THE IMPACT OF THE COST OF LONG-TERM CARE ON THE SAVING OF THE ELDERLY

Anthony Webb

University of California, San Diego and International Longevity Center, New York

March 2001

ABSTRACT

One of the predictions of the life-cycle model of savings behavior is that the elderly should dis-save at a rate that increases with age. But there is little evidence that significant dis-saving takes place at any age. One explanation is that the elderly wish to retain assets to cover the cost of long-term care. I propose a model in which the elderly are informed about both their life expectancy and their likelihood of entering long-term care, and in which the utility of consumption in long-term care differs from that of consumption at home. I consider how the Medicaid rules relating to long-term care might influence the behavior of married couples and single persons whose wealth is above or below Medicaid eligibility limits.

I test the predictions on data from the 1993 and 1995 Asset and Health Dynamics among the Oldest Old (AHEAD) dataset, which has information on expectations. I make use of inter-state differences in Medicaid financial eligibility rules to investigate the effects of Medicaid on household saving. In accordance with the predictions of my model, I find no evidence that people who are eligible for Medicaid dis-save more rapidly if they expect to enter long-term care. On the contrary, married couples save more if they believe it is likely that they will enter long-term care. However, even those households that do not expect to enter long-term care fail to dis-save.

I find that an increase in the generosity of spousal protection rules leads to a decrease in household saving.

JEL Codes:

I would like to thank Robert Butler, Marjorie Flavin, Leora Friedberg and Roger Gordon for very helpful comments. I am grateful to Deb Bailey, Vince Crawford, Rose Lawson and Cathy Liebowitz for help in obtaining the AHEAD restricted data.

Department of Economics 0508, University of California-San Diego, 9500 Gilman Drive, La Jolla, CA 92037-0508, tonywebb@telocity.com International Longevity Center 60 E 86th Street, NY, NY 10028

INTRODUCTION

This paper examines the effects of the cost and likelihood of long-term care on the savings behavior of the elderly. The standard life-cycle model of savings behavior predicts that the elderly should dis-save at a rate that increases with age. Yet little dis-saving takes place (Mitchell, 1997). The absence of substantial dis-saving may reflect the need to retain wealth to meet the possible cost of long-term care. But, individuals who believe they are likely to require long-term care also generally believe that they have a short life expectancy. In the life cycle model individuals with a short life expectancy should dis-save more.

I propose an intertemporal optimization model incorporating individuals' beliefs regarding both life expectancy and the probability of entering long-term care. In the model, the utility of consumption in long-term care differs from that of consumption at home. I consider the Medicaid rules governing long-term care as they apply to annuitized and unannuitized wealth, and to single people and married couples. I then use my model to predict how eligibility for Medicaid, marital status and beliefs regarding the likelihood of requiring long-term care might affect savings.

I test my predictions using the Asset and Health Dynamics among the Oldest Old (AHEAD) dataset. This is a panel containing data on income, assets, asset accumulation and decumulation, health and expectations. I show that individuals hold informed beliefs regarding their life expectancy and likelihood of entering long-term care. Controlling for health and family variables that might be correlated with both savings and expectations, I then show that beliefs regarding the likelihood of entering long-term care affect saving behavior in the ways predicted by the model. I find some evidence that beliefs regarding life expectancy similarly affect saving.

I find no evidence that people expecting to enter long-term care decumulate in order to qualify for Medicaid. Across all asset classes, married couples save more if they expect to enter long-term care. The savings of single women are unaffected by their beliefs regarding the likelihood of entering long-term care. The difference between the behavior of single women and that of married couples does not appear to be the result of

the more generous Medicaid rules applying to married couples. Married couples expecting to enter long-term care save more irrespective of whether their assets would be protected by Medicaid. In any case, spousal protection rules only affect a minority of entrants to long-term care. The majority of admissions are of widows whose assets are unprotected. The difference in behavior may be due to the fact that single women, who are predominantly widows, have much fewer financial resources. It would be entirely consistent both with my results and with the predictions of the life-cycle model if women expecting to enter long-term care were to make additional savings only prior to their husband's death, when resources permitted.

My finding that the effect of long-term care on saving is unaffected by eligibility for Medicaid may be attributable to a strong preference for non-Medicaid facilities, to the need for couples to make adequate provision for a surviving spouse and to the likelihood that by the time that the date of entry into long-term care can be predicted with some certainty, poor health may restrict an individual's ability to consume.

Very few people in the AHEAD voluntarily annuitize, regardless of whether they expect to enter long-term care. The generally favorable treatment accorded by Medicaid to the annuitized wealth of married couples is apparently insufficient to outweigh the loss of liquidity and the particularly unfavorable terms that voluntary annuities offer to people with a short life expectancy. The unannuitized are more likely to enter long-term care than the annuitized. This may be attributable to the liquidity constraints faced by the annuitized.

Although the period covered by the AHEAD dataset is too short to allow a precise measurement of household saving, there is evidence that even those who are sure they will not enter long-term care appear to dis-save little in old age. On the contrary, those with high incomes continue to save, even when childless, and lacking an obvious bequest motive, as other researchers have found. Such individuals may be exhibiting a particularly strong precautionary motive.

The rest of the paper is organized as follows. In Section I, I describe the provision of long-term care in the United States. In section II, I formally show how beliefs regarding life expectancy and the likelihood of entering long-term care might affect the

saving behavior of different household types. In section III, I describe the data and present the evidence that individuals possess information regarding their life expectancy and probability of entering long-term care. I present the estimation results in Section IV. In section V I summarize my findings and estimate the effects on savings and welfare of some policy options.

1. THE PROVISION OF LONG-TERM CARE IN THE UNITED STATES

Long-term care differs from medical care in that it involves the long-term provision of non-medical care necessitated by a chronic illness or disability. Most long-term care is informal care provided by friends and family to individuals living in the community. Institutional care is provided by nursing homes, continuing care retirement communities (CCRCs), and board and care homes. Board and care homes provide fewer medical services than nursing homes. CCRCs are retirement communities where limited long-term care is provided for an additional charge.

