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**Changes in Subjective Well-being with Retirement:
Assessing Savings Adequacy in Australia**

**Garry F. Barrett
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SEDAP Research Paper No. 296

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Changes in Subjective Well-being with Retirement: Assessing Savings Adequacy in Australia*

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Abstract

Does retirement represent a state of relative prosperity or a time of unanticipated economic hardship? To assess whether individuals are successful in smoothing their well-being across the transition to retirement we analyse measures of relative subjective wellbeing (SWB) in the Australian HILDA Survey. Specifically, this research examines individual's self-reported change in their standard of living, financial security, and overall happiness over the transition to retirement. It is found SWB either improves or remains constant for the large majority of individuals as they retire from the labour force. However, there are significant disparities in changes in well-being with retirement among retirees. In particular, the subset of individuals who are forced to retire early due to job loss or their own health, and who find their income in retirement to be much less than expected, report marked declines in their well-being in retirement.

JEL classifications: J26, I31, D91.

Keywords: Retirement, Subjective Wellbeing, Welfare, Income Expectations.

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Changes in Subjective Well-being with Retirement:
Assessing Savings Adequacy in Australia

Garry F. Barrett and Milica Kecmanovic

Résumé

La retraite représente-t-elle un état de relative prospérité ou une période de difficultés économiques non anticipées? Afin de déterminer si les individus réussissent à effectuer leur passage à la retraite en douceur en terme de leur bien-être, nous analysons les mesures de bien-être subjectif (SWB) de l'Enquête australienne HILDA. Plus précisément, cette recherche examine les variations « autodéclarées » du niveau de vie, de la sécurité financière, et du bonheur en général des individus lors de leur passage à la retraite. On observe que le SWB de ces derniers demeurent constant ou s'améliore légèrement après le départ à la retraite. Il existe cependant des disparités importantes parmi les retraités. En particulier, parmi les individus qui sont contraints de prendre une retraite anticipée en raison de la perte de leur emploi ou dû à un problème de santé, et qui trouvent leur revenu de retraite beaucoup moins élevé que prévu, on observe une baisse marquée du bien-être.

1 INTRODUCTION

Does retirement represent a state of unexpected prosperity or a time of unanticipated economic hardship for Australian households? Do individuals make adequate financial provisions for their retirement, and effectively smooth their well-being over this significant labour market transition? Answers to these questions are important for understanding the distribution of economic well-being, and for assessing the effectiveness of Australian retirement income policy. The significance of the issue of welfare smoothing, and the related concerns of savings adequacy and preparedness for retirement, is heightened by the ageing of the Australian population and has been the motivation for major Australian government policy initiatives over the past two decades.

Concern for ensuring a minimal level of well-being in retirement has been a primary objective of the Australian retirement income system since the introduction of the Age Pension in 1908. In more recent times, governments have introduced policies which aim to stimulate individual's own provision for retirement through greater private savings. These policies range from the savings incentives created by the concessional tax treatment of superannuation contributions, subsidies for contributions by low income earners, and compulsory savings mandated by the Superannuation Guarantee. Encouraging greater private provision for retirement remains a continuing concern of policymakers in Australia. The recent Henry Review (2009) of the Australian tax-transfer system linked retirement income policy and national savings policy, and recommendations made by the taskforce concerning retirement income policy focused on the tax treatment of private retirement savings.¹ Much of the policy debate in Australia, as well as in many other developed economies, is premised on the belief that most households do not adequately anticipate their needs in retirement and do not make sufficient provision for their retirement.

There are a number of possible reasons why Australians may fail to smooth their well-being across the working - retirement stage of the life-cycle. These include potential short-sighted consumption behaviour by households (who may myopically over-consume pre-retirement) due to a lack of long-term planning, misunderstanding of the resources required to maintain well-being in retirement, or erroneous information on likely needs (such as medical and care needs) in later stages of the lifecycle. There may also be institutional constraints - such as incomplete markets - where households do not have sufficient options to insure future expenditure needs.² Concern for the effective smoothing of welfare across the

¹Recommendations 18-20, 23; recommendations 21-22 dealt with the availability of annuity products.

²The concern for incomplete markets is less compelling in the case of smoothing consumption over the working-retirement transition. The optimal response of an agent to an anticipated income drop is to save more in the current period, which does not require a perfectly functioning capital markets (in contrast to an income increase, where borrowing options may not be available).

working and retirement stages of the life-cycle is not unique to Australia, as this is an area of policy activism across almost all developed countries faced with an ageing population.

In this paper we assess the success of Australian households in smoothing their well-being across the transition into retirement. In doing so, we also provide an assessment of retirement savings adequacy based on individuals' ability to maintain their well-being from pre- to post-retirement periods. If an individual is saving 'adequately' then it is not possible to re-allocate their resources over time and make the individual better off. This definition is based on the thought experiment whereby shifting an individual's resources from the present to the future does not improve expected lifetime well-being. This definition was applied by Alan, Atalay and Crossley (AAC) (2008) in assessing the adequacy of Canadian retirement savings. This notion of savings adequacy is based on the idea that individuals act to maximise expected lifetime well-being, and will seek to smooth their (expected) well-being through time.³ Like AAC, we use individual reports of changes in subjective well-being pre- and post-retirement to assess the extent to which individuals successfully smooth their well-being from the working to retirement stage of the lifecycle. The use of relative subjective well-being measures is a novel approach to assessing savings adequacy. Alternative studies have used a more mechanical approach, simulating the proposed income needs of households to fund expenditures in retirement, and comparing this to imputed income replacement from social security and private savings (e.g. Skinner 2007). The use of subjective well-being measures, especially relative measures comparing pre- and post-retirement periods for an individual, has the advantage of allowing for heterogeneity across individuals in their assessment of the welfare generated by a given set of resources, and eschews the need to model intricate details of income, asset accumulation and expenditure paths.

This study also contributes to the rapidly growing economics literature which uses subjective well-being measures (SWB) to gauge individual welfare. The use of SWB data, which has its own merits and limitations, provides a useful complement to more traditional welfare concepts based on expenditure, income or wealth measures. The multiple SWB questions in HILDA capture distinct, though related, dimensions of individual welfare. Importantly, the *relative* SWB concepts which are the focus of this study are framed *relative* to pre-retirement levels of well-being. This alleviates the concern over individual heterogeneity in SWB scales - as the form of the questions effectively "differences out" individual variation in absolute levels of SWB. We also use the panel structure of the HILDA Survey to assess the reliability of the retrospective relative SWB measures with changes in contemporaneous reports of

³More formally, individual's maximise expected discounted lifetime utility subject to an intertemporal budget constraint. Along the optimal path individuals smooth the expected discounted marginal utility of wealth; in most preference specifications this also implies smoothing of utility through time.

SWB. Our analysis demonstrates the longitudinal consistency of the relative SWB measures with comparable contemporaneous reports of relative SWB by retirees.

It is important to emphasise that our analysis of welfare smoothing, and the related notion of savings adequacy, is not an assessment of whether individuals have an adequate level of resources to meet a minimal standard of well-being. As discussed by AAC, an individual may succeed in smoothing their well-being, and save adequate resources to effect this smoothing, while their absolute level of well-being may be very low, even impoverished. Likewise, an individual may have access to an abundance of resources and achieve a comfortable level of well-being, while failing to equalise that well-being through time, which is consistent with inadequate savings. Our assessment of welfare smoothing is focussed on individual's success in equalising well-being pre- and post-retirement, rather than evaluating the absolute level of well-being.

The structure of the paper is as follows. In the following section the literature on consumption and welfare smoothing over retirement, and the intersection with SWB measures, is briefly reviewed. Section 3 present a model of intertemporal choice which informs the empirical analysis. In section 4 key properties of the data are outlined, and descriptive statistics presented. In Section 5 the econometrics methods are outlined. Section 6 contains the presentation of the empirical results, and Section 7 concludes by drawing out the policy implications of the main findings.

