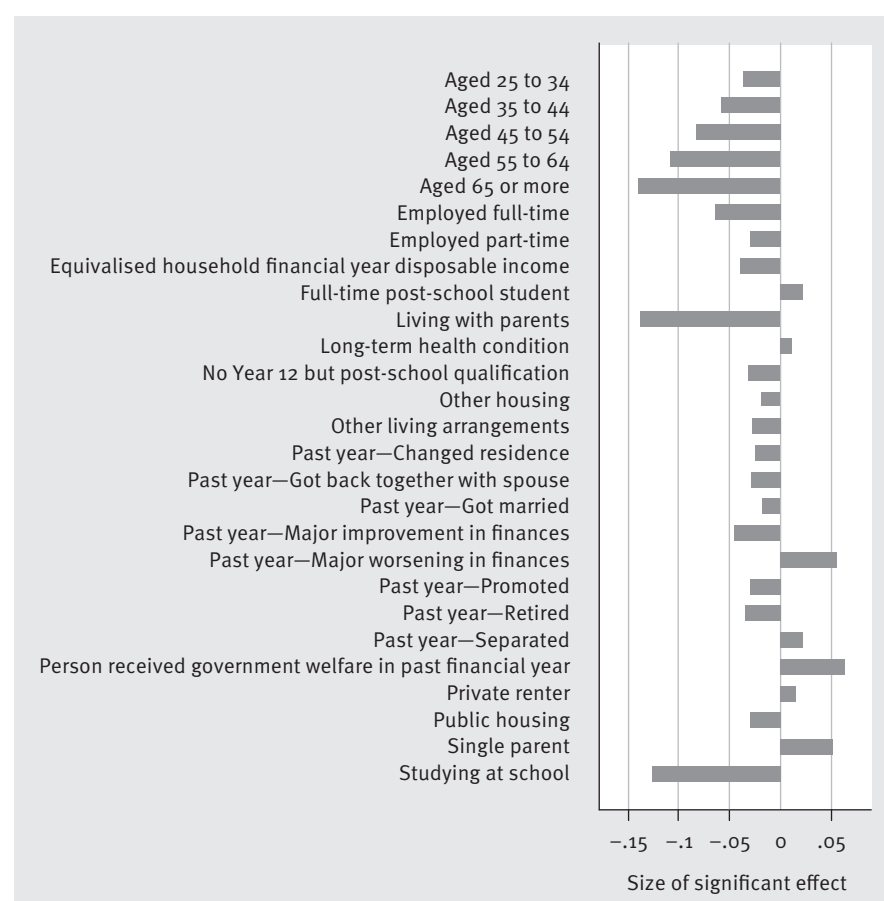


Table 9 and Figure 6 provide the comparable information for reports by individuals of their experience of financial stress events.<sup>15,16</sup> The direction of the effects of most of the variables described for the two previous indicators of the financial situation of people are simply reversed for this indicator. The regression results emphasise the point already made in relation to Figure 3—there is a strong, non-linear age effect on the incidence of financial stress events, with the incidence falling substantially with age. The incidence is also

low among those living with their parent and those still at school, phenomena that explain the low incidence of financial stress events at young ages in Figure 3. As for the other indicators of the financial situation of people, full-time or part-time employment, over and above the effect of income, has a negative impact on the incidence of stress events, while the impacts of many of the life events match those already discussed. The incidence of stress events is lower among those who changed jobs or were promoted, or who retired, and higher among those who were separated. Positive or adverse financial shocks affected the incidence of stress-related events in exactly the way that would be predicted. Having a long-term health condition, being a single parent or a private renter or having received welfare in the previous financial year all increased the incidence of financial stress events.