In 1996 there were 1.56 million residents of nursing homes (Rhoades, Potter and Krauss, 1998). A person who reaches the age of 65 has a 43 percent chance of being admitted to a nursing home prior to death, and 24 percent will spend at least a year in a nursing home (Kemper and Murtaugh, 1991). For men, the probability of admittance is 33 percent, and for women, 52 percent, reflecting the fact that women typically outlive their husbands. The median age of first admission is 81 for men and 84 for women (Dick, Garber and MaCurdy, 1994).

Medicare only covers nursing home care immediately following an inpatient stay in a hospital, and then only for 100 days. Only six percent of the elderly have long-term care insurance (Norton and Newhouse, 1994). Most individuals rely upon private savings to pay for at least some part of their nursing home care. When assets have been spent down to specified Medicaid limits, Medicaid comes into payment. In 1996, Medicaid and other government programs, private insurance and private savings provided 62 percent 5 percent and 33 percent respectively of nursing home revenues (Levit et.al., 1997)

2. A LIFE CYCLE MODEL OF SAVING FOR LONG-TERM CARE

A. Introduction

In standard models of intertemporal optimization, individuals seeking to maximize expected utility subject to a budget constraint will choose a consumption time path satisfying the following Euler equation:

$$U'(C_t) = a_t E_t\{U'(C_{t+1})\}$$

where

$$a_t = B(1+r)(1-p_{t+1})$$

A second order Taylor approximation of the marginal utility of C_{t+1} around C_t produces the result that:

$$\frac{E_t(C_{t+1}) - C_t}{C} = g\left(1 - \frac{1}{\quad}\right) + \frac{\bar{y}}{2} s^2$$

where

γ = intertemporal elasticity of substitution

B = 1/(1+θ) where θ is the rate of time preference

π = probability of dying during year t

ψ = measure of precautionary inclinations (zero if utility is quadratic)

$$\frac{U'''(C_t)}{\quad}$$

σ = standard deviation of the expected change in consumption

$$E_t\left[\frac{C_{t+1} - C_t}{\quad}\right]$$

If the rate of time preference equals the rate of interest[1], if utility is quadratic, and if the marginal utility of consumption does not vary with age, then the expected annual decline in consumption will equal the annual mortality risk multiplied by the intertemporal elasticity of substitution. Annual male mortality, which is under 2% at age 65, attains 5% at 76, 10% at 84 and 20% at 93. Thus, if the intertemporal elasticity of substitution is small, then measurable declines in consumption may only occur at quite advanced ages. To illustrate, if = 0.2, if the rate of interest equals the rate of time preference, and utility is quadratic, consumption would decline by 1% a year at age 76 and 2% a year at age 84. The relationship between consumption and savings will depend on such factors as the extent of the individual's bequest motive, and the proportion of the individual's wealth that is held in annuitized form. To illustrate, an individual who held most of his wealth in the form of Social Security, an annuity whose value is fixed in real terms, might, even if his preference was for only a modest annual decline in consumption, wish to consume all his unannuitized financial wealth quite early in retirement.

Consumption may actually increase if individuals earn unexpectedly large returns on financial assets. Consumption may also rise with age as a result of precautionary saving. Although it is convenient to assume quadratic utility, the extreme unpleasantness of penury in old age might suggest otherwise. Extending the basic model, older individuals might attach great importance to maintaining their habitual level of consumption, or to having enough to pay for private care, but care little about additional consumption.

For most individuals, annuitized wealth, including Social Security, exceeds unannuitized non-housing wealth. Nevertheless, if employer pensions are fixed in nominal terms, or do not provide survivor benefits, then individuals may wish to accumulate financial assets in retirement to cover expected future declines in real annuitized income.

[1] Some might argue that impatience is solely the result of π and that B = 1, in which case consumption would rise unless $\pi > r$.

B. A model of consumption in retirement

The individual believes that at the end of each year t he faces some probability of death, π_t. If he survives, he faces some probability δ_t of entering long-term care, and (1-δ_t) of continuing to live at home. The probability of entering long-term care is exogenous, and in particular, it does not depend on income, wealth, or state of residence[2]. Once in long-term care, he will remain there for the rest of his life. The value of π_t is correlated with δ_t so that individuals who attach a high probability to entering long-term care also believe they face a high mortality risk.

If the individual lives at home, his utility of consumption will be $U(C_{t,h})$, and if he is in long-term care, his utility of consumption will be $\tilde{U}(C_{t,ltc} N_t)$ reflecting the restricted opportunities for normal consumption and N, the new expenditure on long-term care. In addition, individuals care about the amount of the inheritance they leave to their heirs, denoted V(B), B being the individual's bequest. For single people, it is easy to show that solving the intertemporal optimization problem leads to the following Euler equation:

$$U'(C_t) = E_t[(1-p)d\tfrac{1}{1+q}(1+r)\tilde{U}'(C_{t+1,ltc}, N_{t+1}) + (1-p)(1-d)\tfrac{1}{1+J}(1+r)U'(C_{t+1,h}) + p\tfrac{1}{1+q}(1+r)V(B)]$$

This expression reflects consumption choices in t+1 in case the individual enters long-term care, remains out of long-term care or dies. Each year the individual will receive new information about his state of health, and therefore about his life expectancy and his probability of entering long-term care.

Married couples each face some probability of death, $\pi_{t,m}$ and $\pi_{t,f}$ and some exogenous probability of entering long-term care, δ_m and δ_f. The household's utility depends on whether either spouse is living at home, in long-term care or deceased, a total

[2] This assumption makes the model more tractable, but might be defended on the grounds that entry into long-term care appears to be precipitated by problems in performing activities of daily living (ADLs).

of eight possible outcomes. The probability of each outcome is denoted by ¡. In addition, the couple cares about the bequest that will be paid following the death of both spouses. The Euler equation becomes:

$$U^{'}(C_t) = E_t\left[\sum r_i(1+r)\tfrac{1}{1+q}U_i^{'}(C_{i,t+1}) + (p_m * p_f)(1+r)\tfrac{1}{1+q}V(B)\right]$$

The rate of return and rate of time preference have the usual effects on consumption. In the absence of a bequest motive, a high mortality risk, π, will result in current consumption being favored over future consumption. If a surviving spouse needs to spend less to attain a given marginal utility, this will also result in current consumption being favored over future consumption. If entry into long-term care results in the household needing to spend more to attain a given level of marginal utility, this will result in those households that expect to enter long-term care favoring future consumption. But such households may also believe that they face a high mortality risk, which will have the opposite effect. A stronger bequest motive results in increased saving. The analysis is made more complex by Medicaid rules, which affect married and single people differently and which I discuss below.