2 LITERATURE REVIEW

In assessing changes in the well being of individuals as they move into retirement, economists have often analysed the paths of expenditure and consumption at this point in the life-cycle and have sought to explain the observed fall in consumption at retirement. Browning and Crossley (2001) argue that the various changes that households experience at retirement contribute directly to decreasing spending (through, for example, the costs associated with going to work, or a smaller household size). Retirement is also associated with an increase available time for non-market activities, such as home production, which may be a substitute for market expenditures. Aguiar and Hurst (2005) demonstrate that individuals are able to smooth consumption at retirement through, for example, spending more time searching out bargains and increasing time devoted to food preparation. Aguiar and Hurst (2005) find that caloric intake and food quality does not decline at retirement, despite a fall in food expenditures, due to an increase in home production. Smith (2006) explains this fall in consumption by an unanticipated wealth shock caused by involuntary retirement - as food spending decreases significantly only when retirement is involuntary. Similarly, Barrett and Brzozowski (2010) examined household food and grocery expenditures as individuals entered

retirement using the HILDA Survey data, and found the fall in spending was concentrated among individuals who retired involuntarily due to long term job loss or a major health shock.

Given the various changes that occur at retirement, involving available resources (and expected future resources) as well as time use and health status, the use of SWB measures has been advocated by a number of economists as being able to provide useful and important information on the living standards of retirees. The use of these measures is rising in economics (Frey and Stutzer (2002) and Dolan, Peasgood, and White (2008) provide useful surveys) and there is substantial support in the literature for their use as measures of welfare (for example, Kahneman and Krueger (2006)). Dolan, Peasgood, and White (2008) provide a survey of SWB correlates that have been found in the literature; these include income, education, marital status, health, and unemployment, as well as a range of social capital and “community” indicators. The main concerns in using SWB measures relate to potential biases in survey responses and the interpersonal comparability of individual reports. For example, responses to SWB questions may depend on mood, personality traits, and the response scales applied in a particular survey. There is also concern for habituation - or hedonic adaptation - whereby the longer individuals experience a state of well-being, the more they adapt to that state and respond with ‘normal’ levels of well-being (implying that long-term shocks to welfare may only have transitory impacts on reported SWB). In terms of measuring SWB, Frey and Stutzer (2002) stress that SWB data should be treated ordinally, thus not comparing levels in an absolute sense. Di Tella and MacCulloch (2006) further emphasise the value of longitudinal data for individual whereby panel data method can allow for individual differences in the ordinal scale of SWB.

There a number of relatively recent studies that have begun to look at SWB in retirement. For example, Charles (2002) finds a positive correlation between retirement and SWB in the US when discontinuous retirement incentives and social security eligibility rules are used to allow for an exogenous retirement effect. Baker, Gruber, and Milligan (2009) find that income security programs in Canada increase income and decrease poverty among retirees, but find no conclusive evidence on SWB impacts. Similarly, Panis (2003) does not find a correlation between social security benefits and life satisfaction, but does find that those who finance more consumption in retirement from pension annuities are more satisfied. AAC (2008) find that most Canadian retirees report enjoying life more in retirement and being at least as satisfied with their finances in retirement compared to the year before they retired. Involuntary retirement, especially in conjunction with bad health, is found to have the strongest negative affect on life satisfaction. Bender (2004) uses the US Health and Retirement Study to analyse the determinants of overall well-being of retirees and also finds involuntary. or forced, retirement to be the strongest predictor of low well-being

among retirees. Based on the same data, Rohedder (2006) finds that bad health, as well as deteriorating health, as the most significant negative effect on satisfaction in retirement, and also identifies social isolation as important in lowering satisfaction among retirees.

3 ECONOMIC FRAMEWORK

The framework for structuring the empirical analysis and interpreting the results is the standard economic model of intertemporal consumer choice.⁴ Individuals choose consumption (c_t) to maximize the value functional

$$v(A_t, w_t) = \max U(c_t, \mathbf{x}_t) + \rho \mathbf{E} [v(A_{t+1}, w_{t+1})] \quad (1)$$

subject to the budget constraint

$$A_{t+1} = (1 + r)A_t + n_t + w_t - c_t \quad (2)$$

where \mathbf{x}_t is a set of exogenous characteristics, ρ is the consumer's discount rate, A_t is total wealth, r is the interest rate, n_t is non-labour income and w_t is labour income which is stochastic, due to shocks facing the individual. In this formulation, there is a positive probability that $w_t = 0$ (for example, due to forced retired) and the budget constraint is therefore a stochastic constraint which holds with probability 1. Solving for the first order conditions gives

$$\begin{aligned} U_c(c_t, \mathbf{x}_t) &= \lambda_t \\ \lambda_t &= \rho \mathbf{E}_t [\lambda_{t+1}(1 + r)] \end{aligned} \quad (3)$$

which are expressions for the marginal utility of consumption and the marginal utility of wealth, represented by the multiplier λ_t . These conditions imply $U_c(c_t, \mathbf{x}_t) = \rho \mathbf{E}_t [\lambda_{t+1}(1 + r)]$ - the Euler equation of the permanent income model - which is the result that optimizing individuals allocate consumption over time periods to equate the marginal utility of consumption to the discounted expected marginal utility of wealth. The marginal utility of wealth will include the effect of retirement to the extent it is anticipated. This simplified model generates the classic prediction that optimizing individuals will act to maximise expected utility and, by implication, equalise the discounted expected marginal utility of wealth across time. Placing more structure on preferences by assuming quadratic utility, and if the personal discount rate is equal to the inverse of the interest rate ($\rho = (1 + r)^{-1}$), results in the the stronger prediction that $c_t = \mathbf{E}_t c_{t+1}$: that household smooth the expected level of consumption through time. In turn, this tightly specified model generates the prediction that first-differences in consumption will be a martingale process, and that changes

⁴For a more detailed exposition see Deaton (1992) or Adda and Cooper (2003).

in consumption will not be correlated with contemporaneous changes in income that are known in advance (such as planned retirement).

Our approach in this paper is to use SWB measures to represent $U(c_t, \mathbf{x}_t)$ to assess whether individuals make appropriate saving choices (or allocation of the $\{A_\tau\}$ sequence through time) in smoothing their consumption and maximizing their welfare. This approach eschews the need to model the sequence of $\{c_t, A_t\}$ choices with attendant measurement issues. In the analysis we examine direct reports of SWB, and relative SWB, which offers a parsimonious alternative for assessing the success of individuals in effectively smoothing their well-being through time.

4 DATA AND SAMPLE CONSTRUCTION

The HILDA Survey has tracked approximately 7,000 Australian households, comprised of over 13,000 individuals, through time beginning with the first wave collected in 2001. The survey data consists of a number of linked household and persons files. Individuals within the same household are linked within a wave, and individuals are tracked across waves. Each wave of the HILDA Survey contains a module of questions focussed on a specific topic, with the topics generally repeated on a four-year cycle. In waves three (2003) and seven (2007) the special module of questions focussed on retirement plans and experiences. The analysis initially focuses on responses to questions in the 2007 retirement module. Key questions on retirement experiences were asked only of persons aged 45 years or older, who had completely retired from the labour force and worked at some point since 1990 (i.e. individual who made the transition from employment to retirement during the previous 17 years). These restrictions resulted in a sample of 1344 individual retirees, drawn from 1074 households.

Information provided from respondents to the Retirement Module in 2007 is supplemented by information drawn from earlier waves of the HILDA survey. The dependent variables in the analysis are drawn from a series of questions asked of retirees based on self-reported current well-being *relative* to their pre-retirement well-being. In particular, the set of questions analysed in this paper are from the Continuing Person Questionnaire which asks:

Would you say the following are better or worse since you retired:

- i) Your standard of living?*
- ii) Your financial security?*
- iii) your overall happiness?*

(Showcard: 1=much worse, 2=worse, 3=same, 4=better, 5=much better.)