**Table 10: Summary of the direction and significance of explanatory variable effects across wellbeing indicators (only significant effects shown)**

	Financial satisfaction	Sense of prosperity	Any stress event	Financial hardship	Cash flow problems	Used welfare agency	Life satisfaction
Aged 25 to 34		–	–	–	–		–
Aged 35 to 44			–	–	–		–
Aged 45 to 54	+		–	–	–		–
Aged 55 to 64	+		–	–	–		
Aged 65 or more	+		–	–	–		
Couple with children	+	+		–			+
Degree							–
Employed full-time	+	+	–	–	–	–	
Employed part-time	+	+	–	–	–	–	+
Equivalised household financial year disposable income	+	+	–	–	–	–	+
Full-time post-school student	–	–	+		+		
Living with parents		+	–	–	–	–	–
Long-term health condition	–		+	+	+	+	–
No Year 12 but post-school qualification			–		–		–
Other housing	+				–	+	–
Other living arrangements	+	+	–	–	–	–	+
Past year—Birth/adoption of new child		–					–
Past year—Changed residence	+	+	–	–	–	–	+

	Financial satisfaction	Sense of prosperity	Any stress event	Financial hardship	Cash flow problems	Used welfare agency	Life satisfaction
Past year—Fired or made redundant		–					–
Past year—Got back together with spouse			–	–	–	–	
Past year—Got married			–		–		–
Past year—Major improvement in finance	+	+	–	–	–	–	+
Past year—Major worsening in finances	–	–	+	+	+	+	–
Past year—Promoted	+		–		–		
Past year—Pregnancy							
Past year—Retired	+	+	–	–	–	–	
Past year—Separated		–	+	+	+		–
Past year—Changed jobs	+	+			–		+
Received welfare previous financial year	–	–	+	+	+	+	–
Post-graduate qualification	+						
Private renter	–	–	+		+	+	–
Public housing			–			+	
Single parent	–	–	+	+	+	+	
Studying at school	+	+	–	–	–	–	+
Year 12 and post-school qualification							–
Year 12 but no post-school qualification							–

The set of regression results for the fixed effects estimates for equations including the life event variables across all of the indicators of financial position are summarised in Table 10. There, the direction of significant effects on the financial situation indicators are indicated by the use of ‘+’ and ‘–’ signs in the relevant columns. Seven indicators are shown: financial satisfaction, sense of prosperity, any stress event, financial hardship, cash flow problems (the last two make up the any stress event indicator), whether the individual used a welfare agency since the beginning of the survey year (a component of the any stress event and financial hardship indicators), and the overall level of reported life satisfaction.

The main question to be addressed with Table 10 is: to what extent do the explanatory variables and life events have consistent effects across the various indicators of financial situation? Here, consistency would be demonstrated by variables having the effects of similar directions of the financial and life satisfaction variables, as well as the sense of prosperity, and effects in the opposite direction on the financial stress indicators. There are many variables that exhibit just such a pattern (household income, positive and negative finance shocks, part-time work, moving house, being a welfare recipient), while there are others that mostly exhibit this pattern but are not significant in one or two equations (long-term health conditions, full-time employment, retirement, being a single parent, separating from a spouse, being a private renter).

Finally, the set of fixed effects estimates for the specifications including the life events variables reported in Tables 8 to 10 and Figures 4 to 6 also seem to reflect the estimates for important groups within the population. Specifically, the equations were also estimated for males and females separately and for the group of individuals who were at any time in the first eight waves of the HILDA survey in receipt of income support payments. Differences in the parameters estimated for those groups from those for the population as a whole were not systematic across the different indicators of financial wellbeing, and on the key significant variables (specifically the employment, income and income support variables) the parameters were very close to those presented in the tables and figures.

## 5.2 Regression results allowing for interactions in the explanatory variables

The results presented to date show the impact of possessing some characteristic on an individual's financial wellbeing, independent of their possession of any other characteristics. However, it is possible that people dependent on income support during the previous 12 months may have a different response, in terms of their financial wellbeing, to obtaining a full-time job, to additional income or to some other shock such as marital separation, for example, compared with other members of the population. Moreover, it is the combination of characteristics that analysts focus on in looking at the existence of multiple disadvantage via the empirical existence of interaction effects, such that individuals with two factors that have a detrimental impact on their outcomes in fact face a compounded effect on their outcomes that is greater than the sum of the two separate effects.