C. Medicaid rules

A single individual wishing to claim under Medicaid is required to contribute all his income, less an allowance that varies from state to state. In 1991 the allowance varied from $30 to $75 per month. Federal spousal impoverishment rules stipulate that states may allow the community spouse to retain at least $856[3] plus excess housing costs[4]. The total may not exceed $1,662. All but five states permit the non-institutionalized spouse to retain this latter amount. In contrast to the treatment of assets, which are pooled, the institutionalized spouse's Medicaid entitlement is not reduced by the amount by which the community spouse's income exceeds the above amount.

[3] All figures are for 1991. The amounts are adjusted each January by a cost of living factor. The state Medicaid income and asset limits used in my estimations are 1991 figures obtained from the 1993 update of the "Medicaid Source Book" published by the Congressional Research Service.

[4] Excess housing costs are defined as the amount by which housing costs exceed 30% of the $856.

A single individual is required to contribute all his financial assets in excess of an exemption limit that varies from state to state but is always in the order of $3,000. Real property, including the private residence, must be sold, unless it is earning at least a 6 percent return, in which case the individual is only required to contribute the rental income. Spousal impoverishment rules again apply. These exempt the private residence. The financial assets of both spouses are aggregated and exemption given to the greater of $13,296 of assets and half of the first $132,960 of assets. Medicaid can be regarded as a tax on financial assets, payable in the event of entry into long-term care, with a tax rate of 0% on the first $13,296, 100% on the next $13,296, 50% on the next $106,368, and 100% thereafter, up to the total cost of long-term care. States are permitted to increase the $13,296 to an amount not exceeding $132,960, and a number do in fact provide greater protection. The level of this exemption can greatly affect the financial incentives faced by married couples.

If the income of the community spouse is likely to be less than his or her maintenance needs allowance after the death of the institutionalized spouse, then some states exempt such additional financial assets as will provide an investment income sufficient to raise his or her income to the level of the maintenance needs allowance.

Assets in excess of the above limits must be spent down before Medicaid comes into payment. There is however, no prohibition on more expensive private care being purchased either during or subsequent to the period of spend-down.[5] Purchasing high quality care during the spend-down period is one of the few ways in which an individual can benefit from his financial resources once he has entered long-term care.

Prior to the Omnibus Budget Reconciliation Act (1993) some states had legislation enabling them to place asset recovery liens on otherwise exempt assets. OBRA required states to enact such legislation, which occurred at varying date.

There are significant differences between states in Medicaid daily reimbursement rates, reflecting differences in the cost of provision. The 1995 national average daily

[5] Providers of long-term care sometimes make admission conditional on the individual spending an initial period as a non-Medicaid patient. The only Medicaid requirements during the period of spend down are that they (1) do not give their assets away and (2) get “fair market value” for what they spend. It would certainly make sense for many couples to replace their car, pay off their mortgage and other debts and maybe remodel their home

reimbursement rate was $84. Reimbursement rates varied from $53 in Oklahoma to $143 in New York[6] (AARP and Public Policy Institute, 1998). The Medicaid reimbursement rate was 10%-30% less than the cost of private care.

The discussion shows that there are considerable differences between states in the Medicaid financial eligibility rules as they apply to long-term care. I exploit this variation to test whether Medicaid affects the savings of the elderly.

The Medicaid treatment of annuitized wealth is considerably more favorable than that of unannuitized wealth, particularly when held by the community spouse. In the extreme case, annuitized wealth held by the community spouse is completely protected by spousal protection rules, whereas an equivalent dollar of unannuitized wealth will, if financial assets exceed $132,960, be completely unprotected. I therefore investigate the relationship between the form in which wealth is held and the utilization of long-term care.

D. The impact of Medicaid on saving for long-term care

For married couples, Medicaid can be regarded as simultaneously providing free low quality care, and imposing a tax on the savings of the married couple. The tax is payable by the community spouse on the date of institutionalization of his or her partner. The anticipated tax rates in any period are as follows:

[6] Alaska and Washington D.C. were even higher.

TABLE

Married couples anticipated Medicaid tax rates on saving in financial assets

Financial assets	Tax rate[7] – state in which spousal protection limit $13,296	Tax rate – state in which spousal protection limit $66,480
Under $13,296	0%	0%
$13,296 - $26,592	100%	0%
$26,592 -$66,480	50%	0%
$66,480 -$132,960 (or cost of long-term care, if less)	50%	100%
$132,960-	100%	100%
Amounts in excess of the cost of long-term care	0%	0%

The second column shows the tax rate in states providing spousal protection for $13,296 of assets. The third column shows the tax rate in states providing $66,480 of protection.

The tax will have the usual income and substitution effects. The income effect will lead to lower consumption in all periods, and greater pre-institutionalization saving. The substitution effect will lead to pre-institutionalization consumption being substituted for post-institutionalization consumption. Households with savings in excess of $132,960 will exhibit only the substitution effect. If households have Leontief preferences, then they will exhibit only the substitution effect regardless of savings. Given such preferences, any non-zero probability of facing the tax will lead to the same large reduction in current period consumption.

[7] In each case, the effective tax rate is the above rate multiplied by the probability of entering long-term care in the period.