To restrict attention to the purely ordinal information contained in this series of questions, the responses are grouped into the three possibilities of (*worse, same, better*). In doing so, we do not distinguish between degrees of deterioration (much worse, worse) or improvement (better, much better), thereby avoid imposing interpersonal cardinality on the magnitude of changes in the well-being.⁵

It is useful to consider the concept of well-being underlying each of these SWB questions. The standard of living is related to material well-being and is likely to be strongly influenced by economic factors, such as consumption activities. Financial security is more narrowly focused on a financial domain, relating directly to access to liquid or fungible resources. Security of the finances refers to the perception of confidence, certainty or surety of the access to resources. Financial security may be seen as one input, or one dimension, of an individual's standard of living. Further, the third concept of SWB considered - overall happiness - is a much broader, global conception of well-being. The domain of happiness aggregates across material living standards and interpersonal and social relations, and has been interpreted by some researchers equivalent to utility. As part of the sensitivity analysis, we examine how closely changes in the subjective levels of well-being captured by these measures correspond to observed changes in the more traditional economic measures of welfare, such as basic expenditures and disposable income, for the subset of individuals who retire during the observation period covered by the HILDA Survey.

An important feature of these three SWB questions is that they are explicitly asked as *relative* to pre-retirement levels of well-being. This framing of the questions is important as it removes individual heterogeneity in the scale used in assessing own well-being. In essence, this framing of the questions differences out individual-specific differences in the cardinal scale used to assess own subjective well-being. This form of the questions elicits ordinal information on the *direction of changes* in SWB with retirement which is comparable across individuals.

A strength of the HILDA Survey data is the rich set of individual and family characteristics of respondents that is recorded. The explanatory variables used in the analysis include the respondent's age, gender, partnership or social marital status, educational attainment, housing tenure and location. In addition, years spent in retirement is controlled for, which we also use to assess the possibility for adaptation bias in reports of relative SWB. However, we note adaptation or habituation is less likely to be an issue with the relative SWB measures used in this study, as opposed to the more commonly used absolute measures of SWB such as life satisfaction which do not make reference to an anchor point.

⁵We explored sensitivity of the results to this decision, and find little information is lost (which is not surprising given the low incidence of the extreme categories).

Additional explanatory used in the analysis include the reason for retirement, an indicator of whether retirement was voluntary or forced, indicators of the degree to which expectations of income in retirement were met (which are interpreted as the realisation of an expectations error for future retirement income). We also control for (self-reported) change in retirees' health since retiring, with the categories ranging from health being perceived as "worse", "better" or "the same" since retiring. The intertemporal changes measured by these variables aligns with the pre- and post-retirement comparison explicit in the relative SWB measures analysed.

Descriptive statistics for the sample are presented in table 1. The average age of respondents is almost 70 years, slightly less than half of the respondents are female and over 70 percent are partnered. Over 85 percent of the respondents are home owners, reflecting the high incidence of home ownership in Australia generally, which is also more prevalent over older ages.

Respondents to the retirement module had been retired for 7.4 years on average, which given an average of 70 years, implies an average age at retirement of 59.5 years. The more prevalent reasons for retirement are factors related to own health (25.5%), work stress (12.7%) and job loss (12.4%) along with being financially able (16.1%) and wanting to spend more leisure time (14.7%). These reasons for retirement reflect varying degrees to which respondents were able to choose to exit the labour force (presumably according to a longer-term plan) or were constrained by (possibly unanticipated) events such as an adverse health shock or job loss. To reflect whether respondents felt they had discretion in timing their retirement, individuals were asked whether retirement was voluntary or forced, with almost two-thirds indicating that retirement was voluntary.⁶

A large majority of retirees report that their well-being in retirement is the same or better than that experienced prior to retirement. Specifically when comparing their current standard of living to that prior to retirement, 19% indicate it is now worse, 56% state it is the same and 25% indicate is it better. In regards to the more narrowly defined concept of financial security, a significant, and larger, fraction of retirees feel this is worse relative to pre-retirement (27%), half feel it is the same, while a smaller fraction report financial security to have improved (23%). Turning to the broadest measure of subject wellbeing considered - overall happiness - the sample proportions more strongly highlight that retirement is not associated with a deterioration in well-being. Over 60% of retirees report that their overall happiness is better in retirement, one-third indicate overall happiness to be the same, and 7% indicate that overall happiness has declined with retirement. The sample

⁶Approximately 11 percent of respondents indicated retirement was partly voluntary / partly forced. In all the models estimated and presented below, this groups was not significantly different from the fully voluntary set of respondents.

averages indicate that although some household may experience a decline in their standard of living and financial security, their overall happiness does not decline (and even improves) with retirement. This is consistent with factors such as the increase in leisure time, home production and family and social networking activities, contributing to stable or improving sense of wellbeing with retirement. The descriptive statistics suggest that for a very large majority of Australians, retirement is not associated with a marked deterioration in their overall level of well-being, which suggests the large majority of Australian retirees effectively smoothed their well-being across this important labour market transitions Consistent with success in smoothing their welfare, the raw data suggests that the large majority of retirees saved adequately for their retirement..

Table 2 presents a breakdown of the sample according to the responses to the relative well-being questions. The cross-tabulations provide a guide to the important correlates of the reported changes in well-being with retirement. The first three columns report the sample proportion according to the change in standard of living. Comparing across the columns, the set of respondents who experience a worse standard of living, compared to those who experience no change or an improvement, tend to be younger and have been retired longer (and hence retired at a younger age), marginally more likely to be female and substantially more likely to be single (rather than partnered), and not a home-owner. There is a not a strong difference across the levels of educational attainment, although those who report a worsening of their standard of living with retirement are more likely to not have completed high school to year 12, and have a lower incidence of completing a degree or higher qualification. Further, this group of retirees are more likely to have retired due to reasons related to their own health or job loss, rather than due to their financial ability or wanting to spend more leisure time. Consistent with these reasons, the group experiencing a worsening of their standard of living strongly indicate (69%) that retirement was forced, compared to those who report no change (44%) or an improvement (32%) in the standard of living.

Comparing across the columns of Table 2 for the relative financial security and overall happiness, outcomes generally reflect the patterns outlined for the relative standard of living. The small, though significant, minority who report a worsening of their well-being with retirement tend to be younger, who retired earlier in life, are single and do not own their own home, have lower education and were forced to retired due largely to their poor health or job loss. This set of retirees indicate, ex-post, that they were not able to achieve success in smoothing their well-being over the transition to retirement. Even for this group, this possible failure to successfully smooth their well-being over retirement may reflect the arrival of a large, unanticipated shock - such as a major health event - which precipitated labour force exit, rather than an ex ante failure to plan ahead.

The next step of the analysis is to use multivariate methods to control for multiple factors simultaneously in determining changes in SWB. This is necessary for disentangling the influence of alternative factors potentially related to the relative SWB outcomes.

