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The impact of major life events on Australian household financial decision-making and portfolio rebalancing

Tracey West and Andrew C Worthington

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Department of Accounting, Finance and Economics

The impact of major life events on Australian household financial decision-making and portfolio rebalancing

Tracey West, Andrew C. Worthington

Department of Accounting, Finance and Economics, Griffith University, Australia

ABSTRACT

This paper uses household-level longitudinal data from the Household, Income, and Labour Dynamics in Australia (HILDA) survey to gain insights into the asset portfolio rebalancing responses of households experiencing a severe financial shock. The major life events we consider are serious illness or injury, death of a spouse, fired or made redundant, and separation from a spouse. The asset classes are bank accounts, cash investments, equities, superannuation, cash-in values of life insurance policies, trust funds, owner-occupied housing, investor housing, business assets, vehicles, and collectibles. We use static Tobit models to assess the over impact of the life events on asset class shares in household portfolios and dynamic Tobit models to investigate the magnitude and duration of the financial shocks over time. We find that serious illness and injury, loss of employment and separation cause households to rebalance portfolios in ways that have detrimental impacts on long-term wealth accumulation. In particular, when households experience illness/injury or employment loss, they tend to reduce their equity portfolio share in both the short- and long-term with the implication of reduced portfolio returns, while those that experience separation reduce the portfolio share of owner-occupied housing also immediately, but then increase it over the longer term, thereby causing concern about transaction costs. The insights gained from these studies are particularly important for financial planners, as it may be possible to hedge wealth adverse impacts through better financial education, insurance products, or general financial preparedness.

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Corresponding author:

Ms. Tracey West
Department of Accounting, Finance and Economics
Griffith University
Nathan QLD 4111 Australia

Tel: +61 7 373 54273
Email: t.west@griffith.edu.au

1. Introduction

According to life-cycle theory, households accumulate wealth to serve a number of purposes. These include including being more financially independent in retirement, saving down-
payments for asset acquisition, having a buffer for unexpected expenses and being able to
5 bequest wealth to heirs. As asset classes differ in terms of their inherent characteristics, most notably liquidity and divisibility, it is critical that households hold a mix to serve these different purposes. For example, households will often allocate a portion of their wealth to liquid assets, such as bank accounts and equities, to satisfy precautionary motives for saving as well as other motives so that they can draw upon funds in smaller portions than would be
10 the case if they needed to sell a property asset. In essence, the household's portfolio composition will determine how well a household can respond to an event that has a financial consequence with short notice and over a longer period.

However, as with many areas of household finance, there is little appreciation of precisely how households arrange their portfolios around and during major life events. The relatively
15 availability of longitudinal panel data suited for this purpose, particularly in Australia, has enhanced our understanding of some household financial decision-making dynamics, but there remains much to do. For the most part, the limited existing international research focuses on health and labour income shocks, while a few others include market shocks in their respective analyses. In some instances, the portfolio rebalancing response is limited to
20 the impact on equities or a specific set of assets like financial/nonfinancial or risky assets, and thus excludes a broader asset portfolio viewpoint.

Accordingly, the purpose of this paper is to quantify the impact of four common and major life events on the portfolio shares of eleven asset classes held by Australian households using the Household, Income, and Labour Dynamics in Australia (HILDA) Survey. The HILDA
25 Survey questions respondents annually about whether they have experienced a number of life events, of which four are selected for closer examination as it is expected that these will pose major financial consequences for the household. The life events we examine include experiencing an injury or illness, the death of a spouse, being fired or made redundant and separating from a spouse. In addition, every four years the HILDA Survey includes a Wealth
30 Module, which questions households on their overall investment in bank accounts, cash investments, equities, superannuation, life insurance, trust funds, the family home, other property, businesses, vehicles and collectibles. Thus, we employ Waves 2 (2002), 6 (2006)

and 10 (2010) for our analysis. We confine our investigation solely to asset decisions, and defer the debt to future research.

To quantify households' portfolio rebalancing responses to a major life event, we use static longitudinal panel data models to regress each event on the portfolio share of each asset class.

5 We also examine the composition and size of the household portfolios before and after the shock to determine the magnitude and duration of the impact of the life event on financial decisions. To do this, we employ a dynamic model incorporating the lags and leads of each shock on the portfolio shares. As discussed, the findings of this research are important as life events (or shocks) may dramatically affect a household's financial position. Wealth may
10 increase or divide, spending needs change, and new expenditures formed regarding future income, longevity, and bequests. These transitions constitute an important source of risk, with the potential to affect wealth accumulation, including the demand for particular, sometimes risky, assets. Further, over the longer term and in aggregate, the ability of households as a whole to cope with expected and unexpected events has major implications for public policy
15 and calls on the public purse.

The remainder of the paper is organized as follows. Section 2 provides a brief overview of the theoretical framework and Section 3 reviews the empirical literature. Sections 4 and 5 discuss the methodology and data. Section 5 presents the empirical results. Section 6 concludes.

20 **2. Theoretical background**

An individual's preferences for consumption today versus consumption tomorrow will determine their propensity to save. Human nature is complex and many factors may shape an individual's preferences and capacity to save, including their income, current wealth, and their level of financial literacy and awareness, along with many other demographic and
25 socioeconomic characteristics. The basic motive for saving is well known, that is, to save for a 'rainy day'. Indeed, in 1890, Alfred Marshall referred to a prudent person whom '...if he thought that there was a danger that his power of earning income at a future date would run short, he would certainly save some of his means for a future date'. Later, Keynes (1936) gave eight reasons for saving. These include (i) the precautionary motive, (ii) the life-cycle
30 motive, (iii) the intertemporal substitution motive, (iv) the improvement motive, (v) the independence motive, (vi) the enterprise motive, (vii) the bequest motive, and (viii) the

avarice motive (Browning and Lusardi, 1996). More recently, a (ix) down-payment motive has been added (Browning and Lusardi, 1996).

This paper focuses on the second motivation for saving, namely, the precautionary motive. As described by Keynes (1936, Ch. 9), this is the propensity "...to save to build up a reserve against unforeseen contingencies". Because of uncertainty about future income and expenses, individuals and households are motivated to save to smooth consumption over the life cycle in anticipation that at some point in the lifecycle, income will not be as high as expected. This may be because of relatively unexpected events like job loss, death of a partner, divorce, injury, or illness or because expenses may be higher than expected for any of these reasons.

An important contribution of Modigliani and Brumberg's Life-Cycle Hypothesis (LCH) model is to recognise that due to the changing circumstances experienced over the course of a finite life, the demand for particular assets change depending on their functionality and purpose (Modigliani and Brumberg, 1954). For example, during the period of family formation, cars and other durables are required for facilitating work and the establishment of a house. After the purchase of durables (notwithstanding their replacement and renewal), savings then tend to flow to other kinds of assets that facilitate saving, like savings accounts, stocks and bonds. Households may then use accumulated savings to finance a down payment for the acquisition of a house.

In general, it is not until the latter stages of work, when individuals and households are at peak earnings and their children have grown and left home, that many households refocus on savings products like stocks, investment property and collectibles to satisfy precautionary, retirement and bequest motives. Modigliani (1990) points out that it is possible for one asset to satisfy more than one motive simultaneously. For example, the family home provides a consumption service (accommodation), but may also be bequeathed, or alternatively sold or the equity drawn down in order to fund consumption in retirement or for emergencies. Furthermore, the lifecycle stage may not override other factors, including risk-taking attitudes or macroeconomic cycles when determining asset demand.