An increase in the spousal protection limit from $13,296 to $26,592 will benefit all households with assets in the range $13,296 to $132,960. The income effect will lead to an increase in current consumption among all such households. The direction of the substitution effect will depend on whether the household's assets are in the range $13,296 to $66,480 or the range $66,480 to $132.960. If the household's assets lie in the former range, an increase in the spousal protection limit reduces the household's marginal tax rate, and leads it to substitute post-institutionalization for pre-institutionalization consumption. In the household's assets are in the latter range, an increase in the spousal protection limit increases the marginal tax rate and has the opposite effect.

The provision of free low quality care will lead to increased pre-institutionalization consumption for households willing to substitute it for private care. If Medicaid care is perceived to be an unacceptable alternative to private care, then the provision will have no effect on saving or consumption. I am unaware of any data on the acceptability or otherwise of Medicaid care. My casual observation suggests that it is perceived as quite undesirable.

Single individuals face an expected tax each period of 100 percent multiplied by the probability of entering long-term care. Again, given Leontief preferences, they will exhibit only the substitution effect unless Medicaid care is an acceptable substitute for private care.

3. DATA

I use the Asset and Health Dynamics Among the Oldest Old (Ahead) survey. This is a detailed longitudinal survey of 6,047 households containing individuals born in 1923 or earlier. The first interviews took place in 1993, and data is now available from the interviews conducted in 1993 and 1995. African-Americans and residents in the State of Florida are over-sampled.

Individuals were asked in both 1993 and 1995 not only to supply health and financial information but also to estimate their likelihoods of surviving to specified ages

and of entering long-term care during the next five years. In the following two sections, I consider whether individuals' estimates can be regarded as the expression of well-formed beliefs or are merely unconsidered guesses. I conclude that the former is the case. I then discuss the measurement of savings, and provide some descriptive statistics.

A. Estimates of likelihood of entering long-term care

Individuals in each cohort are asked in 1993 to estimate the probability of entering long-term care over the following five years. Lindrooth, Hoerger and Norton (2000) analyzed the responses and found that most of the variables that affect actual nursing home entry also have significant effects on expectations about entry. They found no evidence that individuals systematically underestimated the likelihood of nursing home entry.

My analyses are consistent with the above findings. I compared the 1993 estimates of the likelihood of entering long-term care with subsequent entry during the period 1993-95. I find that with the exception of the youngest cohorts, where the probability of entering long-term care is low, individuals who assign a positive probability to entry into long-term care are more likely to enter care during the following two years than those who assign a zero probability. Table I reports the pattern of responses.

I found a positive correlation of 0.3 between the 1993 and 1995 estimates. I also compared individuals who, in 1993, were certain they would not enter long-term care but in 1995 assigned a positive probability to entry with those who reported a positive probability in 1993 and a zero probability in 1995. I found no relationship between changes in beliefs regarding the likelihood of entering long-term care and changes in self-reported health status, but some relationship between changes in beliefs and changes in the ability to perform activities of daily living (ADLs). My analyses indicate that difficulties in performing ADLs are more significant than general health in determining subsequent entry to long-term care.

Therefore, I conclude that the responses contained in the AHEAD dataset represent reasonable beliefs regarding the individual's absolute and relative risk of entry into long-term care.

B. Estimates of survival probabilities

Non-institutionalized individuals in the AHEAD study were asked to estimate the probability that they would live to certain ages. In 1993, those born 1904-1908 were asked to estimate the probability that they would live to age 100, those born 1909-1913 were asked the probability of living to 95, and so on over five age groups. Many individuals rounded their answers to 0, 25, 50, 75 or 100 percent. I then compared the responses with the predictions of life tables.

The predicted survival rates varied greatly from cohort to cohort. Life tables predict that only 8 percent of those born 1904-08 will attain 100, but that 69 percent of those born 1924 or later will attain 80. Table II shows that the median response of each cohort was close to the predicted value. But for the older cohorts for whom the predicted survival rate was small, the mean response was much greater than the predicted value. This is a result of optimistic individuals giving a survival probability that was many times greater than the small average probability for the cohort as a whole.

I would ideally wish to calculate each individual's estimate of his yearly probability of survival. It is impossible to do this for the large number of individuals who answered that they had either a 0 or a 100 percent probability of survival, and it is difficult to know what adjustment, if any, should be made to the responses of those individuals who indicated a probability of survival many times that of the population as a whole. I therefore classify individuals according to whether they estimate a greater or smaller probability of survival than that predicted by the life tables.

Table III shows that actual mortality for each cohort was close to the predictions of the life tables. The mortality rates of the pessimists were close to the predictions of the life tables, but the mortality rates of the optimists were much lower. Individuals appear to

have some knowledge of whether their life expectancy is better or worse than average. There may, however, be a bias towards underestimating survival probabilities.

I estimate a probit model of mortality 1993-1995 for each cohort. Explanatory variables are an indicator variable taking the value one if the individual believes he has better than average life expectancy, zero otherwise, and the probability of that individual surviving to 1995, calculated from life tables. The coefficient on the life-table mortality is less than unity, reflecting the lower than average mortality of the sample. The coefficient on the indicator variable is positive and significantly different from zero for the four older age groups. It fell just short of significance for the youngest reflecting the very small number of individuals in that age group who died[8].

My findings are similar to those of Hurd and McGarry (1995) in their study of responses to identical questions in the Health and Retirement Study, a survey of individuals approaching retirement. They found that the probabilities aggregated to average survival probabilities, and that they co-varied with known determinants of life expectancy.

Therefore, I conclude that the responses contained in the AHEAD dataset represent reasonable beliefs regarding the individual's survival probability.

C. Measuring savings

Understanding the impact of beliefs about life expectancy and long-term care on saving requires a reliable measure of household saving. One can measure saving in the AHEAD dataset by either calculating the increase in assets between 1993 and 1995 or using individuals' responses to the question asking by how much they had added to or drawn on their savings over the previous two years.