5 METHODS

5.1 Ordered Response Model

The empirical analysis is based on the well-known ordered probit estimator. Let the latent change in well-being following retirement, ΔSWB_i^* , be a function of individual determinants \mathbf{x}_i' and an idiosyncratic error term e_i :

$$\Delta SWB_i^* = \mathbf{x}_i' \beta + e_i \quad (4)$$

where β are parameters to be estimated. Although the actual ΔSWB_i^* is not observed, individuals report ΔSWB_i which indicates that ΔSWB_i^* falls into one of 3 rank ordered categories $\Delta SWB_i^* \in \{worse \prec same \prec better\}$ or, without loss generality, $\Delta SWB_i \in \{-1, 0, 1\}$. Hence

$$\Delta SWB_i = \begin{cases} -1 & \text{if } \Delta SWB_i^* \leq \mu_1 \\ 0 & \text{if } \mu_1 < \Delta SWB_i^* \leq \mu_2 \\ 1 & \text{if } \mu_2 < \Delta SWB_i^* \end{cases} \quad (5)$$

where $\{\mu_1, \mu_2\}$ partition the ΔSWB^* scale into three segments. Assuming the distribution of the idiosyncratic error term e_i is standard normal:

$$\begin{aligned} \Pr(\Delta SWB_i = -1) &= \Pr(\Delta SWB_i^* \leq \mu_1) = \Phi(\mu_1 - \mathbf{x}_i' \beta) \\ \Pr(\Delta SWB_i = 0) &= \Pr(\mu_1 < \Delta SWB_i^* \leq \mu_2) = \Phi(\mu_2 - \mathbf{x}_i' \beta) - \Phi(\mu_1 - \mathbf{x}_i' \beta) \\ \Pr(\Delta SWB_i = 1) &= \Pr(\Delta SWB_i^* > \mu_2) = 1 - \Phi(\mu_2 - \mathbf{x}_i' \beta) \end{aligned} \quad (6)$$

where Φ is the standard normal CDF. The parameters of the model $\{\beta, \mu_1, \mu_2\}$ are estimated by standard maximum likelihood methods. A property of the model is that the sign of β_j reveals whether the latent change in subjective wellbeing is increasing with the covariate x_j ($\beta_j > 0$), implying a positive change in the probability that subjective well-being increased (and lowering the probability the change was for the worse). As the magnitude of the coefficient is not directly interpretable, in order to gauge the economic significance of the magnitude of the covariate effect, the marginal effect of a change in \mathbf{x}_i on the probability of each potential outcome is presented.

The analysis considers three measures of relative subjective well-being: the standard of living, financial security and overall happiness. The three outcomes form a tri-variate ordered probit system with latent error $\mathbf{e} \sim \mathbf{N}(0, \Sigma)$. The system is estimated using a bivariate ordered probit estimator applied in two-steps. This LIML estimator recovers all

the parameters of the system, including the full correlation matrix for the latent error terms, $\Sigma = \begin{bmatrix} 1 & & \\ \sigma_{21} & 1 & \\ \sigma_{31} & \sigma_{32} & 1 \end{bmatrix}$. The correlation terms reveal the strength of the linear relationship among the latent factors influencing the different measures of well-being, and can be used to test whether the outcomes are orthogonal.

The HILDA Survey is based on a household sample frame, the 1344 retired respondents to the module are drawn from 1074 families (hence 270 families contribute two individual-level observations). The responses from individuals within families are likely to be correlated, and the clustering of observations at the level of household is taken into account in the estimation and inference procedures.

6 EMPIRICAL RESULTS

6.1 Reliability and Comparability of the Relative Subjective Well-being Measures

The reliability and time consistency of SWB measures is an important issue for understanding observed patterns (Pudney 2011). Before examining the determinants of relative SWB of retiree, we use the panel structure of the HILDA Survey to assess the reliability of the relative SWB measures with changes in contemporaneous reports of SWB over the retirement transition. Specifically, we perform two tests with the relative SWB measures used in the paper. First, we test the reliability of the relative SWB measures by considering the subset of individuals who were retired in both waves in which the relative questions were asked, waves 3 and 7. For this subsample, we compared the change in reported relative SWB with changes in individual's reponse to the contemporaneous SWB questions on financial satisfaction and life satisfaction, as well as income, between the two waves. These results are presented in Table 3 (a). From the results, we can see that the change in both, the relative standard of living and relative financial security between wave 3 and wave 7 is significantly positively correlated with changes in the contemporaneously reported financial satisfaction. The change in relative overall happiness from wave 3 to wave 7 is correlated with changes in the contemporaneously reported financial satisfaction and especially life satisfaction. Hence there is time consistency in the relative SWB responses - which also indicates that individuals interpret the question on standard of living and financial security as referring to the material aspect of their wellbeing. Further, the question on overall happiness is being interpreted as a broader measure of wellbeing which encompasses both financial and life satisfaction.

For an additional test, we considered the subsample of individuals who retired during the observation period of the HILDA Survey. Specifically, we took the subsample of individuals

working in wave 3 but retired in wave 7 (thereby answering the relative SWB questions) to determine whether the reported relative SWB measures aligned with individual’s contemporaneous reports of SWB pre- and post-retirement. For this subsample we take the difference between observed SWB 2 years prior to retirement and the year post retirement and compare this difference (as well as the change in current income) to the reported changes in relative SWB. This test allows us to ascertain whether using relative SWB measures in a cross-section is equivalent to using the longitudinal information on SWB. From Table 3(b), we can see that changes in contemporaneous reports of life satisfaction and financial satisfaction are significantly correlated with the stated change in the standard of living. The reported change in financial security is correlated with contemporaneous changes in financial satisfaction, while the reported change in overall happiness is correlated with contemporaneous changes in life satisfaction. Income changes are uncorrelated with the various relative SWB responses. Thus, the retrospective SWB measures are longitudinally consistent with the changes across the retirement transition for the subsample we observe retiring, supporting the reliability of the relative SWB measures.

6.2 Standard of Living

Table 4 reports the results of the ordered probit model for retirees’ standard of living now relative to that prior to retirement. The model estimates in column (1) control for basic demographic characteristics. The age profile estimates indicate that retirees in the youngest age group, 45-54 years of age, tend to experience a decline in the standard of living with retirement, there is no significant difference for retirees aged 55-74 years, and while older retirees are more likely to report an improvement. Individuals who have been retired for 5 years or more are not significantly more (or less) likely to report a change in their standard of living with retirement.⁷ The insignificance of the years retired variable suggests that ‘habituation’ - or adaptation to the current state the longer has spent in the state (which implies a positive coefficient point estimate) - is unlikely to be a major influence on the results. Given the cross-sectional variation in these variables, it is not possible to determine whether the pattern by age primarily reflects birth cohort differences or age-at-retirement effects.

Additional estimates from model (1) indicate that partnered retirees are significantly more likely to report an improvement in their standard of living with retirement, which is consistent with complementarity in leisure time and home production activities. Residents outside the major cities - in rural areas - are also significantly more likely to report an improvement in their standard of living with retirement. This may reflect factors such

⁷A number of alternative specifications of the years retired effect - including a polynomial in years retired - were also statistically insignificant.

as differential changes in cost of living between urban and rural areas, differences in the amenities available for leisure time activities or systematic differences in social networks by location. There is no significant pattern of differences in relative standard of living across educational categories. Home ownership is associated with a significantly higher probability of a positive change in relative standard of living, with a magnitude comparable to that of being partnered, which may reflect a wealth effect and the availability of resources to smooth well-being across the retirement transition.

In model (2) a set of categorical variables indicating the detailed reasons for retirement were added to the specification. As a group, these variables are highly jointly significant. The omitted category is “retired because financially able” - and represents the comparison group for the impact of the alternative reasons for retirement. A number of important effects are apparent. First, a number of reasons for retirement are not statistically different from ‘financial ability.’ These reasons include work stress, the health of other family members, partner retired and wanting to spend more leisure time. These reasons are found to be equivalent to having the financial ability to retire, which implies that the exercise of these choices to retire are premised on having the financial capacity to do so. Second, both own health and job loss reasons are associated with significant and large reductions in the probability of positive change in the standard of living with retirement. Both of these factors are consistent with a substantial contraction in the opportunity set of individuals. To the extent that the events associated with job loss and a major decline in own health are unanticipated, these are consistent with a significant reduction in expected lifetime wealth in terms of the lifecycle model. Retiring due to pension eligibility (access to public income support) and partner’s health are also associated with a lower probability of a positive change (and higher probability of a worsening) in relative standard of living - though of a smaller magnitude than the effects of own health or job loss reasons.