This paper contributes to the literature on how households utilise asset classes to satisfy their savings motives as described by Keynes (1936) and Modigliani and Brumberg's LCH. In accordance with the LCH, we anticipate that households smooth consumption by utilising relatively liquid assets for precautionary reasons such as a health event, job loss, or the death

of a spouse over the short term, and tend to divest more ‘lumpy’ assets like the family home, to fund consumption over the longer term.

3. Empirical literature

A growing body of research utilises longitudinal panel data, including repeated cross-sections and dynamic models, to gain insights into household portfolio rebalancing responses when they have experienced a financial shock of some sort. Investigations include the impact of a change in income caused by a foreseen event, such as retirement, which may require very extensive planning or consideration, or an event that may be relatively unforeseen, including ill health or job loss for which households may or may not be able to accommodate with an existing financial plan. Much of this research aims to affirm the savings hypothesis and observe how households actualise it in practice. As we focus on relatively unforeseen (unexpected) events like injury, illness, death of a spouse, job loss and divorce, the following literature review is limited.

In general, income shocks can majorly affect a household’s portfolio allocation decisions, especially if the change to income is permanent or long lasting. For example, Angerer and Lam (2009) and Gomes and Michaelides (2005) concluded that investment in risky assets, including stocks, falls with income shocks, while Angerer and Lam (2009) also found that the size and permanence of the income change impacts portfolio rebalancing. In this sense, a small transitory change (positive or negative) will not induce any portfolio adjustments, whereas a large permanent change will motivate households to overcome transaction costs to either trade down or up assets like the family home to adjust expenditure (i.e. mortgage payments) (Chetty and Szeidl, 2007).

While poor health is primarily associated with ageing, serious injuries or illness can happen at any point in the lifecycle without warning, or sometimes with some warning for early diagnosis of a health condition. Illness and serious injury can have a detrimental impact on the financial circumstances of a household given the loss of income and increased medical expenses. Further, there is a long-known association between poor health and poverty in Australia and elsewhere (Australian Council of Social Services, 2009; Saunders, 1998).

Those who have investigated health and ageing shocks on household portfolio choice invariably find that a health shock significantly reduces household total financial wealth, in turn leading households to restructure the composition of their financial assets (Berkowitz

and Qui, 2006). Using US data, Berkowitz and Qui (2006) found that households reduce investments in more liquid financial wealth, while Paas et al. (2007) found that households discard more risky assets before lower risk assets in the Netherlands, although Paas et al. (2007) did not include housing. However, Coile and Milligan (2009) suggested that ageing
5 induces a decrease in the ownership of the family home, vehicles, financial assets, businesses, and other property, while more liquid assets like equities and cash investments are favoured. Similarly, health shocks and the death of a spouse have similar potential impacts on the asset portfolio, with widowhood and health shocks associated with a reduced likelihood of owning a home, vehicle, business or other property. Moreover, when households have members with
10 physical or mental impairments and disabilities, the magnitude of the financial impact of the shock can increase, while there is an additional wealth impact when households with health conditions transition from home ownership to renting (Palumbo, 1999; Hurd, 1999; Coile and Milligan, 2006).

There is some contention about the impact of health events on households by household
15 structure. Using six waves of the US Health and Retirement Study from 1992 to 2006, Berkowitz and Qui (2006) concluded that lone person-households tend to divest financial assets, but Love and Smith (2010) found no significant impact. However, for couple-households, Love and Smith (2010) revealed a small negative effect on stock ownership, while Berkowitz and Qui (2006) find that a health shock to the wife led to a decline in
20 financial assets nearly three times larger than that in nonfinancial assets.

Nevertheless, Cai (2009) proposes that wealth also impacts health, and argued that wealthier households in the 2002–04 HILDA Survey were much less likely to experience ill health. Cai (2009) reasoned that people with less economic resources may eat less healthy food, and may live in poorer housing/local area conditions. The poor may also receive fewer associated
25 health services and wealthier people may experience less chronic stress due to their greater freedom in decision-making.

Job loss is a life event that particularly when unanticipated can negatively affect wealth and cause great financial stress. In evidence, the Reserve Bank of Australia (2011) used HILDA data from 2008–09 and showed that around 27 percent of households experienced a fall in
30 weekly income because of the preceding global financial crisis, which was associated with becoming unemployed or working fewer hours. However, most of the available evidence in Australia is anecdotal. In related work, Stavrunova and Yerokhin (2008) investigated the

impact of the subjective risk of job loss on stock market participation. Using the HILDA Survey, they found that those with a higher subjective risk of job loss were less likely to participate in the equity market in the first instance, and that conditional on participation, tended to invest a smaller share of their liquid financial wealth in direct equity ownership.

- 5 They also found that households with an unemployed head were 10 percent less likely to participate in the stock market.

It seems obvious, but divorce can also considerably influence wealth accumulation outcomes for households. This is because upon separation, the division of household assets, and the financial constraints faced by households result in the family home being taken up by one
10 partner or sold (Sheehan and Hughes, 2001). Both outcomes may be ill timed in terms of the market, and both parties will bear significant transactions costs in buying and selling homes along with the costs of relocating and establishing a new home. Hendershott et al. (2009) confirmed that divorce has a significant negative impact on net wealth and lowers the probability of home ownership, even for those that remarried up to ten years later.

- 15 A number of studies have demonstrated that divorce affects men and women differently. In a study that examined the impact of divorce on risky assets, Love (2010) used the US Health and Retirement Study and the Panel Study on Income Dynamics and found that an immediate portfolio rebalancing response for men was to increase their allocation to risky assets (equities), while women preferred to avoid risky assets. Also using the US Health and
20 Retirement Study, Ulker (2004) concluded that the net cost of divorce in terms of wealth accumulation was higher for men than for women. However, in the longer run, he concluded that remarriage made the financial impact of past marriages insignificant for both genders. This is despite the fact that those with a past marital history and that have remarried tended to change their portfolio composition, preferring investment in nonphysical (financial) assets to
25 housing.

Subsequently, Ulker (2009) again used the Health and Retirement Study and extended his earlier study to investigate the impact of past marital history on households that had and had not remarried. Once again, he found that remarriage overcomes the financial ‘sufferings’ of marital disruptions which have occurred early in the life-cycle. However, for single females,
30 a past divorce played a major role in the reduction of household wealth (although net wealth rises if they experienced the death of a spouse). Ong (2008) similarly found that divorced

women in the 2002 to 2003 HILDA Survey had low expectations about their ability to self-fund retirement.

Finally, the death of a spouse can inflict economic hardship through loss of income, funeral expenses, lack of estate planning and delays in the time for insurance policies to be processed. In addition, a household may already be under financial stress given the ill health of a spouse before death (Corden et al, 2008). In general, widowhood is associated with a significant decline in the probability of home ownership, and to a lesser degree, vehicles, businesses and property, and raises the share of assets held in savings accounts (Coile and Miligan, 2009). Using six waves of the US Health and Retirement Study, Coile and Milligan (2009) argued that these effects strengthen over time, meaning that it may take some time for a widowed household to rebalance its portfolio to reflect the change in circumstances.

The lessons learned from the literature are that life events, such as adverse health conditions, death of a spouse, job loss, and separation from spouse may lead households to rebalance their portfolios. Although the evidence is sparse, the Australian and international literature on household asset portfolio rebalancing decisions indicated that households will first draw down on investments in liquid assets to smooth consumption in the event of an illness and injury, death of a spouse and job loss. In contrast, separation and divorce is more likely to involve the family home being sold, although those that subsequently remarry are likely to return to home ownership.