There are a number of possible approaches that might be followed for the inclusion of interaction effects. One would be to include a set of pre-specified, potentially important interactions in the equations. The problem with this approach is that it is somewhat ad hoc and runs the risk of ignoring other interactions that are also potentially important. An alternative approach is to include all possible combinations of variables to allow the data to reveal what combinations are, in fact, empirically important. The problem with this approach is that it involves so many comparisons that some are bound to be found to be important where they may not be (for example, some 5 per cent of estimates may be significant just because the test results are drawn from a random variable). In addition, so many results are produced this way that it is hard to identify just what is of empirical importance, above what is statistically significant, and how to convey that information in a meaningful way.

Despite these concerns, both approaches were adopted here. In further analysis, we looked at the importance of a select group of potentially important interactions, described further below, and at the interactions of pairs of explanatory variables on all outcomes considered in the paper. In the latter case, we tested for the joint significance of the interaction variables in any equation by comparing the test statistic with a significance level adjusted for the number of significance tests undertaken.<sup>17</sup> Below, we report the results only for those interaction effects for the variables where the joint test was significant across all financial outcome dependent variables. Interactions between the following variables and other explanatory variables were jointly significant across all dependent variables: Private renter; Living with parents; Employed full-time; Received welfare in the previous financial year; Equivalised household disposable income; Past year—separated; Past year—Got back together with spouse; Past year—Pregnancy; Past year—Major worsening in finances; and Past year—Promoted. The discussion and results presented focus on just three interacted variables—Received welfare in the previous financial year, Employed full-time and Equivalised household disposable income—since the other effects,

while statistically significant, are not empirically very important. Moreover, our approach even to looking at the interactions of these three variables is limited—we report the role of the interactions in relation to financial satisfaction, involving the production of three figures, Figures 7, 8 and 9, that are directly comparable to Figure 4. The impacts of the allowed interactions on the figures for other dependent variables are qualitatively similar to those presented for financial satisfaction and are available on request from the author.

Figure 7: Magnitude and direction of significant main and welfare receipt effects on financial satisfaction