Table IV compares 1993 with 1995 financial asset balances[9]. The last two rows show savings calculated, respectively, by differencing 1993 and 1995 asset balances and by using the responses to the question referred to above. The increases in asset balances

[8] I find that self-assessed mortality risk is still significant even when health data is included in the model, suggesting that individuals possess private information about theirlife expectancy.
[9] Missing values are filled in using the AHEAD's imputations.

indicate an implausibly high level of saving over the period. Median financial assets more than doubled from $15,000 in 1993 to $35,000 in 1995.

The increases arise not only from higher average balances being reported by those reporting non-zero balances, but also from an increase in the proportion of households reporting non-zero balances. The increase can be explained neither by gains in stock market indices over the period, nor by differential mortality on the part of poorer households, nor by net sales of non-financial assets, nor by inheritances, nor ny changes in the techniques used to impute missing data[10].

In common with other similar datasets, the AHEAD survey suffers from a high level of non-response to questions of a financial nature. The survey uses "hot deck imputation" to fill in missing data. The missing data is filled in by assigning to the household with the missing data the answer given by a donor household randomly drawn from the sub-sample of households with similar demographics. This procedure introduces a great deal of noise into savings measured by differencing 1993 and 1995 asset balances, with some households appearing to save or dis-save amounts exceeding their total income for the period.

Nonetheless, my analyses show that there is a clear relationship between savings, calculated by differencing the 1993 and 1995 asset balances, and known determinants of saving. The relationship between self-reported savings and the same determinants is extremely weak. I therefore use differenced asset balances as my measure of savings. In view of the large increase in average asset balances, and the presence of households saving or dis-saving implausibly large amounts, I regard this measure of savings as providing a better indication of the relative amounts saved by different households than of the actual dollar amounts saved. I therefore sort household savings into quintiles.

I also re-impute financial asset data, closely following the imputation methodology adopted by the AHEAD, but including as covariates the responses to the asset balance questions at both waves[11]. This greatly reduces the variance of the change

[10] Reported asset balances in the Health and Retirement Study and Survey of Consumer Finances do not show similar increases

[11] To illustrate, if an individual refused to disclose the 1993 value of his stocks, the AHEAD would impute a 1993 range value drawn from the sub-sample of people who stated that the value of their stocks lay within a particular range, and then a 1993 precise value drawn at random from the people who gave a precise value

in value of individual financial assets over the period 1993-95. The ranking of the savings of individual households is relatively unaffected by the reimputation. The correlation coefficient is [ ].

D. Characteristics of the sample

The AHEAD interviewed 6,047 households in 1993, of which 5,222 were re-interviewed in 1995. The composition of 4,878 of these households remained unchanged between 1993 and 1995, the remainder changing due to divorce, death etc. Of these households, 1,778 were married couples, 2,478 single women and 622 single men. I carried out no further analysis of the single men due to the small sample size. 1,621 of the single women answered both the long-term care and survival probability questions, a response rate of 68%. In 1,139 of the married couples, both spouses answered both questions, a response rate of 64%.

Tables V-A and B provide descriptive statistics for married couples and single women analyzed by age, and in the case of single women, by marital status. It is important to examine the two groups separately. Single women have considerably fewer financial resources than married couples and predominate in the older age groups. To aggregate both household types would result in a misleading picture of declining household wealth with age.

Married couples have much greater financial wealth that single women. Financial wealth is unevenly distributed. Among 70-74 year olds, the 25th percentile of total financial wealth is $9,000, and the 75th percentile $147,000. Rates of home ownership and receipt of occupational pension vary little with age. Older cohorts are much less likely to hold an IRA. It is not possible to tell whether the non-participants held one in the past and then closed the account, or whether they never participated. There is no evidence that wealth declines with age, indeed there is a slight trend for wealth to increase. Given that older cohorts will have had lower lifetime income, this finding might suggest that households are continuing to save into retirement.

---

within that range. When drawing a 1993 range value, I would include the 1995 value of the individual's

Of the single women aged 70-84, 1,757 were widows, 221 were divorced, and 121 had never married. The women who had never married had much greater financial assets, but the lowest home ownership rate[12]. Controlling for age, both of the other groups had much fewer financial assets than married couples. The financial assets of single women tended to decline with age, even after controlling for the greater proportion of widows among the older age groups. The single women are much less likely to receive a pension from either their or their husband's former employment. The dataset does not distinguish between pensions received from these two sources.

Table VI compares individuals who attach a positive probability to entering long-term care with those who are certain they will not enter long-term care. For both married couples and single women, financial assets are greater among those who attach a positive probability to entering long-term care. But the table does not establish the direction of causality, and it might be the case that individuals with greater financial assets believe that long-term care is more affordable, and therefore believe it is more likely that they will purchase it.

Voluntary annuitization is extremely rare. Only 7.7 percent of married couples and 7.3 percent of single women receive income from annuities. The median annual amounts received are $319 and $265 respectively.

4. RESULTS

A. Estimation strategy

My dependent variable is savings in financial assets over the period 1993-95. I estimate all my specifications separately for married couples and single women, there being too few single men to obtain meaningful results. I first sort savings into quintiles and estimate ordered probits with Huber-White standard errors. I use the AHEAD-provided person level analysis weights to make the estimates nationally representative. I then re-

stocks as a covariate.

[12] Given their age, it is unlikely that many were living with their parents.

impute the financial asset balances using, as covariates, information regarding both the 1993 and 1995 balances of the asset in question. Using savings calculated from the re-imputed dataset, I estimate median regressions.

I control for a variety of other influences on savings. These include income, initial financial and housing wealth, medical expenditure and life expectancy. In addition, I include dummies for education, ethnicity, health status, having children, having health and long-term care insurance, the availability of assistance with activities of daily living and receipt of pensions from a former employer.

B. Estimation results

Table 7 reports marginal effects from ordered probit estimates for several specifications. Table 7-A reports results for married couples and table 7-B reports similar results for single persons. Tables 8-A and B show marginal effects for key variables. A complete table of marginal effects is available from the author.

The basic specification, 7.1 includes interviewees' 1993 estimates of the probability, rated on a scale of one to one hundred, that they will enter long-term care during the following five years. It also includes a dummy variable for each household member, taking the value of one if they believe that their life expectancy is better than average, zero otherwise.