Most problematically, much of household finance literature is cross-sectional in nature, and therefore provides little inference of how the portfolios of households change over time, or respond to an evolving financial need. If households are motivated to save for precautionary reasons, their portfolios should rebalance as they draw down on their savings to smooth consumption. The few studies that utilise longitudinal data find that health events and marital status transitions have a particularly significant impact on the portfolio composition of household's asset portfolios (Coile and Milligan, 2009; Love, 2010).

4. Data

We use longitudinal data from the Household, Income and Labour Dynamics in Australia (HILDA) survey. This survey aims to follow the 7,682 households and 13,969 individuals interviewed in Wave 1 over time; in 2010, they reinterviewed 6,727 households and 13,526 individuals. The range of topics covered by the HILDA Survey include income, labour

market and family dynamics, with additional modules added in various years such as the wealth module added every four years from 2002 (Wave 2). The wealth module survey questions relate to the householder's assessment of their investment in assets such as bank accounts (*BNK*), cash investments (*CSH*), equities (*EQT*), superannuation (*SPR*), cash-in values of life insurance policies (*INS*), trust funds (*TST*), the family home (*HOM*) and other property (*OPR*), business assets (*BUS*), vehicles (*VEH*) and collectibles (*COL*). These wealth variables form the basis of the dependent variables used in this study.

The independent variables pertain to the life events experienced by survey respondents. Every wave asks respondents whether they experienced any of 22 life events listed, including getting married, having a baby, being detained in jail, the death of a family member, etc. The life events we hypothesise that will have an impact on the financial circumstances of the household that test their precautionary motives for saving include suffering serious personal injury/illness (*INJ*), the death of a spouse (*DTH*), being fired or made redundant (*FRD*) and separation from a spouse (*SEP*). We recode these four life events to match the years a wealth module is included in the household survey. Thus, a respondent received a one if they reported at least one positive response to a shock in the periods 2001–02, 2003–06, and 2007–10.

<INSERT TABLE 1 HERE>

Table 1 details the number of respondents that experienced *INJ*, *DTH*, *FRD* and *SEP* life events. As shown, compared with the other life events, there are more instances of respondents experiencing *INJ*, and the number of reported *INJ* peaked in 2006. Indeed, the reporting of all life events included in this study was highest in 2006.

Table 2 provides a further insight into the timing of life events by age. In the original surveys, the categories available are being aged 15–17, 18–19, 20–21, 22–24, 25–34, 35–44, 45–54, 55–64, 65–74 and over 75 years of age. We recoded these into six categories: aged under 24 (*AGE1*), 25–34 (*AGE2*), 35–44 (*AGE3*), 45–54 (*AGE4*), 55–64 (*AGE5*) and over 65 years (*AGE6*).

<INSERT TABLE 2 HERE>

As shown, *INJ*, and *FRD* peaks at *AGE4* (45–54 years) Not surprisingly, *DTH* rises in the *AGE6* (over 65 years) category. *SEP* tends to occur earlier in the life cycle, with *SEP* highest in the *AGE2* (35–44 years) and *AGE3* (45–54 years) categories. Because of the importance of

age on the likelihood of a life event occurring, all models in the analysis control for household age. Finally, Table 4 provides the mean portfolio shares by asset class across the entire sample. As shown, owner-occupied housing and superannuation are the major asset classes for Australian households, accounting for 44.2% and 20.8% of all household assets, respectively. These are followed at some distance by vehicles (9.1%), bank accounts (8.4%) and other property (7.8%). The remaining asset classes, including life insurance, trusts, and collectibles, account for only small very shares of household assets.

5. Method

Our primary aim is to measure the impact of selected life events on the asset portfolio shares of Australian households. Further, we aim to measure the magnitude and duration of the impact in terms of the portfolio share of asset classes held before and after a life event. The methodological approach described herein is similar to that used by Coile and Milligan (2009), who examined older households to see whether changes in asset holdings during old age related to health and mortality shocks, including the death of a spouse and events such as a stroke or cancer diagnosis. Coile and Milligan (2009) used data from the US Health and Retirement Survey to first consider the effect of shocks in a static context that compares households before and after a shock, and then in a dynamic analysis that allowed observation of how the response varied over time. Their static model utilised a regression model that incorporates household fixed effects, a dummy variable for a widow shock, and dummy variables for diagnosis of acute and chronic health conditions.

In contrast, Coile and Milligan's (2009) dynamic analysis estimated separate models for each health shock and restricted the sample to households who experienced the shock at some point during the observed sample period. They considered the shock to have occurred between periods, and so included a *shockplus1* variable, being a dummy variable equal to one if the household-wave observation corresponded to the wave immediately after the shock, and defined other *shockplus* and *shockminus* variables similarly. They omitted the wave immediately before the shock, *shockminus1*. This specification allowed them to observe whether there were changes in asset holdings prior to the shock and whether the response to the shock was immediate or delayed.

We extend Coile and Milligan's (2009) approach in three ways. First, we specify a wider range of shocks, or life events. Second, we employ a broader sample, in that Coile and Milligan (2009) limited their study to retirees. Third, we employ Australian longitudinal

panel data. Lastly, Coile and Milligan (2009) apply a fixed effects estimator to their model, whereas a random effects model is preferred as it allows for differences across households to have some influence on the dependent variables.

The models thus consist of a series of static regressions to model the impact of life events on a household's portfolio share in each asset class. Given the nature of the dependent variable (asset portfolio share, ranging from 0 to 1), we employ a Tobit model:

$$y_{it} = \alpha_i + L'_{ijt}\beta + \varepsilon_{it} \quad (1)$$

where y_{it} is the asset portfolio share, L_{it} are a set of life event dummy variables relevant to the household j , α_i are random individual-specific effects, and ε_{it} is an idiosyncratic error. Note the fixed effects model allows correlation between α_i and the regressors L_{ijt} , whereas the random effects model assumes that α_i is purely random and implies that α_i is uncorrelated with the regressors.

The second stage of the analysis is use of a dynamic model to assess the short and long-term impacts of life events on portfolio composition. We achieve this by including lead and lag dummy variables for each life event in a portfolio share model. This provides a sense of how households respond to each particular type of life event, whether expected or unexpected, in the period leading up to and after the event. Given the long but still limited length of the available data, we can only include two lead and lag variables as follows:

$$y_{it} = \beta_0 + \beta_1 L_{minus2} + \beta_2 L_{minus1} + \beta_3 L_{plus1} + \beta_4 L_{plus2} + \beta_5 \text{age} + \alpha_i + \varepsilon_{it} \quad (2)$$

We estimate this same model separately for each life event (L), and control for age effects and across the portfolio shares of the 11 asset classes.

<INSERT TABLE 3 HERE>

Table 3 details the expected signs. First, illness and injury may cause ongoing medical expenses and time out of the labour force, causing severe financial hardship and future uncertainty (Lum and Lightfoot, 2003). Similarly, long-term medical conditions may trigger high health care expenditures and divert resources otherwise used for other purposes like retirement, leading to inadequate retirement wealth (Taylor, 2013). Conversely, if one partner in a household has a serious health problem, one or both partners may work longer and save more for retirement as a means of covering higher than average projected household medical expenses. Thus, even though there may be contradictory portfolio rebalancing responses in

regards to a health condition, it is predicted that an ongoing illness or injury concerns will overall have a negative impact on asset ownership, and cause households to draw down on investment in liquid assets in the short term. Over the longer term, if the condition persists, households may have to draw upon investments in nonfinancial assets, such as property.