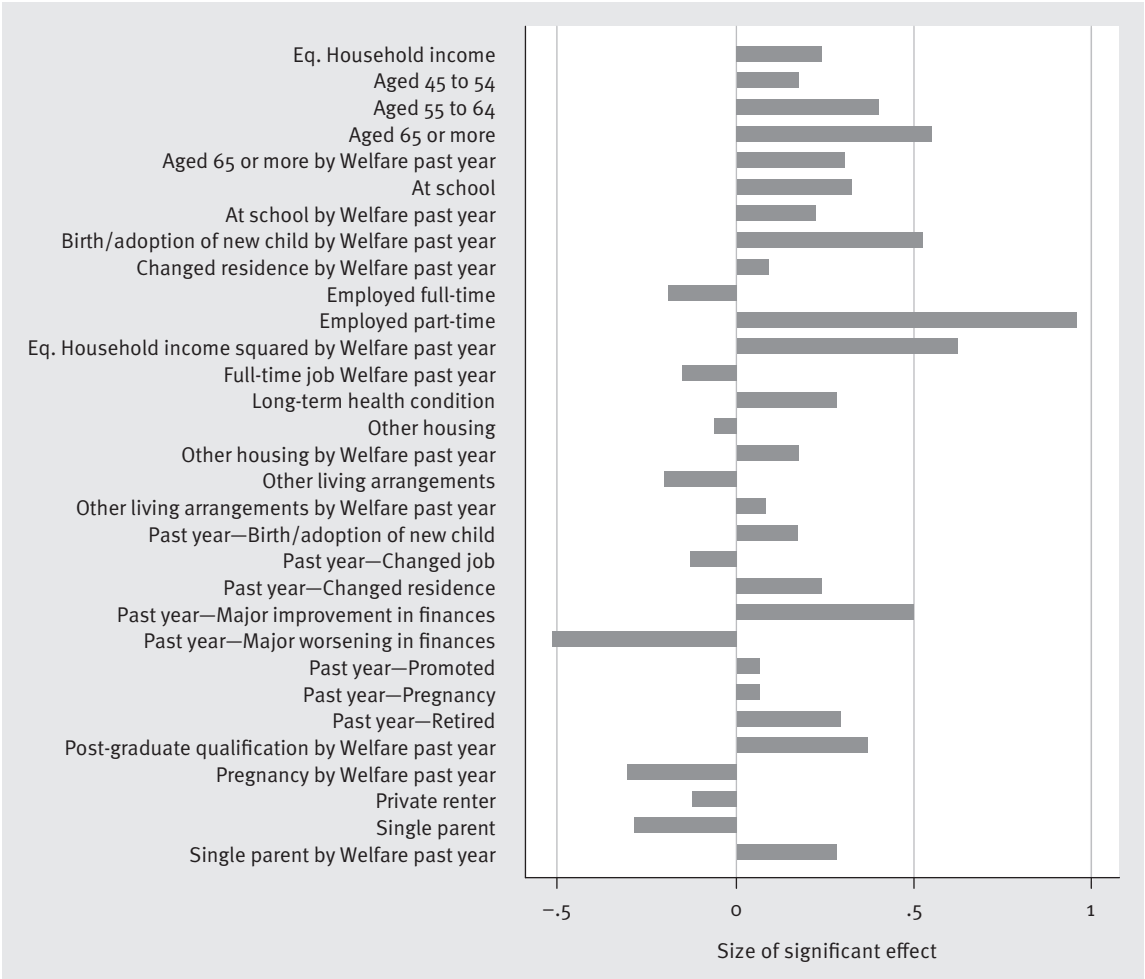
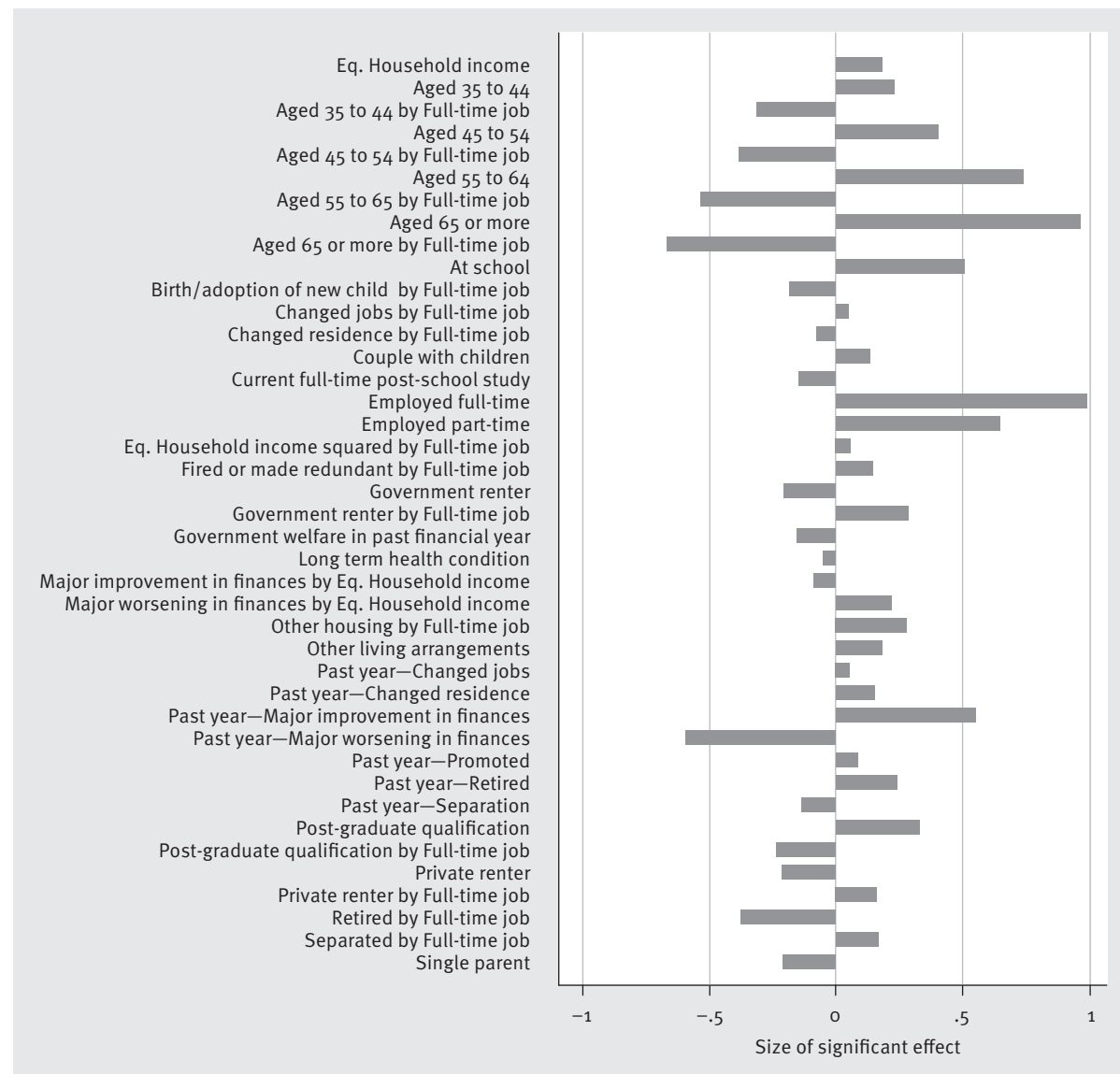