The pattern of the effects of different reasons for retirement on changes in relative standard of living are consistent with varying degrees to which retirement occurred at the individual’s discretion. At one end of the spectrum is having the financial means to exercise that discretion, to the opposite end of the spectrum where retirement was effectively imposed due to a health-related incapacity or an unexpected contraction in job opportunities. That is, cutting across the different reasons for retirement is the degree to which labour market exit was ‘voluntary’ or whether it was involuntary or ‘forced’ due to external circumstances. In model (3) the binary variable indicating whether retirement was forced was added to the specification. As shown in Table 4, the coefficient is highly statistically significant. Including this variable appreciably reduced the magnitudes of the coefficients on the separate reasons for retirement. The proportional decline in the magnitude of the coefficient estimates was greater for the own health and job loss reasons indicators, although these

coefficients remained statistically significant (along with reasons due to pension eligibility and partner's health). Inclusion of the forced retirement indicator also resulted in the set of age indicators no longer being statistically significant. From this, it can be concluded that the age pattern found in model (1) reflected differences in the incidence of forced retirement by age - with those retiring at the youngest ages more likely to have been forced to retire, rather than retiring at their own discretion and with the financial capacity to do so.

Model (4) represents the most comprehensive model specification. This model included additional controls for whether expectations regarding income in retirement were realised, and for changes in individual's own health pre- and post-retirement. The HILDA retirement module included questions on whether retiree's income is more or less than the individual had expected for retirement. This information is a direct indicator of whether the individual's expectations were realised - and if, not, the direction and relative magnitude of the 'income shock' associated with retirement. A separate, though potentially related, factor is the change in the individual's own health before and after retirement. This is likely to be related to being forced to retire due to health related reasons. As evident from Table 4, these two sets of explanatory variables are both highly statistically significant. Including the indicators of income expectations errors and own health shocks reduced the magnitude of the coefficient estimates for the health reasons for retirement (which are no longer statistically significant). Indeed, the only reason for retirement that remains statistically significant is job loss - which represents a shock over and above that captured by the controls for the income expectation error and forced retirement. Interestingly, inclusion of these two sets of controls led to the reduction in the magnitude of the coefficient on the home ownership variable - which is no longer statistically significant; the home ownership variable is essentially a proxy for household wealth and this pattern of results suggests that home ownership may represent a form of self-insurance (or is a proxy thereof) for unanticipated wealth shocks at retirement.

The coefficient estimates from the ordered probit model are not directly interpretable. To better gauge the economic magnitude of the effect of covariates on the smoothing of standard of living outcomes with retirement, the marginal effects calculated from model (4) are presented in Table 4B. The important patterns include the magnitude of the effect of retiring due to loss job, and being forced to retire (together, being forced to retire due to job loss is associated with a 15 percentage point reduction in the likelihood of reporting a better standard of living). Further, there is a large and significant difference across the income expectations error categories: retirees who report income is much less than expected in retirement compared to those who report it is much more, are, other things equal, 38 percentage points more likely to report a decline, and 47 percentage points less likely to report an improvement, in their standard of living with retirement. The magnitude of

the marginal effect of changes in own health since prior to retiring is also economically significant.

6.3 Financial Security

The next set of estimation results are for changes in financial security since retiring. As discussed above, financial security is a more narrowly defined concept of well-being, as it relates specifically to the domain of finances and may be considered as an input for achieving a desired standard of living, and the notion of risk or assurance in that domain. Table 5 presents the ordered probit model estimates. Results from two model specifications are presented, which correspond to the most parsimonious and comprehensive specifications considered for relative standard of living. Model (1), with main demographics included, indicates improved financial security following retirement is associated with being partnered and being a home-owner. Having a partner is associated with greater family earnings capacity, and greater lifetime wealth, while home ownership is also proxy for family wealth security. Comparing across age groups, retirees who are particularly young (45-54 years of age) are less likely to report an improvement in financial security with retirement, while retirees aged 75-79 years are more likely to report an improvement. The negative relationship between the change in financial security and age for the younger retirees may be a result of the fact that those who retire at a younger age are more financially fragile and face a more uncertain future than individuals who retire at older ages. The coefficient on having been retired for five or more years is also insignificant for relative financial security, suggesting adaptation bias is unlikely to be prevalent with this relative measure of well-being.

The second set of model estimates, and associated marginal effects, are presented in Table 5. In addition to the socioeconomic and demographic variables, this model includes controls for the reasons for retirement, whether retirement was forced (or voluntary, whether there was an error in expectations concerning income in retirement, and for changes in own health since retirement. Interestingly, the magnitude and significance of both partnership status and homeowner status found in model (1) are substantially reduced once these controls are added to the model. There is substantial variation across retirees in terms of their financial security relative to pre-retirement according to the reason for retirement. Relative to retiring because of financial ability, those who retired because of job loss are much more likely to report a worsening of their financial security. Retiring because of own health, pension eligibility or job stress are also with a greater probability of worsening of financial security (and lower probability of improved financial security) with retirement, though not to the same magnitude as the effect of job loss. Forced retirement is also associated with a deterioration in financial security following retirement. The inclusion of this variable did

not fully mitigate the effects of the differing reasons for retirement, as found for the relative standard of living outcome.

Not surprisingly, the controls for errors in income expectations for retirement and changes in own health were highly economically significant in explaining relative financial security. The impact of these factors on financial security is more pronounced than their effects on standard of living (in terms of the predicted variation across the three states of the outcome variables). This pattern of results seems reasonable and can be readily rationalised in terms of the lifecycle model of intertemporal choice. On average, individuals are forward looking and make plans to smooth well-being through time and into retirement. The majority of households are successful in maintaining their standard of living into retirement. However, individuals face uncertainty and, when bad health and job shocks are realised forced retirement is more likely and realised income in retirement is less than that previously expected. These wealth shocks translate into reduced financial security for some in retirement, and for a subset without effective insurance, a reduction in their material well-being in retirement. In the following section, how these outcomes in turn translate into overall happiness is assessed.

6.4 Overall Happiness

Of the three outcome measures examined, overall happiness is the broadest for assessing welfare smoothing and savings adequacy. This concept of subjective well-being incorporates economic or material well-being, as well as interpersonal, community and social domains. It is useful to assess how successful retirees are at smoothing overall happiness across pre- and post-retirement stages of the lifecycle, and the impact of the economic factors on that success. The model estimates for relative overall happiness in retirement are presented in Table 6. In model (1) there is not a strong pattern by age, apart from the negative effect of being in the youngest age group of retirees.

Estimates and marginal effects for the comprehensive model specification are presented in the remaining panels of Table 6. With the full set of controls, there is no significant variation across the age groupings of retirees. However, other things equal, overall happiness is more likely to be reported as having improved the longer individuals have been retired. This effect may reflect a true increase in overall happiness as individuals have greater experience being retired or this may be a reflection of adaptation bias. These two hypotheses are observationally equivalent, and cannot be distinguished, with the cross-sectional variation used in this estimation.

In terms of the reasons for retirement, for relative happiness the health factors - both own health and partners health - are more important than that found for the other SWB outcomes considered. Job loss continues to have a negative effects on the likelihood of suc-

cessfully smoothing well-being over the retirement transition, though it is not as pronounced as found for the other, economic outcomes. Likewise, being forced to retire is associated with a significantly lower probability of reporting greater happiness in retirement relative to pre-retirement, though the magnitude of this effect is more muted compared to its effect on the relative standard of living. Similarly, the indicators of the retirement income expectations error remain significant and important in explaining the smoothness of overall happiness across retirement. However the stronger factor in terms of explaining variation in individual's effectiveness in maintaining, or improving, happiness into retirement is changes in own health over the same period. For example, holding the other observed factors constant, an individual who reported their health is now worse compared to pre-retirement, is 49 percentage points less likely to report an improvement (and 14 percentage points more likely to report a decline) in overall happiness with retirement. Clearly, the health-related factors are more strongly related to the broader concept of overall well-being than the concepts related to more narrowly defined economic and financial domains.