- 5 Second, the dissolution of an adult couple household has a major impact on the asset ownership of the newly single adult households. Such life events could include the death of a spouse, or divorce/separation. In general, marriage (or de facto relationships) facilitates wealth creation through lowering borrowing constraints because of the combination of the income/wealth of two singles, economies of scale in consumption, and efficiency gains
10 through the division of labour that increases output and allows couples to save at a greater rate than they would as singletons (Hendershott et al., 2009).

Household dissolution effectively reverses this wealth effect, as one or both partners move out of their dwelling and divorce settlement involves division of accumulated assets and deadweight losses (legal costs, etc.). In addition, there are expenses incurred to set up new
15 dwellings and child custody arrangements can restrict the labour supply of the primary carer. While individuals may attempt to maintain consumption at a pre-divorce level, and only gradually readjust over time to the revised income level, they are also more likely to prefer rental accommodation as they feel they are in a transitional phase and unable to make long-term commitments (Hendershott et al., 2009). Therefore we hypothesise that separation will
20 negatively impact net wealth, and that households may divest many assets, including the family home as an immediate portfolio rebalancing response to these events.

The same logic applies to widows and widowers, in that in the exception of an insurance payout, the surviving household member will suffer wealth losses due to the loss of income, economies of scale, and efficiency gains upon the death of a spouse (*DTH*). However, in this
25 case, we hypothesise that these households do not sell their family homes as an immediate portfolio rebalancing response. This is because the lower (single-person) pension payments and higher accommodation costs associated with renting or moving are disincentives in Australia to selling the family home as it may push household income below the poverty line (Yates and Bradbury, 2010). Further, while the bequest of the family home is a long cultural
30 practice in Australia, this desire to bequest wealth to the next generation seems to be significantly diminishing (Olsberg and Winters, 2005). However, widow/widower may divest many other assets, especially when held in the deceased spouse's name, as a means to fund

consumption. This hypothesis differs from that of Coile and Milligan (2009), who found that the death of a spouse was a significant and strong predictor of selling the principal residence, and increases in liquid assets and savings accounts in the US context.

Fourth, studies on unexpected job loss, including being fired or made redundant, find that it affects households through multiple channels, including financial stress from the negative income shock and psychological shocks associated with a decline in individual self-esteem and perceived role in society (Mendolia, 2009). We presume that given the financial stress of potential job loss, household will follow a precautionary savings motive and save liquid assets for such unexpected life events (Poterba and Samwick, 1997). However, empirical studies show that households may also use nonliquid assets (including housing) to satisfy the precautionary savings motive (Carroll et al., 2003). Nonetheless, we hypothesise that job loss causes households to divest liquid assets in the short run, but that if joblessness (and related psychological issues) persist, they then divest of physical property over the longer term.

6. Results

Table 5 presents the estimated coefficients, standard errors, and p-values of the random effects Tobit regression for the static analysis. The table also includes several statistics to aid model selection. We reject the likelihood ratio tests that the specified models outperform a constant-only for all models except *TST* (trusts) and *COL* (collectibles), so we omit the results for these models from the discussion.

<INSERT TABLE 4 HERE>

As shown, the event that provides the largest positive impact by far on an asset class is *DTH* (death of a spouse) on *BNK* (0.136) (bank accounts). Thus, the death of a spouse may result in a positive cash gain due to insurance or other payout, including the spouse's superannuation or unpaid work entitlements. *DTH* also has a small positive impact on the portfolio share of *LFI* (0.012) (life insurance) and *EQT* (0.009) (equity), perhaps meaning that a small portion of the cash windfall is directed into life insurance and/or share market investment. Because of the increased portfolio share to these asset classes, the main reduction in portfolio share is for *SPR* (-0.040) (superannuation).

The next largest positive impact is that of *SEP* (separation) on *SPR* (0.037). *SEP* also positively influences *BNK* (0.026) and *VEH* (0.024) (vehicles), and these positive impacts are most likely attributed to the reduced portfolio shares of *HOM* (-0.079) (family home) and

BUS (-0.011) (business). These results highlight the division of assets that occur after a marriage breakdown, selling off the family home and family-run businesses. Consequently, the portfolio share of *BNK*, *VEH* and *SPR* play a more dominant role in the portfolio.

The liquid nature of *BNK* and *EQT* is especially clear for individuals that experience *INJ* (illness/injury) and *FRD* (fired or made redundant). For *FRD*, there is a reduction in both the portfolio shares of *BNK* (-0.010) and *EQT* (-0.006), while the portfolio share of *SPR* increases (0.027). For *INJ*, there are reductions in the portfolio share of *BNK* (-0.009), *EQT* (-0.003) and *BUS* (-0.005), which are offset by the positive increase to the portfolio share of both property types, *HOM* (0.007) and *OPR* (0.010). It seems likely that households draw on liquid assets in these circumstances to cover increased expenses and/or reductions in income (due to job loss or illness/injury).

These results highlight some important findings. First, the portfolio share of home ownership is only a significant reduction for *SEP*, which is expected and largely unavoidable for many households experiencing the dissolution of a marriage/partnership with the division of matrimonial/shared assets. We do not find other events, like *INJ*, *DTH*, or *FRD*, where capacity to continue to make mortgage payments or otherwise maintain a house may be jeopardised, negatively affects the overall portfolio share of *HOM*. Second, on the whole, *DTH* seems to impact positively on the portfolio share of assets used for savings purposes like *BNK*, *EQT* and *LFI*. lastly, we find that only two life events, *INJ* and *FRD*, draw down on liquid assets like *BNK* and *EQT* as a most likely means to smooth consumption.

<INSERT TABLE 5 HERE>

Table 6 presents the dynamic analysis findings for *BNK* and *CSH*. For the portfolio share of *BNK*, the significant coefficients indicate that there are generally small increases in anticipation of and in response to life events. For example, two periods prior to a life event occurring, there is a 1.7 percentage point increase in anticipation of *INJ* and a 1.7 percentage point increase for *SEP*. One period prior, there is a 1.0 percentage point increase for *FRD*. In one period after the life event was experienced, there was an increase for *INJ* (0.017) and *DTH* (0.037), and in two periods after there was an increase of 7.6 percentage points for *SEP* (0.017). For all life events examined, *BNK* attracts positive portfolio rebalancing responses given both the near universal role it plays as a basic savings product.

<INSERT TABLE 6 HERE>

For *CSH*, there were only small positive increases in the portfolio share of *CSH* before the life event occurred. The relevant life events are *INJ* (0.001), *DTH* (0.004) two periods beforehand, and *INJ* (0.001) in the period immediately beforehand. The lack of statistical significance may be due to the low participation rate of *CSH*, but this provides some evidence that *CSH* investments are utilised by households to meet their precautionary (*INJ* and *DTH*) savings motives.

<INSERT TABLE 7 HERE>

Table 7 presents the results for *EQT* and *SPR*. Households engage in a consistent portfolio rebalancing response for *EQT* within the asset portfolio across a range of life events. In both periods leading up to the life event occurring, there are incremental increases to the portfolio share of *EQT* for those households that experienced *INJ* (*Shock-2*, 0.010; *Shock-1*, 0.009). After the life event has occurred, there are sustained but small reductions in the portfolio share of *EQT* when a household experiences *INJ* (-0.006), *DTH* (-0.017), and *SEP* (-0.014), but there is a pattern of longer-term portfolio restructurings that occurred for all life events: *INJ* (-0.011), *DTH* (-0.034), *FRD* (-0.013) and *SEP* (-0.016). The largest of these decreases is for *DTH* is for *Shock+2*, which decreases by a relative 85 percent of the mean portfolio share of 4.0 percent. These results are indicative of the highly liquid nature of equities and the capacity of shares facilitate saving with a higher potential rate of return for investors. However, a small component of the results could be representative of the aftermath of the GFC in that people exited the stock market due to uncertainty, particularly *Shock+2*, or a decline in share market values.