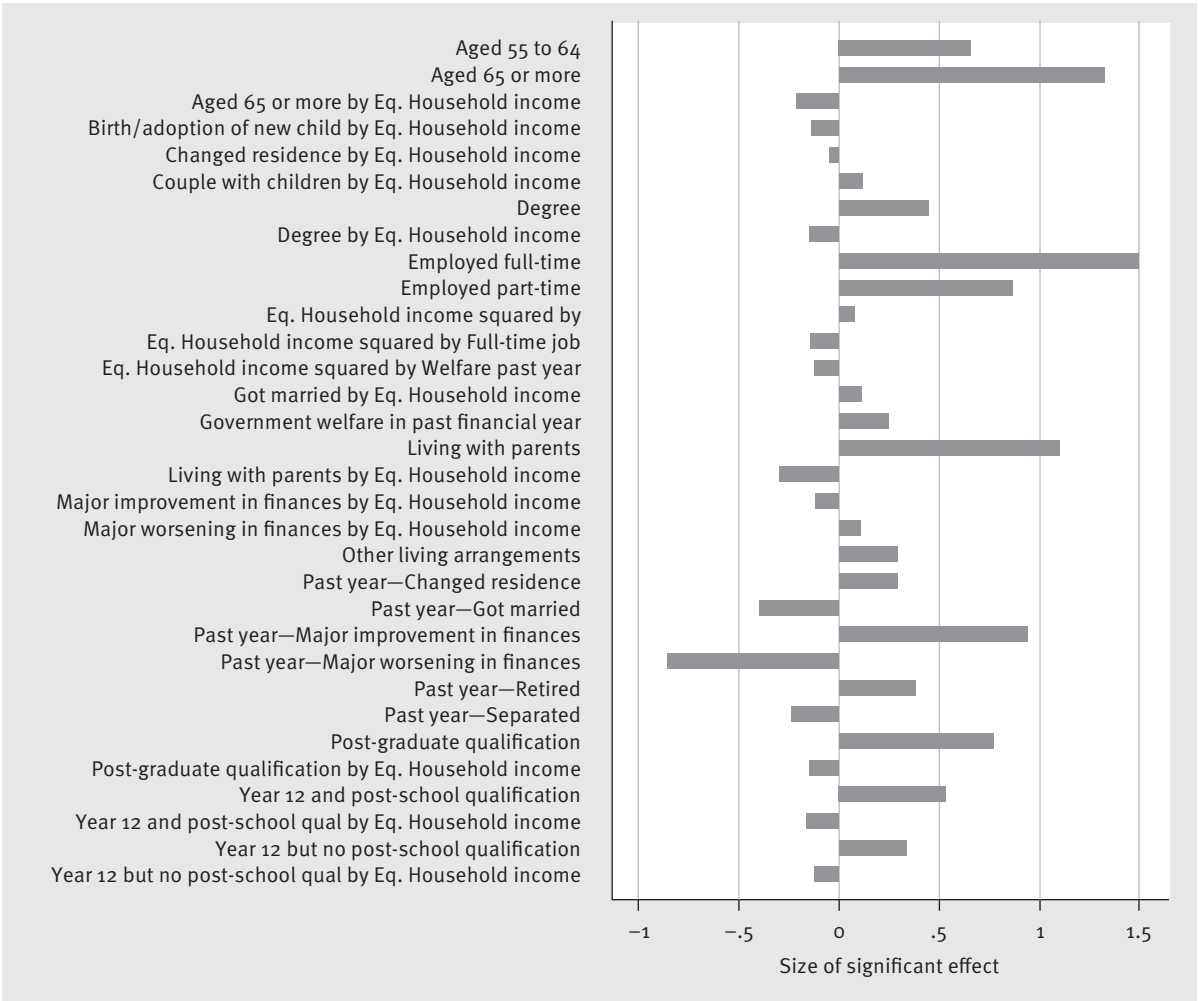
Figure 7 contains the interaction effects where ‘Welfare receipt in the previous financial year’ was interacted with all other explanatory variables to establish its impact on financial satisfaction. This is one way of directly addressing the third research question set out in the Introduction. Most of the main effects do not change very much, though the main ‘Received welfare in the previous financial year’ effect becomes insignificant when the interaction terms are included. Further, most of the interactions with welfare receipt effects were positive, such that those previously on welfare who obtain a full-time job, for example, report a larger increase in their reported financial satisfaction than do other people surveyed in HILDA. Another surprising result is that interaction effect for those aged 65 and previously in receipt of welfare is also positive. Since most of these people will be on the Age Pension, this indicates higher levels of financial satisfaction among this group of Age Pension recipients. Comparable results were evident when the equation was estimated only over those who ever were in receipt of income support in the data—those aged 65 or over reported higher levels of financial satisfaction than younger individuals who had also been in receipt of income support. One further result of note in relation to the group who had received welfare is that the interaction with equivalised household disposable income was negative, indicating that the impact of additional income for the welfare group on financial satisfaction was smaller than for the broader population.