Specification 7.2 interacts the expectation variables with household assets, assets being banded $0, $1-$13,296, $13,296-$66,480, $66,480-$132,960 and $132,960 plus, the bands being chosen to coincide with the different Medicaid "tax" rates.

Specification 7.3 includes an additional dummy variable for each household member, taking the value of one of their 1993 estimate of the probability of entering long-term care was zero, and their 1995 estimate was greater than zero. I also include similar dummies for those individuals whose 1995 estimate was zero and whose 1993 estimate was greater than zero.

Specification 7.4 tests for the effect of spousal protection rules on married couples. It includes a dummy variable taking the value of one if the couple lived in a

state that gave full protection to $66,480 of the household's financial assets, zero otherwise. I also include two additional variables interacting the state dummy variable with the dummy variables for households with financial assets in the ranges of $13,296-$66,480 and $66,480-$132.960 respectively. As previously mentioned, the effect of increasing the Medicaid spousal protection limit from $13,296 to $66,480 is to reduce the Medicaid "tax on financial assets in the range $13,296 to $26,592 from 100 percent to zero percent, to reduce the "tax" on financial assets in the range $26,592 to $66,480 from 50 percent to zero percent, and to increase the "tax" on financial assets in the range $66,480 to $132,960 from 50 to 100 percent.

The control variables have the same qualitative impact on retirement found in a long line of previous research. Home-owners, people with higher income and a college education save more. African-Americans, Hispanics, and people with less than a high school education save less. Households with a financial adviser save more.

The pattern of the coefficients on the initial wealth variables, with households with low initial wealth saving the most, is almost certainly in large part the result of errors in the reporting of wealth. Individuals underreporting initial wealth, who are likely to appear in the lowest initial wealth brackets, will, unless they make similar errors in reporting 1995 wealth, show larger than average increases in wealth over the period 1993-95. The coefficient on the male age variable is positive and significant, violating the prediction of the life-cycle model.

In the married couple models, male life expectancy has the effect predicted by the life-cycle model with saving being greater among households containing males who believe they have a better than average life expectancy. Female life expectancy has no effect.

In specification 7.1, the coefficient on the wife's estimate of entering long-term care is positive and significant. That on the husband's estimate is not significantly different from zero. Savings are also significantly increased when the husband believes he has a better than average life expectancy. The wife's life expectancy coefficient is not significantly different from zero.

In specification 7.2, I allow the long-term care coefficient to vary with the level of financial assets. In each asset band, the wife's coefficient is greater than the husband's. The coefficients appear to be larger for wealthier households, consistent with the hypothesis that long-term care is a luxury good. But none is significantly less than zero and there is no evidence that couples with fewer financial assets and who expect to enter long-term care consume more of their assets.

In specification 7.3, I examine the effects of changes in beliefs regarding the likelihood of entering long-term care. Among women, a change from a zero to a positive estimate of the likelihood of entering long-term care is associated with greater saving, and among men, a change from a positive to a zero estimate is associated with reduced saving. The other two coefficients are not significantly different from zero. Thus, to the extent that the results are statistically significant, they indicate that "bad news" regarding the likelihood of entering long-term care increases saving, and that "good news" correspondingly reduces saving.

In specification 7.4, I test for the effects of differences between states in spousal protection rules. I divide states into those that set a spousal protection limit of $13,296 and those that set a limit of $66,480. A few states set a limit that is in the low $20,000s, and I include these states in the former group. The state dummy variable is insignificant and close to zero, indicating that savings behavior does not vary across states. I find that the coefficient is negative on both interaction variables and that on the $66,480 to $132,960 interaction variable is significant. I conclude that the income effect dominates the substitution effect and that households respond to an increase in the generosity of the spousal protection rules by increasing both pre and posit-institutionalization consumption.

Forecasts of the percentages of households falling within each savings quintile, based on my preferred specification, 7.2 are shown in table IX. I compare households in which both husband and wife attach a zero probability to entering long-term care with households in which both spouses attach a hundred percent probability. I assume that everyone has the mean characteristics of the sample, so that the difference in the percentages falling into each quintile arises solely as a result of differences in beliefs

regarding the likelihood of entering long-term care. When the likelihood of entering long-term care changes from zero to one hundred percent, the percentage in the top savings quintile rises from eleven to eighteen percent and the percentage in the bottom quintile falls from thirty to twenty percent.

Although most of the control variables have much the same effects for single women as for married couples, the same is not true of the expectation variables. Single women who believe they have better than average life expectancy do not save more than the remainder of the sample. Expectations regarding the likelihood of entering long-term care likewise have no effect on savings, regardless of the initial level of wealth. A change from a zero to a positive expectation of entering long-term care does, however, have the predicted effect.

Single women have fewer financial resources and smaller incomes than married couples, and opportunities for saving are therefore correspondingly limited. Table 5-B shows, however, that single women expecting to enter long-term care have greater financial wealth than single women who attach a zero probability to entry. Most single women in the sample are widows, and it is possible that single women expecting to enter long-term care made greater savings when previously married.[13]

Although the ordered probit results show savings quintiles, they do not enable me to determine the effect of personal characteristics on the dollar amount saved. To do this, I estimate median regressions on the re-imputed dataset. The results are presented in tables 9-A and B……] Although

Medicaid rules treat annuitized wealth much more favorably than equivalent amounts of unannuitized wealth.

5. CONCLUSIONS

In the United States, only a small percentage of older households purchase insurance against the cost of long-term care. The elderly do not appear to underestimate the risks of

[13] An alternative explanation would be that single women with greater financial wealth believe that long-term care is more affordable, and therefore believe it is more likely they will make use of it.

entering long-term care, and information regarding the cost of such care is widely available.

It is sometimes claimed that the restrictive terms on which such insurance is offered is an indication of a market failure resulting from adverse selection. As the AHEAD sample ages, and more members of the sample enter long-term care, it may be possible to test this hypothesis. If the private insurance market is not operating efficiently, there may be a case for government intervention, either in the form of compulsory insurance as practiced in Germany (for a description of the scheme, see Wilbers (2000)), or for subsidizing the purchase of private insurance.