The role of *SPR* in household portfolios is interesting because its compulsory nature means that it cannot be drawn upon except in retirement (unless there are grounds for compassionate or severe financial hardship for which an early release can be applied for). However, it could still experience a downgrading of value given the heavy weight placed on equities and therefore have a reduced portfolio share. More likely, though changes to the portfolio share of *SPR* are due to the rebalancing of the shares of other asset classes in the portfolio. Table 7 shows that in the lead up to the life event occurring, there is generally a reduction of the portfolio share of *SPR*. For *FRD* (-0.017) and *SEP* (-0.049) there were incremental decreases in *Shock-2*, and for *INJ* (-0.005), *DTH* (-0.021) and *SEP* (-0.025) there are incremental decreases in *Shock-1*. After the shock has occurred, there are short-term portfolio adjustments that result in slight increases in the portfolio share of *SPR* for *INJ* (0.014), *FRD* (0.030) and

SEP (0.038), and longer-term adjustment increases for *INJ* (0.020), *DTH* (0.076) and *SEP* (0.022). The largest of these increases is for *DTH*, which is a 36.5 percent relative increase from the mean portfolio share rate that occurs up to eight years after the event. This is at odds with the findings of the previous section that pointed to an overall decrease in the portfolio share of *SPR* when *DTH* was experienced.

<INSERT TABLE 8 HERE>

Table 8 presents the results for *TST* and *LFI*. As mentioned, we do not discuss the results of *TST* because of the Wald Chi-square test results, which may be due to the very low participation rate. Table 8 shows that the portfolio rebalancing decisions for *LFI* also lack significance, and generally indicate that there are some short-term decisions that are made that reduce the portfolio share of *LFI* after an event occurs (*FRD*, -0.006), and that this asset class is used to satisfy the savings motives over the longer term. In *Shock-2*, there are increases in the portfolio share for those that experience *INJ* (0.003) and *FRD* (0.005), and in *Shock-1* there are increases for those that experience *DTH* (0.007).

Table 9 presents the results for *HOM* and *OPR*. The portfolio rebalancing before and after a *SEP* for *HOM* garners some interest. In both periods leading up to a *SEP*, *HOM* has an increased portfolio share (*Shock-2*, 0.038; *Shock-1*, 0.015). Upon the *SEP* occurring, there is an immediate reduction in the portfolio share of *HOM* (-0.033), but over the longer term the portfolio share is increased by about the same amount. Thus, individuals that have previously owned a home are likely to return to home ownership in the long term, perhaps to accommodate the needs of children and/or derive utility from the multiple benefits home ownership provide. A portfolio increase in home ownership also occurs with households that have experienced *FRD* two periods beforehand (0.020). Decreases in portfolio share occur two periods before *INJ* occurs (-0.010), and one period before *DTH* occurs (-0.030). Those that experience an *INJ* rebalance their portfolio to increase the portfolio share of *HOM* one period after (0.010).

<INSERT TABLE 9 HERE>

The patterns in the portfolio share of *OPR* reveal that generally households have a lower portfolio share of *OPR* in both the short and long-term before a life event occurs. For example, the largest reduction in the portfolio share of *OPR* occurs for *FRD*, where a reduction of -0.037 occurs in *Shock-2*, and -0.017 in *Shock-1*. Those that have experienced a *SEP* reduce the portfolio share of *OPR* by -0.023 in *Shock-2*, and -0.012 in *Shock-1*. For *INJ*,

the reductions are -0.020 in *Shock-2* and -0.008 in *Shock-1*. The only positive rebalancing occurs after experiencing *FRD*, in *Shock+1* (0.016) and *Shock+2* (0.021). There are no significant coefficients for *DTH*.

Table 10 presents the results for *BUS* and *VEH*. On average, *BUS* comprises only 3.2 percent of household asset portfolios, even though around 14 percent of the population participate in this asset class. Businesses, especially owner-manager businesses, may be labour and capital intensive for the holder, and thus it is not surprising that after a life event is experienced, there is generally a very quick divestment of the *BUS* portfolio share. As shown, divestment occurs after experiencing *DTH* (-0.018) and *SEP* (-0.019). For those that report experiencing being *FRD*, they reduce the portfolio share of business in the period prior (-0.012). Thus these respondents are indicating that they have most likely sold their business and report being made redundant perhaps by the new owners after. The only positive increases to business portfolio share occur in *Shock-2* (0.008) and *Shock-1* (0.007).

<INSERT TABLE 10 HERE>

We may attribute the changes in the portfolio share of *VEH* to the rebalancing of other assets, or an upgrading of motor vehicles held by the household. Table 10 shows that there is a consistent increase in the portfolio share of *VEH* before a life event occurs, and this applies for households that experience any of the life events in the period immediately prior. The highest relative increase is for *DTH*, where there is a 40.7 percent increase relative to the mean portfolio share of 9.1 percent in the period immediately prior. Afterwards, there is a short-term decrease in the portfolio share of *VEH* when a household experiences *FRD*, and in the long term if *DTH* is experienced (we expect because of the disposal of an unneeded vehicle in two-vehicle households).

Finally, Table 11 presents the results for *COL*. Again because of a very low participation rate, there is a general lack of significance across the coefficients. However, positive rebalances occur in two periods prior to *DTH* (0.006), one period after *SEP* (0.007) and two periods after *INJ* (0.003). A negative rebalance occurs two periods after a *SEP* (-0.008). These responses are largely attributed to the rebalancing of other assets in the portfolio, like for example, those that experienced *SEP* returning to home ownership in *Shock+2*.

<INSERT TABLE 11 HERE>

In brief, the findings of the dynamic Tobit models confirm that households make portfolio-rebalancing decisions for precautionary reasons in anticipation of a life event occurring, and increase portfolio shares in *BNK*, *CSH*, *EQT*, *LFI* and *VEH*. After a life event occurs, we typically observe reduced portfolio shares for *EQT*, *LFI*, *BUS* and *VEH*. Especially for *EQT*, these results are highly suggestive of their highly liquid nature. Also of note is the role of *HOM* in portfolios where a *SEP* occurs, that although *SEP* results in a decrease in the portfolio share immediately after, over the long term *HOM* returns to an increased role in the asset portfolio.

7. Concluding remarks

We aimed to provide insight into the impact of life events on the broad asset portfolio decisions of Australian households. Specifically, we investigated how life events affected asset portfolio shares across a range of asset classes, and measured household responses before and after major life events, being a serious illness or injury (*INJ*), death of a spouse (*DTH*), been fired or made redundant (*FRD*) and separated from spouse (*SEP*). This research is important as life events (or shocks) such as these may dramatically affect a household's current and future financial position. Wealth may increase or decrease, spending needs change, and new expenditures formed affecting future income, longevity, and bequests. These transitions constitute an important source of risk, with the potential to affect wealth accumulation, including the demand for (risky) assets.

This analysis provides a number of important contributions. First, there is limited research to date on shocks to household wealth, not least in Australia, and these tend to focus on a very narrow range of assets (i.e. equities) and a limited array of shocks (health, labour income). We thereby include a broad range of asset classes and a broader range of shocks. Further, this is the first study of its kind utilising Australian panel data, and we extend the novel approach in Coile and Milligan (2009) previously employed in the US to employ a random effects model rather than a fixed effects model, to allow for the many expected differences between households to have some influence on the dependent variables.