6.5 Error covariance structure

A final component of the estimation is the correlation structure among the latent factors determining relative standard of living, financial security and overall happiness. Estimating the tri-variate ordered probit model as a system, using the comprehensive specification for each factors, gave the estimated correlations presented in Table 7. Several important results are apparent. First, the latent factors are clearly related. The null hypothesis that the three domains of subjective well-being are independent (condition on the full set of covariates) is strongly rejected at conventional levels of statistical significance. Second, financial security is strongly related to an individuals's standard of living but only weakly related to overall happiness. This makes intuitive sense in that financial security is a more narrowly defined concept, representing one input into an individual's material standard of living. Third, an individual's standard of living is a strong influence on a their overall happiness; however, there are clearly other factors beyond this concept of material well-being which determine overall happiness for retirees.

7 CONCLUSION

We have used three different measures of subjective well-being to analyse how the welfare of Australians change with retirement. The three measures provide different, but complementary, information on well-being - while the relative standard of living may provide the closest measure of the material resources available to retirees, compared to pre-retirement levels, while relative financial security is an indicator of whether retirees perceive they have

the resources to continue funding a steady stream of consumption into the future. Overall happiness is a measure that encompasses the first two measures, but is also includes other factors that contribute to individuals' welfare that are not related to their financial position, such as family and other social relationships, community belonging, and health.

Our results accord well with these differences in domain of the subjective well-being measures. For example, while around 19 percent of retirees feel that their standard of living is worse since retiring, even though a larger fraction (27 percent) feel that their financial security is worse since retiring, consistent with the distinction between current and expected future access to resources. On the other hand, over 60 percent of retirees feel that their overall happiness is higher in retirement, again emphasising that many other factors which impact on one's happiness, besides finances, do improve with retirement.

The ordered probit results also point to the nuances in the three SWB measures. The most important factors in explaining a deterioration in living standards in retirement are retiring due to job loss and being forced to retire, which together lead to a 15 percentage point reduction in the likelihood of a better standard of living. Income expectation errors and own health shocks also significantly affect the relative standard of living, in the expected direction, and including these two decrease the effect of the home ownership variable. The factors that lead to a decrease in financial security are similar to those for living standards; however, income expectation errors and health shocks have a stronger effect on relative financial security than on relative living standards. Finally, while job loss and being forced to retire also affect relative happiness in retirement, the magnitude of the effects are much lower than for financial security and living standards. On the other hand, own health and partner's health have a stronger effect on this outcome - consistent with the greater breadth of this outcome measure. While no general ageing effects are found for the living standards and financial security measures, overall happiness is more likely to be reported as having improved the longer individuals have been retired.

Overall, most individuals appear to successfully smooth their standard of living, financial security and overall happiness across the transition into retirement. Nevertheless there clearly does exist a small but significant minority who do not succeed in smoothing their well-being. These individuals tend to be those who are not partnered or home owners, those who were forced to retire at younger ages due to own health reasons or job loss and whose income in retirement is much less than they had anticipated. This group experiences major shocks precipitating retirement and lack the insurance opportunities to overcome these shocks. In terms of policy, it appears that targeting assistance to individuals who are less successful in smoothing their well-being across the retirement stage of the life-cycle would be more effective than general policy measures affecting all households.

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Table 1. Summary Statistics - Personal Characteristics 2007

	Retirees
Age (years)	66.885
Female	0.488
Partnered	0.717
Family Size	1.952
Home Owner	0.851
Income Less than Expected	0.350
<i>Education</i>	
HSLessYr12	0.467
HSYr12	0.068
Certificate	0.234
Diploma	0.092
Bachelor	0.138
missing	0.002
Years Since Retired	7.404
<i>Main Reason for Retirement</i>	
Age Pension eligibility	0.039
Financially able	0.161
Job Loss	0.124
Work Stress	0.127
Own Health	0.255
Partner Health	0.037
Other Family Member Health	0.014
Partner Retire	0.047
Spend Leisure Time	0.147
Other	0.048
<i>Forced / voluntary</i>	
voluntary	0.544
forced	0.342
part forced / vol	0.110
<i>SWB - relative to pre-retirement</i>	
<i>standard of living</i>	
worse	0.187
same	0.563
better	0.250
<i>financial security</i>	
worse	0.272
same	0.502
better	0.227
<i>overall happiness</i>	
worse	0.073
same	0.326
better	0.601
Net Income	822
Grocery Expenditure	146

Financial Hardship

Any Financial Hardship 0.094
Hardship Index (0,6) 0.158

Life Satisfaction (0,10) 8.150
Financial Satisfaction (0, 10) 7.032

State of residence

NSW 0.311
VIC 0.244
QLD 0.188
SA 0.094
WA 0.115
TAS 0.031
NT 0.001
ACT 0.016

Location

Urban 0.541
Regional 0.445
Remote 0.014

Observations 1344

Table 2. Summary Statistics by Relative Subjective Wellbeing

	Relative Standard of Living			Relative Financial Security			Relative Happiness		
	Worse	Same	Better	Worse	Same	Better	Worse	Same	Better
Age (years)	65.20	67.37	67.06	65.42	67.44	67.40	64.67	67.66	66.73
Female	0.522	0.474	0.503	0.504	0.482	0.492	0.480	0.493	0.490
Partnered	0.558	0.713	0.720	0.608	0.718	0.708	0.459	0.655	0.730
Family Size	1.837	1.979	1.976	1.942	1.976	1.908	1.918	1.920	1.973
Home Owner	0.741	0.877	0.875	0.767	0.884	0.879	0.704	0.838	0.876
Income Less than Expected	0.725	0.280	0.229	0.649	0.276	0.157	0.582	0.370	0.312
<i>Education</i>									
HSLessYr12	0.494	0.461	0.461	0.485	0.466	0.449	0.510	0.493	0.448
HSYr12	0.080	0.062	0.071	0.074	0.064	0.069	0.061	0.073	0.066
Certificate	0.235	0.231	0.241	0.244	0.227	0.239	0.235	0.235	0.234
Diploma	0.076	0.107	0.068	0.082	0.104	0.075	0.061	0.082	0.100
Bachelor	0.116	0.139	0.152	0.115	0.139	0.161	0.133	0.116	0.150
missing	0.000	0.000	0.006	0.000	0.000	0.007	0.000	0.000	0.002
Years Since Retired	8.725	8.112	7.619	8.584	7.950	7.869	8.755	8.434	7.845
<i>Main Reason for Retirement</i>									
Age Pension eligibility	0.040	0.040	0.039	0.038	0.045	0.030	0.031	0.032	0.045
Financially able	0.056	0.180	0.199	0.044	0.185	0.249	0.020	0.142	0.189
Job Loss	0.171	0.139	0.057	0.186	0.108	0.085	0.184	0.135	0.111
Work Stress	0.084	0.122	0.173	0.090	0.142	0.138	0.020	0.103	0.153
Own Health	0.426	0.240	0.161	0.400	0.227	0.144	0.459	0.297	0.208
Partner Health	0.044	0.040	0.027	0.044	0.036	0.033	0.041	0.046	0.032
Other Family Member Health	0.012	0.016	0.012	0.016	0.012	0.016	0.020	0.014	0.014
Partner Retire	0.036	0.045	0.060	0.033	0.047	0.062	0.051	0.048	0.046
Spend Leisure Time	0.068	0.141	0.217	0.090	0.154	0.197	0.092	0.130	0.162
Other	0.064	0.038	0.057	0.058	0.043	0.046	0.082	0.055	0.040
<i>Forced / voluntary</i>									
voluntary	0.307	0.563	0.679	0.329	0.596	0.685	0.224	0.498	0.608
forced	0.618	0.309	0.211	0.553	0.288	0.210	0.622	0.368	0.295
part forced / vol	0.076	0.124	0.104	0.115	0.110	0.105	0.133	0.128	0.098
Net Income	568	858	928	602	881	954	614	783	868
Grocery Expenditure	127	149	150	137	148	149	136	143	148
observations	251	757	336	365	674	305	98	438	808