On the other hand, the failure to purchase long-term care insurance may reflect a willingness of those with few financial assets to rely upon Medicaid, and of those with greater financial assets to pay for long-term care out of what would otherwise be unintended bequests. If these were more typical explanations for individuals deciding not to purchase insurance, then the case for intervention would be weaker.

I find that, among married couples, a belief that the wife is likely to enter long-term care leads to an increase in savings and a reduction in consumption. This occurs regardless of the initial level of the household's financial assets. If households regarded Medicaid as an acceptable substitute for private long-term care, one would observe the opposite effect among the poor. The responses to changes in beliefs regarding the likelihood of entering long-term care are consistent with this result.

I would ideally like to measure the size of the reduction in consumption that concerns about the cost of long-term care impose on the elderly. I would also like to calculate whether the savings behavior of individuals who are certain they will not enter long-term care is in accordance with the predictions of the life-cycle model. This calculation would enable me to estimate the extent to which concerns regarding long-term care answer the retirement saving puzzle.

Only the first two waves of the AHEAD dataset are currently available, and I have therefore measured savings over only a two-year period. Although the dataset appears to provide a good indication of the ranking of the savings of different households, it provides a much less reliable indication of dollar amounts saved. My calculations

indicate that long-term care has a substantial effect on a household's ranking. A household attaching zero probability to entering long-term care has a 15 percent probability of being in the top quintile of savers, whereas a household which is certain that the wife will enter long-term care has a twenty five percent probability.

REFERENCES

American Association of Retired Persons and Public Policy Institute (1998) "Across the States: Profiles of Long-Term Care Systems" AARP 601 E. Street NW Washington DC

Bernheim, B, Skinner, J and Weinberg, J (1997) "What Accounts for the Variation in Retirement Wealth among U.S. Households" National Bureau of Economic Research Working Paper No 6227 October

Dick, A, Garber, A and MaCurdy, T (1994) "Forecasting Nursing Home Utilization of Elderly Americans" in D Wise, ed., Studies in the Economics of Aging, University of Chicago Press, Chicago 365-394

Hurd, M and McGarry, K (1995) "Evaluation of the Subjective Probability of Survival in the Health and Retirement Study" Journal of Human Resources V30 n0 (Suppl 1995) s268-92

Kemper, P and Murtaugh, C (1991) "Lifetime use of Nursing Home Care" New England journal of medicine 324: 595-600

Levit, K Lazenby, H Braden, B Cowan, C Sensenig, A McDonnell, P Stiller, J Won, D Martin, A Sivarajan, L Donham, C Long, A and Stewart, M (1997) "National Health Expenditures" Health Care Financing Review 19(1) 161-200.

Lindrooth, R Hoerger, T and Norton, E "Expectations Among the Elderly about Nursing Home Entry" Health Services Research Vol. 35 No. 5 pp1181-1202

Mitchell, O and Moore, J "Retirement Wealth Accumulation and Decumulation: New Developments and Outstanding Opportunities" National Bureau of Economic Research Working Paper No 6178 September 1997

Norton, E "Long-Term Care" Handbook of Health Economics

Norton, E and Newhouse, J (1994) "Policy Options for Public Long-Term Care Insurance" Journal of the American Medical Association 271(19): 1520-1524

Rhoades, J Potter, D and Krauss, N "Nursing homes – structure and selected characteristics, 1996" MEPS Research Findings No. 4, AHCPR Publication no. 98-0006 (Agency for Health Care Policy and research, Rockville, MD)

Taylor, D Sloan, F and Norton, E "Formation of Trusts and Spend Down to Medicaid" Journal of Gerontology: Social Sciences 1999 Vol. 54B No. 4 S194-S201

Wilbers, J "Long-term Care Insurance in Germany" International Longevity Center Working Paper 60 East 86th Street, New York

TABLE 1

Probability of entering long-term care within five years

Birth year	1904-08	1909-13	1914-18	1919-23	1924+
Sample size	467	1113	1602	2316	772
% reporting positive probability	41.5	42.0	42.3	38.0	35.5
% reporting 50%+ probability	24.8	22.3	17.4	13.6	10.4
% in long-term care 1995 of those reporting positive probability 1993	8.2	4.9	1.9	0.6	0.0
% in long-term care 1995 of those reporting zero probability 1993	5.5	3.4	1.0	1.0	0.7

TABLE 2

Analysis of responses to questions on life expectancy

Date of birth	1904-1908	1909-1913	1914-1918	1919-1923	1924+
Age used in question	100	95	90	85	80
Sample size	481	1093	1595	2261	663
Life table probability of attaining age	7.77	19.91	36.56	52.49	69.02
Mean probability of sample	29.43	31.71	38.46	51.05	56.89
Median probability of sample	10.00	20.00	40.00	50.00	50.00
% answering life table probability +/- 5%					
% answering 0	42.2	35.0	24.7	11.8	9.9
25	2.3	4.4	4.2	3.3	3.0
50	15.6	18.6	22.8	30.3	26.4
75	4.2	2.5	4.7	6.3	8.5
100	6.0	8.9	9.3	15.0	15.6

TABLE 3

Mortality Rates 1993-1995

	1904-08	1909-13	1914-18	1919-23	1924+
Predicted deaths per life tables	19.4	13.1	8.4	5.9	3.6
% dying 1993-1995	19.1	12.7	9.7	6.2	2.3
% dying 1993-1995 of those who believe their mortality to be good	13.1	7.6	5.4	3.6	0.1
% dying 1993-1995 of those who believe their mortality to be bad	20.1	13.1	10.6	5.8	2.7
% dying 1993-1995 of those who do not answer mortality question	14.8	13.9	10.9	7.6	2.0
% dying 1993-1995 of those who were institutionalized and not asked the question	34.8	24.3	22.9	18.6	7.8