Our results confirm the proposition that major life events generally influence the asset portfolios of households, both before and after an event. The Tobit models of these impacts highlighted circumstances where households may be more financially vulnerable in terms of wealth accumulation due to reducing the portfolio share of assets in response to a life event. These circumstances include reducing the portfolio share of *EQT* in response to experiencing

INJ and *FRD*, or *HOM* in response to *SEP*. While insurance products for injury, illness, and redundancy may assist households to manage associated costs of these life events, there is as yet no financial product that can help to manage the costs of *SEP*.

We obtained some finer detail on the financial decisions made by households was using dynamic Tobit models incorporating lead and lag variables. The long-term divestment of *EQT* following all life events is a major cause of concern for household wealth accumulation, above all because over the entire period over which the HILDA Survey has been conducted, equity investment has outperformed all other asset classes, with the possible exception of owner-occupied property. While the reduced portfolio share may be a reflection of the GFC and attitudes towards the stock market after the large reductions in market value in 2008, over the 2006 to 2010 period (i.e. *Shock+1* and *Shock+2*) the Australian stock market still averaged 10.16 percent return (ASX, 2011). Another significant finding was that households that experience a *SEP* return to *HOM* in the long-term, which may have transaction cost implications on the household in terms of real estate commissions if the family home was sold and stamp duty for home purchase.

These findings are particularly relevant to public policy makers as they work to institute policies in anticipation of the impending retirement of the ‘baby boomer’ generation, and for financial planners and investors in general who incorporate expected future performance of asset markets into their investment decisions. Specifically, financial planners need to ensure that clients have a diverse range of liquid assets or insurance products that are able to assist with smoothing consumption when required, particularly in the case of an unforeseen event, and are able to avoid selling at the bottom of the market cycle for that particular asset class.

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Table 1. Recoded life events

	2002		2006		2010		Total
INJ	1,270	18.1%	2,981	43.5%	2,727	39.9%	6,979
DTH	65	0.9%	185	2.7%	171	2.5%	421
FRD	250	3.6%	552	8.0%	536	7.8%	1,338
SEP	275	3.9%	648	9.4%	547	8.0%	1,470
Total events	1,860		4,366		3,981		10,208
Total households	7,002		6,860		6,840		20,702

Table 2. Proportion of respondents experiencing life event by age

	INJ	DTH	FRD	SEP
AGE1	2.30%	0.00%	0.90%	1.10%
AGE2	5.70%	0.30%	1.70%	2.40%
AGE3	10.60%	0.30%	2.00%	2.60%
AGE4	12.50%	0.30%	2.20%	2.00%
AGE5	9.80%	0.50%	1.10%	0.90%
AGE6	9.10%	1.20%	0.30%	0.50%

Table 3. Estimated coefficient signs for life events

Life Event	BNK	CSH	EQT	SPR	LFI	TST	HOM	OPR	BUS	VEH	COL
Before-life event portfolio rebalance											
INJ	+	+	+	+	+	+	+	+	+	+	+
DTH	+	+	+	+	+	+	+	+	+	+	+
FRD	+	+	+	+	+	+	+	+	+	+	+
SEP	+	+	+	+	+	+	+	+	+	+	+
Short-term portfolio rebalancing response											
INJ	–	–	–	–	–	–	–	–	–	–	–
DTH	–	–	–	–	–	–	+	–	–	–	–
FRD	–	–	–	–	–	–	–	–	–	–	–
SEP	–	–	–	–	–	–	–	–	–	–	–
Long-term portfolio rebalancing response											
INJ	–	–	–	–	–	–	–	–	–	–	–
DTH	–	–	–	–	–	–	+	–	–	–	–
FRD	–	–	–	–	–	–	–	–	–	–	–
SEP	–	–	–	–	–	–	–	–	–	–	–

Notes: *BNK* bank accounts; *CSH* cash investments; *EQT* equities; *SPR* superannuation accounts; *LFI* life insurance; *TST* trust accounts; *HOM* family home; *OPR* other property ownership; *BUS* business assets; *VEH* vehicles; *COL* collectibles .

Table 4. Mean portfolio shares all respondents

BNK	CSH	EQT	SPR	LFI	TST	HOM	OPR	BUS	VEH	COL
8.4%	0.3%	4.0%	20.8%	0.9%	0.4%	44.2%	7.8%	3.2%	9.1%	1.0%

Table 5. Estimated coefficients, standard errors, and p-values for Tobit model of portfolio share and life events

	BNK	CSH	EQT	SPR	LFI	TST	HOM	OPR	BUS	VEH	COL
AGE	0.001	0.002	0.001	-0.003	0.000	0.000	0.003	-0.002	0.000	-0.002	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.588	0.000	0.012	0.000	0.000	0.965
INJ	-0.009	0.000	-0.003	0.001	0.000	0.001	0.007	0.010	-0.005	-0.002	0.000
	0.002	0.004	0.001	0.003	0.001	0.001	0.004	0.002	0.002	0.002	0.001
	0.000	0.324	0.028	0.695	0.940	0.212	0.057	0.000	0.002	0.400	0.940
DTH	0.136	-0.001	0.009	-0.040	0.012	0.000	0.021	-0.010	-0.003	0.009	-0.005
	0.007	0.001	0.004	0.009	0.003	0.002	0.013	0.008	0.005	0.007	0.003
	0.053	0.289	0.046	0.001	0.000	0.867	0.096	0.190	0.563	0.176	0.090
FRD	-0.010	0.001	-0.006	0.027	-0.002	-0.001	-0.012	0.000	-0.005	0.004	0.001
	0.004	0.001	0.003	0.005	0.002	0.001	0.007	0.005	0.003	0.004	0.002
	0.022	0.526	0.022	0.000	0.131	0.280	0.119	0.968	0.103	0.277	0.582
SEP	0.026	0.000	-0.399	0.037	-0.002	0.000	-0.079	0.006	-0.011	0.024	0.003
	0.004	0.008	0.003	0.005	0.001	0.001	0.007	0.005	0.003	0.004	0.002
	0.000	0.930	0.117	0.001	0.174	0.683	0.000	0.190	0.000	0.000	0.106
CONS	0.015	-0.005	-0.002	0.335	0.018	0.005	0.289	0.086	0.058	0.189	0.009
	0.005	0.001	0.003	0.007	0.001	0.001	0.010	0.005	0.003	0.005	0.002
	0.004	0.000	0.515	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
lnLR	9506.08	44219.41	19479.96	4448.65	31343.75	36653.66	-2855.72	7728.41	16386.41	9795.86	29844.37
Wald χ^2	252.590	120.730	254.250	566.400	73.590	2.930	468.390	26.530	82.560	526.960	5.710
W-stat. p-value	0.000	0.000	0.000	0.000	0.000	0.711	0.000	0.000	0.000	0.000	0.335
$\text{Ln } \sigma_u^2$	1.432	1.418	2.403	2.833	1.992	1.688	3.542	2.041	2.884	2.351	1.292
$\text{Ln } \sigma_u^2$ SE	0.138	0.119	0.046	0.058	0.061	0.113	0.045	0.049	0.043	0.052	0.059
σ_u	0.121	0.011	0.070	0.162	0.018	0.158	0.239	0.104	0.075	0.116	1.908
σ_u SE	0.121	0.000	0.001	0.002	0.001	0.000	0.003	0.001	0.001	0.001	0.056
ρ	0.503	0.152	0.458	0.536	0.115	0.143	0.559	0.350	0.405	0.482	0.246
ρ SE	0.007	0.008	0.007	0.007	0.008	0.008	0.007	0.008	0.008	0.007	0.008
McFadden's R^2	-0.274	-0.005	-0.109	-1.444	-0.004	-0.005	0.502	-0.161	-0.097	-0.257	-0.018