Table 3. Relative Subjective Wellbeing and Changes in Contemporaneous Reports of Wellbeing

(a) Change in Relative SWB 2003-2007 for Continuously Retired															
	Δ Rel Standard of living					Δ Rel Financial Security					Δ Rel Overall happiness				
	Coeff	(std err)	Marginal Effects			Coeff	(std err)	Marginal Effects			Coeff	(std err)	Marginal Effects		
			Worse	Same	Better			Worse	Same	Better			Worse	Same	Better
<i>Δ contemporaneous:</i>															
Income (\$10,000)	0.010	(0.036)	-0.003	-0.001	0.003	-0.024	(0.036)	0.006	0.003	-0.008	-0.028	(0.036)	0.009	0.000	-0.009
Life satisfaction	0.022	(0.034)	-0.005	-0.001	0.007	0.032	(0.034)	-0.008	-0.003	0.011	0.150	(0.034)	-0.047	-0.002	0.049
Financial satisfaction	0.098	(0.029)	-0.024	-0.005	0.029	0.132	(0.029)	-0.031	-0.014	0.045	0.070	(0.028)	-0.022	-0.001	0.023

Sample: Individuals Continuously Retired 2003-2007, n=536.

(b) Relative SWB07 and change in current SWB 2 yrs pre-retirement and post retirement															
	Rel Standard of living					Rel Financial Security					Rel Overall happiness				
	Coeff	(std err)	Marginal Effects			Coeff	(std err)	Marginal Effects			Coeff	(std err)	Marginal Effects		
			Worse	Same	Better			Worse	Same	Better			Worse	Same	Better
<i>Δ contemporaneous:</i>															
Income (/10,000)	-0.012	(0.027)	0.003	0.001	-0.004	-0.007	(0.026)	0.002	0.000	-0.002	0.014	(0.028)	-0.002	-0.003	0.005
Life satisfaction	0.085	(0.047)	-0.018	-0.008	0.026	0.041	(0.046)	-0.011	-0.002	0.013	0.120	(0.050)	-0.015	-0.027	0.042
Financial satisfaction	0.097	(0.035)	-0.020	-0.009	0.029	0.084	(0.034)	-0.022	-0.003	0.025	0.057	(0.037)	-0.007	-0.013	0.020

Sample: Individuals Working 2003 and Retired 2007, n=211.

Table 4. Relative Standard of Living in Retirement - Ordered Probit Estimation Results

	Coeff (Std.Err)	Coeff (Std.Err)	Coeff (Std.Err)	Coeff (Std.Err)
Age4554	-0.380 (0.178)	-0.263 (0.183)	-0.181 (0.184)	-0.038 (0.197)
Age5559	-0.130 (0.112)	-0.039 (0.113)	-0.013 (0.114)	0.027 (0.117)
Age6064	-0.061 (0.092)	-0.014 (0.092)	0.008 (0.093)	-0.007 (0.097)
Age7074	0.034 (0.095)	0.015 (0.097)	-0.010 (0.097)	-0.027 (0.097)
Age7579	0.206 (0.109)	0.202 (0.111)	0.155 (0.112)	0.266 (0.116)
Age80+	0.247 (0.148)	0.154 (0.158)	0.111 (0.158)	0.157 (0.161)
<i>Years Retired</i>				
Retired 5yr+	-0.086 (0.071)	-0.009 (0.072)	0.032 (0.073)	0.036 (0.076)
Female	0.066 (0.060)	-0.021 (0.065)	-0.048 (0.065)	-0.083 (0.069)
Partnered	0.241 (0.076)	0.186 (0.076)	0.175 (0.076)	0.151 (0.078)
Rurual	0.180 (0.067)	0.178 (0.068)	0.158 (0.068)	0.158 (0.068)
<i>Education</i>				
IncompHS	-0.052 (0.139)	-0.025 (0.140)	-0.022 (0.139)	0.013 (0.147)
Cert/Diploma	-0.040 (0.139)	-0.058 (0.140)	-0.051 (0.138)	-0.022 (0.146)
Degree	0.082 (0.156)	-0.007 (0.158)	-0.026 (0.157)	-0.113 (0.162)
Home Owner	0.266 (0.103)	0.189 (0.102)	0.188 (0.101)	0.119 (0.101)
<i>Reason Retired</i>				
Pension eligibility		-0.367 (0.177)	-0.355 (0.178)	-0.154 (0.172)
Job Loss		-0.662 (0.112)	-0.431 (0.122)	-0.294 (0.126)
Work Stress		-0.025 (0.114)	0.024 (0.116)	0.038 (0.123)
Own Health		-0.639 (0.102)	-0.420 (0.110)	-0.176 (0.120)
Partner Health		-0.477 (0.179)	-0.358 (0.183)	-0.141 (0.173)
Other Family Member Health		-0.177 (0.272)	-0.029 (0.267)	0.128 (0.287)
Partner Retire		-0.137 (0.170)	-0.071 (0.170)	0.046 (0.165)
Spend Leisure Time		0.079 (0.111)	0.090 (0.112)	0.170 (0.113)
Other		-0.329 (0.174)	-0.203 (0.168)	-0.013 (0.176)
Forced			-0.396 (0.084)	-0.272 (0.087)
<i>Income less / more than Expected in Retirement</i>				
Much Less				-0.947 (0.125)
Less				-0.206 (0.090)
More				0.511 (0.092)
Much More				0.811 (0.183)
<i>Own Health Since Retired</i>				
Worse				-0.129 (0.077)
Better				0.625 (0.096)
μ_1	-0.494 (0.182)	-0.909 (0.198)	-0.949 (0.199)	-0.923 (0.212)
μ_2	1.110 (0.184)	0.767 (0.198)	0.747 (0.198)	0.972 (0.209)
<i>LLF value</i>	-1296.00	-1252.23	-1240.46	-1121.73

Table 4 Continued. Relative Standard of Living in Retirement - Marginal Effects

	Coeff (Std.Err)	Marginal Effects		
		Worse	Same	Better
Age4554	-0.038 (0.197)	0.008	0.002	-0.010
Age5559	0.027 (0.117)	-0.006	-0.001	0.007
Age6064	-0.007 (0.097)	0.002	0.000	-0.002
Age7074	-0.027 (0.097)	0.006	0.001	-0.007
Age7579	0.266 (0.116)	-0.057	-0.014	0.071
Age80+	0.157 (0.161)	-0.034	-0.008	0.042
<i>Years Retired</i>				
Retired 5yr+	0.036 (0.076)	-0.008	-0.002	0.010
Female	-0.083 (0.069)	0.018	0.004	-0.022
Partnered	0.151 (0.078)	-0.033	-0.008	0.040
Rurual	0.158 (0.068)	-0.034	-0.008	0.042
<i>Education</i>				
IncompHS	0.013 (0.147)	-0.003	-0.001	0.004
Cert/Diploma	-0.022 (0.146)	0.005	0.001	-0.006
Degree	-0.113 (0.162)	0.024	0.006	-0.030
Home Owner	0.119 (0.101)	-0.026	-0.006	0.032
<i>Reason Retired</i>				
Pension eligibility	-0.154 (0.172)	0.033	0.008	-0.041
Job Loss	-0.294 (0.126)	0.064	0.015	-0.079
Work Stress	0.038 (0.123)	-0.008	-0.002	0.010
Own Health	-0.176 (0.120)	0.038	0.009	-0.047
Partner Health	-0.141 (0.173)	0.030	0.007	-0.038
Other Family Member Health	0.128 (0.287)	-0.028	-0.007	0.034
Partner Retire	0.046 (0.165)	-0.010	-0.002	0.012
Spend Leisure Time	0.170 (0.113)	-0.037	-0.009	0.045
Other	-0.013 (0.176)	0.003	0.001	-0.004
Forced	-0.272 (0.087)	0.059	0.014	-0.073
<i>Income less / more than Expected in Retirement</i>				
Much Less	-0.947 (0.125)	0.205	0.049	-0.254
Less	-0.206 (0.090)	0.044	0.011	-0.055
More	0.511 (0.092)	-0.111	-0.026	0.137
Much More	0.811 (0.183)	-0.175	-0.042	0.217
<i>Own Health Since Retired</i>				
Worse	-0.129 (0.077)	0.028	0.007	-0.034
Better	0.625 (0.096)	-0.135	-0.032	0.167
μ_1	-0.923 (0.212)	Predicted Probability		
μ_2	0.972 (0.209)	0.188	0.561	0.251
<i>LLF value</i>	-1121.73			