**Figure 8: Magnitude and direction of significant main and full-time employment interaction effects on financial satisfaction**



**Figure 9: Magnitude and direction of significant main and equivalised household disposable income interaction effects on financial satisfaction**



The results for Figures 8 and 9, where first interactions with full-time employment and then equivalised household disposable income are included in estimation, are similar in that the main effects do not change very much. With the full-time employment results, the interactions with the age indicators are all negative and largely offset the main age effects, while most of the other interaction terms are positive. In contrast, most of the interactions with equivalised household disposable income tend to act to offset the main effect of that variable somewhat for the other characteristics found to be significant in that equation. However, none of them changes the nature of the inferences that were drawn from the equation without interactions.

**Table 11: Summary of the significance and direction of specific interaction effects across alternative dependent variables**

	Financial satisfaction	Sense of prosperity	Any stress event	Financial hardship	Cash flow problems	Used welfare agency	Life satisfaction
Age Pension, single person, private renter							0.01
Single parent, private renter		0.04					0.00
Single parent, part-time job	0.01						0.00
Separated and moved house in past year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single person, private renter, low income					0.03		
Single person, long-term health condition, low income							
Studying at school, not living with parents		0.01	0.01		0.01	0.00	
Aged under 35, full-time student, private renter		0.01	0.00		0.02	0.00	
Low-income household, fired and previously sole earner	0.03	0.03					
Has current mortgage and fired in past year	0.00	0.03	0.03	0.00	0.00		
Moved house in past year, low-income household			0.01	0.00	0.00		
In jail in past year				0.00	0.03		
Has current mortgage and birth or adoption of child in past year		0.01					0.00

Note: Only effects significant at the 5 per cent level are shown in the table. Those elements without shading were estimated to be negatively associated with financial wellbeing (they had negative parameters in the financial satisfaction and sense of prosperity equations, and positive parameters in the financial stress incidence equations), while those with shading were associated with improved financial wellbeing.