Table 6. Estimated coefficients, standard errors and p-values for Tobit models of the portfolio share of *BNK* and *CSH* and lead and lag life events

	BNK				CSH			
	INJ	DTH	FRD	SEP	INJ	DTH	FRD	SEP
AGE	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Shock+2	−0.002	0.030	−0.003	0.017	−0.001	−0.003	−0.002	0.002
	0.010	0.019	0.010	0.007	0.001	0.004	0.002	0.002
	0.840	0.117	0.760	0.018	0.207	0.482	0.249	0.404
Shock+1	0.017	0.037	−0.008	−0.002	0.000	−0.003	0.000	0.000
	0.007	0.014	0.007	0.010	0.001	0.003	0.001	0.001
	0.018	0.008	0.301	0.840	0.462	0.263	0.935	0.752
Shock−1	0.007	−0.008	0.010	0.007	0.001	0.000	0.000	0.001
	0.005	0.008	0.005	0.005	0.000	0.002	0.001	0.001
	0.106	0.284	0.027	0.106	0.035	0.806	0.675	0.183
Shock−2	0.017	0.013	0.001	0.017	0.001	0.004	0.000	−0.001
	0.007	0.012	0.007	0.007	0.001	0.002	0.001	0.001
	0.011	0.266	0.828	0.011	0.082	0.081	0.774	0.685
CONS	0.012	0.017	0.014	0.012	−0.005	−0.005	−0.005	−0.005
	0.005	0.005	0.005	0.005	0.001	0.001	0.001	0.001
	0.018	0.001	0.006	0.018	0.000	0.000	0.000	0.000
σ_u	0.121	0.121	0.122	0.121	0.011	0.011	0.011	0.011
	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
σ_e	0.121	0.121	0.121	0.121	0.027	0.027	0.027	0.027
	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ρ	0.503	0.504	4090.100	0.502	0.153	0.153	0.153	0.153
	0.007	0.007	0.000	0.007	0.008	0.008	0.008	0.008
lnLR	9460.2	9460.7	9458.3	9461.5	44068.0	44065.0	44063.0	44063.0
Wald χ^2	197.920	198.720	193.830	200.690	128.810	121.170	117.830	118.890
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LR $\sigma_u=0$	4080.4	4079.3	4090.1	4045.3	444.5	443.9	444.1	444.3
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cox Snell R^2	0.720	0.720	0.720	0.721	0.998	0.998	0.998	0.998
ρ^{yDV}	0.130	0.129	0.128	0.133	0.089	0.087	0.086	0.086
ρ^2	0.017	0.017	0.016	0.018	0.008	0.008	0.007	0.007

Table 7. Estimated coefficients, standard errors and p-values for Tobit models of the portfolio share of *EQT* and *SPR* and lead and lag life events

	EQT				SPR			
	INJ	DTH	FRD	SEP	INJ	DTH	FRD	SEP
AGE	0.001	0.001	0.001	0.001	−0.003	−0.003	−0.003	−0.003
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Shock+2	−0.011	−0.034	−0.013	−0.016	0.020	0.076	0.013	0.022
	0.003	0.012	0.006	0.006	0.006	0.024	0.012	0.012
	0.000	0.004	0.034	0.007	0.000	0.002	0.286	0.072
Shock+1	−0.006	−0.017	−0.001	−0.014	0.014	−0.017	0.030	0.038
	0.002	0.009	0.005	0.004	0.004	0.018	0.009	0.009
	0.005	0.046	0.902	0.002	0.001	0.343	0.001	0.000
Shock−1	0.009	−0.002	0.002	−0.003	−0.005	−0.021	−0.004	−0.025
	0.001	0.005	0.003	0.003	0.003	0.010	0.006	0.006
	0.000	0.652	0.573	0.293	0.093	0.032	0.488	0.000
Shock−2	0.010	0.003	0.005	0.004	−0.004	−0.003	−0.017	−0.049
	0.002	0.007	0.004	0.004	0.004	0.015	0.008	0.008
	0.000	0.658	0.222	0.355	0.298	0.854	0.047	0.000
CONS	−0.013	−0.004	−0.005	−0.003	0.352	0.345	0.346	0.354
	0.003	0.003	0.003	0.003	0.007	0.007	0.007	0.007
	0.000	0.181	0.140	0.315	0.000	0.000	0.000	0.000
σ_u	0.070	0.070	0.070	0.070	0.163	0.163	0.163	0.164
	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
σ_e	0.076	0.076	0.076	0.076	0.151	0.151	0.151	0.151
	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ρ	0.463	0.460	0.460	0.460	0.538	0.539	0.539	0.541
	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
lnLR	19514.0	19456.0	19454.0	19458.0	4396.6	4388.5	4388.0	4422.9
Wald χ^2	364.550	246.560	242.960	252.470	497.890	480.100	479.360	548.860
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LR $\sigma_u = 0$	3928.8	3863.7	3863.9	3864.2	5282.6	5276.2	5269.6	5339.2
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cox Snell R^2	0.935	0.935	0.935	0.935	0.400	0.399	0.399	0.401
$\rho^{\bar{y}DV}$	0.183	0.177	0.177	0.178	0.217	0.216	0.215	0.216
ρ^2	0.033	0.031	0.031	0.032	0.047	0.047	0.046	0.046

Table 8. Estimated coefficients, standard errors and p-values for Tobit models of the portfolio share of *TST* and *LFI* and lead and lag life events

	TST				LFI			
	INJ	DTH	FRD	SEP	INJ	DTH	FRD	SEP
AGE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.808	0.731	0.719	0.649	0.000	0.000	0.000	0.000
Shock+2	0.001	−0.005	0.005	0.001	0.000	−0.008	−0.003	−0.004
	0.001	0.005	0.003	0.003	0.002	0.007	0.004	0.004
	0.296	0.396	0.06	0.753	0.806	0.286	0.419	0.303
Shock+1	−0.002	0.002	0.001	0.001	−0.001	0.007	−0.006	0.004
	0.001	0.004	0.002	0.002	0.001	0.005	0.003	0.003
	0.027	0.615	0.74	0.673	0.225	0.141	0.024	0.129
Shock−1	0.000	−0.003	0.000	0.001	−0.001	0.007	−0.002	−0.002
	0.001	0.002	0.001	0.001	0.001	0.003	0.002	0.002
	0.730	0.213	0.836	0.690	0.379	0.02	0.329	0.309
Shock−2	0.000	0.003	0.000	−0.002	0.003	0.004	0.005	−0.003
	0.001	0.003	0.002	0.002	0.001	0.004	0.002	0.002
	0.616	0.361	0.962	0.197	0.003	0.375	0.043	0.205
CONS	0.005	0.005	0.005	0.005	0.017	0.017	0.017	0.018
	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
σ_u	0.016	0.016	0.016	0.016	0.018	0.018	0.018	0.018
	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
σ_e	0.039	0.039	0.039	0.039	0.050	0.050	0.050	0.050
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ρ	0.143	0.143	0.143	0.143	0.115	0.113	0.115	0.114
	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
lnLR	3644.1	3642.4	3642.5	3641.7	31269.0	31268.0	31268.0	31266.0
Wald χ^2	7.020	3.660	3.760	2.230	60.15	57.95	59.22	54.97
	0.219	0.600	0.584	0.816	0.000	0.000	0.000	0.000
LR $\sigma_u=0$	392.5	392.3	391.3	392.6	229.1	225.2	228.5	227.5
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cox Snell R^2	0.995	0.995	0.995	0.995	0.989	0.989	0.989	0.989
$\rho^{\bar{y}DV}$	0.018	0.013	0.015	0.008	0.057	0.057	0.057	0.055
ρ^2	0.000	0.000	0.000	0.000	0.003	0.003	0.003	0.003