Table 5. Relative Financial Security in Retirement - Ordered Probit Estimation Results

	Coeff (Std.Err)	Coeff (Std.Err)	Marginal Effects		
			Worse	Same	Better
Age4554	-0.566 (0.173)	-0.234 (0.1877)	0.062	-0.004	-0.058
Age5559	-0.125 (0.113)	0.018 (0.116)	-0.005	0.000	0.004
Age6064	-0.075 (0.094)	-0.046 (0.099)	0.012	-0.001	-0.012
Age7074	-0.010 (0.098)	-0.083 (0.100)	0.022	-0.001	-0.021
Age7579	0.197 (0.108)	0.270 (0.111)	-0.071	0.004	0.067
Age80+	0.210 (0.163)	0.098 (0.179)	-0.026	0.001	0.024
<i>Years Retired</i>					
Retired 5yr+	-0.050 (0.071)	0.089 (0.076)	-0.023	0.001	0.022
Female	0.054 (0.060)	-0.079 (0.066)	0.021	-0.001	-0.020
Partnered	0.163 (0.075)	0.063 (0.077)	-0.017	0.001	0.016
Rurual	0.022 (0.068)	-0.025 (0.068)	0.007	0.000	-0.006
<i>Education</i>					
IncompHS	-0.053 (0.135)	0.008 (0.144)	-0.002	0.000	0.002
Cert/Diploma	-0.047 (0.137)	-0.064 (0.146)	0.017	-0.001	-0.016
Degree	0.100 (0.153)	-0.106 (0.160)	0.028	-0.002	-0.026
Home Owner	0.306 (0.102)	0.117 (0.106)	-0.031	0.002	0.029
<i>Reason Retired</i>					
Pension eligibility		-0.453 (0.162)	0.119	-0.007	-0.113
Job Loss		-0.563 (0.131)	0.148	-0.008	-0.140
Work Stress		-0.321 (0.116)	0.085	-0.005	-0.080
Own Health		-0.440 (0.111)	0.116	-0.007	-0.109
Partner Health		-0.277 (0.195)	0.073	-0.004	-0.069
Other Family Member Health		-0.088 (0.344)	0.023	-0.001	-0.022
Partner Retire		-0.154 (0.161)	0.041	-0.002	-0.038
Spend Leisure Time		-0.176 (0.112)	0.046	-0.003	-0.044
Other		-0.386 (0.178)	0.102	-0.006	-0.096
Forced		-0.182 (0.085)	0.048	-0.003	-0.045
<i>Income less / more than Expected in Retirement</i>					
Much Less		-1.054 (0.124)	0.278	-0.016	-0.262
Less		-0.349 (0.088)	0.092	-0.005	-0.087
More		0.586 (0.097)	-0.155	0.009	0.146
Much More		1.079 (0.183)	-0.285	0.016	0.268
<i>Own Health Since Retired</i>					
Worse		-0.187 (0.075)	0.049	-0.003	-0.047
Better		0.425 (0.094)	-0.112	0.006	0.106
μ_1	-0.297 (0.183)	-1.036 (0.217)	Predicted Probability		
μ_2	1.089 (0.185)	0.634 (0.215)	0.273	0.500	0.228
LLF value	-1369.53	-1170.66			

Table 6. Relative Happiness in Retirement - Ordered Probit Estimation Results

	Coeff (Std.Err)	Coeff (Std.Err)	Marginal Effects		
			Worse	Same	Better
Age4554	-0.300 (0.179)	-0.072 (0.188)	0.009	0.015	-0.024
Age5559	-0.177 (0.122)	-0.030 (0.120)	0.004	0.006	-0.010
Age6064	-0.044 (0.098)	0.038 (0.103)	-0.005	-0.008	0.013
Age7074	0.038 (0.103)	0.052 (0.107)	-0.006	-0.011	0.017
Age7579	-0.123 (0.111)	-0.048 (0.123)	0.006	0.010	-0.016
Age80+	-0.184 (0.153)	-0.188 (0.165)	0.023	0.040	-0.063
<i>Years Retired</i>					
Retired 5yr+	0.044 (0.077)	0.149 (0.079)	-0.018	-0.032	0.050
Female	0.085 (0.068)	0.027 (0.075)	-0.003	-0.006	0.009
Partnered	0.336 (0.077)	0.306 (0.080)	-0.037	-0.065	0.102
Rural	0.136 (0.070)	0.150 (0.072)	-0.018	-0.032	0.050
<i>Education</i>					
IncompHS	-0.052 (0.139)	0.054 (0.133)	-0.007	-0.012	0.018
Cert/Diploma	0.039 (0.142)	0.100 (0.134)	-0.012	-0.021	0.033
Degree	0.129 (0.162)	0.052 (0.154)	-0.006	-0.011	0.017
Home Owner	0.224 (0.098)	0.118 (0.103)	-0.014	-0.025	0.039
<i>Reason Retired</i>					
Pension eligibility		-0.027 (0.209)	0.003	0.006	-0.009
Job Loss		-0.275 (0.142)	0.033	0.058	-0.092
Work Stress		0.050 (0.136)	-0.006	-0.011	0.017
Own Health		-0.330 (0.124)	0.040	0.070	-0.110
Partner Health		-0.390 (0.187)	0.047	0.083	-0.130
Other Family Member Health		-0.260 (0.303)	0.032	0.055	-0.087
Partner Retire		-0.346 (0.180)	0.042	0.074	-0.116
Spend Leisure Time		-0.124 (0.127)	0.015	0.026	-0.041
Other		-0.414 (0.176)	0.050	0.088	-0.138
Forced		-0.116 (0.090)	0.014	0.025	-0.039
<i>Income less / more than Expected in Retirement</i>					
Much Less		-0.197 (0.112)	0.024	0.042	-0.066
Less		0.085 (0.092)	-0.010	-0.018	0.028
More		0.337 (0.103)	-0.041	-0.072	0.113
Much More		0.491 (0.176)	-0.060	-0.104	0.164
<i>Own Health Since Retired</i>					
Worse		-0.314 (0.078)	0.038	0.067	-0.105
Better		0.853 (0.115)	-0.104	-0.181	0.285
μ_1	-0.993 (0.181)	-1.213 (0.198)	Predicted Probability		
μ_2	0.243 (0.177)	0.171 (0.196)	0.072	0.329	0.599
LLF value	-1133.06	-1031.09			

Table 7. Estimated Correlation Across Latent Factors

	Relative Standard of Living	Relative Financial Security
Relative Standard of Living	1 -	
Relative Financial Security	0.623 (0.024)	1 -
Relative Happiness	0.354 (0.036)	0.187 (0.038)

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