As indicated previously, a set of specific interactions was also added separately to the set of regression equations, involving the impact of either pairs of characteristics or up to three characteristics. The various combinations are set out in Table 11, along with an indication of the statistical significance of the inclusion of such variables and the direction of the effects. The combinations of characteristics include, among others, interactions with single parenthood, low-income status, having a house mortgage, being a private renter and having been fired. Only effects significant at the 5 per cent level are shown in the table.<sup>18</sup> Those elements with no shading were estimated to be negatively associated with financial wellbeing (they had negative parameters in the financial satisfaction and sense of prosperity equations, and positive parameters in the financial stress incidence equations), while those with shading were associated with improved financial wellbeing.

In only one case was the interaction term significant and indicated a deterioration in circumstances across all wellbeing indicators—having recently been separated and moved house was associated with worse financial outcomes. Holding a mortgage and having been fired or retrenched in the past year was also negatively associated with most financial wellbeing indicators. Moving house and being from a low-income family were associated with increased incidence of financial stress events, but not lower financial satisfaction levels. Other factors, such as having a mortgage and a new child, were only sporadically significant and, while negatively associated with some financial wellbeing indicators, appeared to be positively associated with general wellbeing.

## 6 Conclusion

This paper has looked at how reports by individuals of their financial wellbeing or their experiences of financial deprivation change as their circumstances change. In general, the effects of changing circumstances are quite consistent across the set of indicators of financial wellbeing considered here. Age is positively associated with financial wellbeing, even among people aged 65 years or more who are welfare recipients. Employment and household income are also positively associated with financial wellbeing. While the income effects on financial wellbeing appear quite modest in size, full-time employment most often has the largest effect on the various indicators of financial wellbeing. Individuals who develop long-term health conditions report lower levels of financial wellbeing, though the initial effects of these conditions appear to be relatively modest.

Various life events also have substantial impacts on financial wellbeing, including retirement (a positive effect), becoming a single parent and separating from a spouse (both negative effects). Individuals who report major improvements (or worsening) in their financial situation over the previous 12 months also report higher (lower) levels of financial wellbeing and a lower (higher) incidence of financial stress events. Changing jobs, being promoted at work and moving house have positive impacts on a number of indicators of financial wellbeing.

Somewhat surprisingly, some life events show little relationship with financial wellbeing. A new birth in the family or a new pregnancy has little impact on reported financial wellbeing, as does getting married. Similarly, being fired or made redundant does not appear, in general, to influence the financial wellbeing of individuals. However, the effects of employment at the time of the survey are captured through other variables, so this result means that those individuals fired or made redundant between surveys who find re-employment report no different levels of financial wellbeing than individuals who retained their jobs throughout. Hence, short-term, involuntary churning through jobs seems to have little impact on financial wellbeing, but job loss that continues into the longer term does have a negative impact. However, job loss in conjunction with other financial responsibilities, such as paying off a mortgage, may induce people to revise downwards their sense of financial wellbeing.

People who rely on welfare for at least part of the preceding financial year report lower levels of financial wellbeing and more instances of financial deprivation. Given the magnitudes of the estimated parameters, marginal increases in payments would do little to change this situation. For most indicators, the parameter on the welfare receipt indicator is smaller in magnitude than the household income variable, but of the opposite sign. Given the log specification of the income variable, this means that household equivalised disposable income would need to be more than doubled for individuals who received income support (or who became single parents) in the previous year to overcome that effect on their financial wellbeing. Therefore, it seems unlikely that changes to payment levels of any feasible magnitude could make up this difference in reported financial wellbeing.