Table 9. Estimated coefficients, standard errors and p-values for Tobit models of the portfolio share of *HOM* and *OPR* and lead and lag life events

	HOM				OPR			
	INJ	DTH	FRD	SEP	INJ	DTH	FRD	SEP
AGE	0.003	0.003	0.003	0.004	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.017	0.001	0.003
Shock+2	−0.004	−0.048	−0.011	0.030	0.004	0.031	0.021	−0.007
	0.008	0.034	0.018	0.017	0.005	0.021	0.011	0.011
	0.606	0.161	0.535	0.086	0.447	0.144	0.056	0.550
Shock+1	0.010	−0.001	−0.015	−0.033	0.000	−0.010	0.016	0.001
	0.006	0.025	0.013	0.013	0.004	0.016	0.008	0.008
	0.085	0.984	0.261	0.010	0.925	0.536	0.050	0.907
Shock−1	−0.007	−0.030	0.008	0.015	−0.008	0.013	−0.017	−0.012
	0.004	0.014	0.008	0.008	0.003	0.009	0.005	0.005
	0.114	0.034	0.345	0.073	0.003	0.157	0.002	0.022
Shock−2	−0.010	−0.023	0.020	0.038	−0.020	−0.019	−0.037	−0.023
	0.005	0.021	0.012	0.012	0.003	0.013	0.007	0.007
	0.064	0.278	0.092	0.001	0.000	0.156	0.000	0.002
CONS	0.287	0.278	0.274	0.271	0.098	0.089	0.094	0.093
	0.010	0.010	0.010	0.010	0.005	0.005	0.005	0.005
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
σ_u	0.240	0.240	0.240	0.240	0.104	0.104	0.104	0.104
	0.003	0.003	0.003	0.003	0.001	0.002	0.001	0.002
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
σ_e	0.213	0.213	0.213	0.213	0.142	0.142	0.142	0.142
	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ρ	0.560	0.560	0.560	0.561	0.351	0.349	0.349	0.349
	0.007	0.007	0.007	0.117	0.008	0.008	0.008	0.008
lnLR	−2909.0	−2911.0	−2912.0	−2901.0	7704.0	7682.3	770.3	7686.4
Wald χ^2	351.300	345.680	344.270	366.560	56.320	12.890	48.970	21.130
	0.000	0.000	0.000	0.000	0.000	0.025	0.000	0.001
LR $\sigma_u = 0$	5731.0	5728.0	5728.0	5710.0	2140.3	2118.1	2122.9	2118.9
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
McFadden's R^2	0.496	0.496	0.496	0.496	0.656	0.655	0.656	0.655
ρ^{yDV}	0.159	0.158	0.158	0.156	0.049	0.040	0.055	0.042
ρ^2	0.025	0.025	0.025	0.024	0.002	0.002	0.003	0.002

Table 10. Estimated coefficients, standard errors and p-values for Tobit models of the portfolio share of *BUS* and *VEH* and lead and lag life events

	BUS				VEH			
	INJ	DTH	FRD	SEP	INJ	DTH	FRD	SEP
AGE	0.000	0.000	−0.001	0.000	−0.002	−0.002	−0.002	−0.002
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Shock+2	−0.002	0.009	−0.007	−0.011	−0.004	−0.035	−0.011	−0.004
	0.003	0.014	0.007	0.007	0.004	0.019	0.010	0.010
	0.484	0.507	0.344	0.110	0.394	0.066	0.275	0.676
Shock+1	−0.002	−0.018	−0.007	−0.019	−0.005	0.020	−0.015	0.005
	0.002	0.010	0.005	0.005	0.003	0.014	0.007	0.007
	0.398	0.073	0.214	0.000	0.119	0.142	0.042	0.508
Shock−1	0.007	0.004	−0.012	0.001	0.007	0.037	0.011	0.020
	0.002	0.006	0.003	0.003	0.002	0.008	0.005	0.005
	0.000	0.476	0.000	0.776	0.003	0.000	0.022	0.000
Shock−2	0.008	−0.007	−0.003	−0.003	0.004	0.031	0.021	0.024
	0.002	0.009	0.005	0.005	0.003	0.012	0.007	0.006
	0.000	0.398	0.533	0.574	0.153	0.007	0.001	0.000
CONS	0.049	0.055	0.058	0.056	0.187	0.192	0.189	0.186
	0.004	0.003	0.003	0.003	0.005	0.005	0.005	0.005
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
σ_u	0.075	0.075	0.075	0.075	0.116	0.116	0.116	0.116
	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
σ_e	0.091	0.091	0.091	0.091	0.120	0.120	0.120	0.120
	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ρ	0.405	0.405	0.404	0.404	0.484	0.483	0.484	0.481
	0.008	0.008	0.008	0.008	0.007	0.007	0.007	0.007
lnLR	16293.0	16276.0	16280.0	16280.0	9766.0	9773.0	9767.0	9773.0
Wald χ^2	93.730	59.130	67.860	68.500	505.440	519.030	507.600	520.590
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LR $\sigma_u = 0$	2905.7	2899.9	2886.4	2894.1	4065.2	4042.3	4057.0	3983.1
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cox Snell R^2	0.098	−0.098	−0.097	−0.098	0.733	0.733	0.733	0.733
$\rho^{\bar{y}DV}$	0.065	0.054	0.062	0.059	0.174	0.178	0.175	0.182
ρ^2	0.004	0.003	0.004	0.004	0.030	0.032	0.031	0.033

Table 11. Estimated coefficients, standard errors and p-values for Tobit models of the portfolio share of *COL* and lead and lag life events

	COL			
	INJ	DTH	FRD	SEP
AGE	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000
	0.943	0.756	0.971	0.948
Shock+2	0.003	−0.009	0.006	−0.008
	0.002	0.008	0.004	0.004
	0.085	0.246	0.144	0.028
Shock+1	−0.001	0.003	0.001	0.007
	0.001	0.005	0.003	0.003
	0.284	0.563	0.840	0.015
Shock−1	0.001	0.006	0.002	0.001
	0.001	0.003	0.002	0.002
	0.220	0.052	0.291	0.539
Shock−2	0.002	−0.003	0.003	0.003
	0.001	0.005	0.003	0.003
	0.162	0.520	0.299	0.215
CONS	0.009	0.010	0.009	0.009
	0.002	0.002	0.002	0.002
	0.000	0.000	0.000	0.000
σ_u	0.029	0.029	0.029	0.029
	0.001	0.001	0.001	0.001
	0.000	0.000	0.000	0.000
σ_e	0.051	0.051	0.051	0.051
	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000
ρ	0.246	0.246	0.246	0.246
	0.008	0.008	0.008	0.008
lnLR	29700.0	29700.0	29698.0	29703.0
Wald χ^2	8.160	6.340	4.110	13.870
	0.148	0.274	0.534	0.016
LR $\sigma_u=0$	1056.0	1056.6	1055.7	1055.7
	0.000	0.000	0.000	0.000
Cox Snell R^2	0.986	0.986	0.986	0.986
ρ^{yDV}	0.020	0.016	0.014	0.025
ρ^2	0.000	0.000	0.000	0.001