As in other studies that look at dimensions of wellbeing, the methodology used here appears to matter for the results. The fixed effects estimates remove the impact of unobserved idiosyncratic factors that cause individuals to respond similarly from survey to survey from the estimated impact of the life events. Hence, in estimating the effects only by looking at the difference in the reports of people whose circumstances changed, it is possible to obtain a more accurate picture of what the impact of policies that change the circumstances of individuals might be. People whose employment status changed from one survey to the next reported larger changes in their financial wellbeing than those apparent by just comparing the financial wellbeing responses of those employed or not in the population. While these effects were more muted for older individuals than the rest of the population, they were larger for those with a history of receipt of income support. It seems most likely that policies that promote employment are also the policies most likely to have an impact on the reported financial wellbeing of individuals and their experience of financial deprivation.

Limited information is contained in HILDA about how individuals or households manage their money and even less on their related financial skills. Measures that improve these skills and the strategies employed by individuals are obviously channels to improve the financial wellbeing of individuals, possibly captured imperfectly in the current analysis through the estimated age effects. Better data on these factors would be useful in allowing an assessment of the extent to which they might help lower the experience of financial deprivation among Australians.

## Endnotes

- 1 Of course, governments also face calls to intervene to deal with ongoing social disadvantage.
- 2 Data from the HILDA survey broadly support the ‘typical’ timing suggested in Figure 1, though clearly it is not perfect—people can be retrenched, get promoted or develop a disability at any age. The timing is indicative, however.
- 3 Subjective poverty indicators have been developed from responses about consumption adequacy in a developing country context (see Pradhan & Ravallion 2000).
- 4 As noted in Frijters et al. (2004), random effects estimates are routinely rejected in favour of fixed effects estimation in this literature.
- 5 The issue of whether this reflects the ageing of the panel or economic prosperity is not pursued in this paper.
- 6 Following Bray (2001) we also distinguished between indicators that reflect ‘financial hardship’ (missing meals, pawning assets, inability to heat the home and applying for welfare) and those that reflect ‘cash flow’ problems (inability to pay rent/mortgage or utilities, and borrowing from friends). Separate analysis of these aggregated variables was very similar to the ‘any stress event’ aggregate, so they are not separately reported.
- 7 The incidence of reporting one, two, three or up to seven indicators of hardship all decline between 2001 and 2008, just as the incidence of reporting at least one (or ‘any’) of the indicators declines (see Table 2). Hence, the simple approach adopted to these hardship indicators does not mask patterns that might be apparent in a more disaggregated approach.
- 8 There was a slight divergence to this pattern in 2009. The proportions experiencing three or fewer hardship events continued to fall, while the proportions reporting experience of four or seven events increased a little.
- 9 Equivalised income is estimated using OECD equivalence scales designed to make income from households of varying sizes comparable.
- 10 When repeated with the 2009 HILDA data, which better reflect the impact of the global financial crisis, reports of financial satisfaction still increase after age 50, but to an average number just over 7.1 as compared to 7.5 in Figure 2.
- 11 This is not what the fixed effects parameters estimate, which is the average change in the dependent variable only over those whose explanatory variables actually change, not the comparison of the means of those whose explanatory variables change with those whose do not.
- 12 Ordinary Least Squares results are also available from the author on request, but are not discussed here.
- 13 The OLS results were typically larger again, which means that the fixed effects are important in that unobserved differences between people in different circumstances also contribute to them having differing levels of financial wellbeing.
- 14 Distinguishing between the ages of children for couples with children did not suggest that their ages influenced reported financial satisfaction, sense of prosperity or the incidence of financial hardship events.
- 15 This equation was also estimated as a conditional logit equation, which deals with the discrete character of the dependent variable. The estimates were qualitatively similar to those presented and are available from the author on request.
- 16 Further, the equation was also estimated with the dependent variable taking the form of the number of hardship events experienced in any year, using count data approaches (poisson and negative binomial estimation), again estimated with individual fixed effects. The estimates were qualitatively similar to those presented, with the exception that the employment effects were relatively smaller than those produced by other methods. The results are available from the author on request.
- 17 Known as the Bonferonni correction, this involves dividing 0.05 by total number of tests conducted, 36 times 6, or 216, and using this number as the critical value in all tests undertaken.
- 18 In this case a Bonferonni correction would imply a critical value for the significance threshold of 0.0005, which would leave only those entries of 0.00 in Table 12 as significant.

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