TABLE 4

Financial asset balances 1993 and 1995

	25th percentile		Median		75th percentile		90th percentile		mean	
	93	95	93	95	93	95	93	95	93	95
Stocks	0	0	0	0	0	20,000	50,000	140,000	29,835	99,105
Bank a/c	500	1,000	5,000	8,000	20,000	28,000	52,000	70,000	21,041	29,729
CDs	0	0	0	0	0	10,000	30,000	60,000	10,372	20,541
Bonds	0	0	0	0	0	0	0	3,000	6,606	14,082
IRAs	0	0	0	0	0	0	20,000	30,700	10,294	14,564
Total	1,200	4,000	15,000	35,000	69,000	129,100	195,000	335,000	78,150	178,023
Increase 1993-95		-1,500		1,000		40,000		157,000		71,105
Additions to financial assets		-5000		-1235		0		6,000		

TABLE 5-A

Selected financial data 1995 – married couples

Age of husband 1995	70-74		75-79		80-84	
Sample size		625		710		468
% homeowner		88		81		78
% husbands with employer pension		54		52		49
Median Social Security 1995		13,452		13,440		13,800
Median employer pension 1995		8,136		7,152		4,920
Asset balances	Median	75th percentile	Median	75th percentile	Median	75th percentile
Checking	10,000	34,000	10,000	30,000	10,000	34,000
Stocks	0	20,000	0	38,000	0	30,000
CDs	0	5,000	0	14,000	0	30,000
Bonds	0	0	0	0	0	0
IRAs	0	29,500	0	14,000	0	0
Total	50,000	147,000	46,000	163,000	50,000	170,000
Increase financial assets 1993-95	5,000	52,000	8,000	63,000	9,300	79,000
House value 1993	90,000	150,000	87,000	140,000	70,000	120,000

TABLE 5-B

Selected financial data 1995 – single women

Age 1995		70-74		75-79		80-84
Sample size		482		846		771
% homeowner		64		59		55
% with employer pension		38		38		30
Median Social Security 1995		7,932		7,752		7,656
Median employer pension 1995		3,780		4,560		3,600
Asset balances	Median	75th percentile	Median	75th percentile	Median	75th percentile
Checking	3,000	14,000	3,000	15,000	2,500	15,000
Stocks	0	5,500	0	0	0	0
CDs	0	5,000	0	2,000	0	5,000
Bonds	0	0	0	0	0	0
IRAs	0	0	0	0	0	0
Total	10,000	96,000	10,000	50,000	9,300	53,000
Increase financial assets 1993-95	235	31,900	200	20,000	500	27,000
House value 1993	75,000	120,000	70,000	105,000	60,000	95,000

	Widowed		Divorced		Never married	
Sample size		1,757		221		121
% homeowner		62		45		35
% with empl pens		34		39		46
Median Soc Sec		7,980		7,200		6,720
Median empl pens		3,780		3,144		6,000
Asset balances	Median	75th percentile	Median	75th percentile	Median	75th percentile
Checking	3,000	15,000	1,000	10,000	3,895	18,000
Stocks	0	0	0	0	0	20,000
CDs	0	5,000	0	0	0	1,000
Bonds	0	0	0	0	0	0
IRAs	0	0	0	0	0	0
Total	10,000	60,000	2,000	29,000	15,000	151,000
Increase financial assets 1993-95	375	25,700	2	4,600	13,000	54,500
House value 1993	70,000	100,000	65,000	100,000	64,000	100,000

TABLE 6-A

Selected financial data 1995 – married couples

Expectation regarding LTC	Both zero		Both positive		One zero, one positive	
Sample size	576		297		859	
% homeowner	82		83		84	
% husbands with employer pension	54		58		50	
Median Social Security 1995	13,200		13,500		13,620	
Median employer pension 1995	6,600		8,400		6,708	
Asset balances	Median	75th percentile	Median	75th percentile	Median	75th percentile
Checking	9,500	28,000	15,000	45,000	11,000	35,000
Stocks	0	20,000	200	100,000	0	38,000
CDs	0	5,500	0	14,000	0	11,000
Bonds	0	0	0	0	0	0
IRAs	0	14,000	0	20,000	0	18,000
Total	40,000	135,000	91,000	294,000	56,000	169,000
Increase financial assets 1993-95	4,650	43,000	18,000	132,000	13,000	75,240
House value 1993	80,000	140,000	82,000	125,000	85,000	140,000

TABLE 6-B

Selected financial data 1995 – single women

Expectation regarding LTC		Zero		Positive
Sample size		1,299		877
% homeowner		58		58
% with employer pension		34		37
Median Social Security 1995		7,800		7,752
Median employer pension 1995		3,600		4,560
Asset balances	Median	75th percentile	Median	75th percentile
Checking	3,000	15,000	5,000	20,000
Stocks	0	0	0	9,000
CDs	0	1,500	0	2,000
Bonds	0	0	0	9,000
IRAs	0	0	0	0
Total	10,000	60,000	22,000	85,000
Increase financial assets 1993-95	400	27,200	650	31,500
House value 1993	70,000	100,000	68,000	100,000

TABLE 7-A – Married couples – Savings quintiles

Regression results:

Coefficient estimates on expectation variables

Dependent variable: quintile into which household savings falls 1993-95	7.1	7.2	7.3	7.4
Expectation variables:				
Husband's estimate of probability of entering long term care in five years	-0.080 (0.165)	-	-	-
Wife's estimate of probability of entering long term care in five years	0.414** (0.162)	-	-	-
Husband's estimate * 1993 financial assets zero	-	0.242 (0.267)	0.566 (0.471)	0.530 (0.478)
Wife's estimate * 1993 financial assets zero	-	-0.199 (0.241)	-0.188 (0.336)	-0.187 (0.340)
Husband's estimate * 1993 financial assets $1 - $13,296	-	-0.197 (0.231)	0.005 (0.293)	-0.013 (0.295)
Wife's estimate * 1993 financial assets $1 - $13,296	-	0.294 (0.185)	0.456* (0.239)	0.455* (0.240)
Husband's estimate * 1993 financial assets $13,296 - $66,480	-	0.032 (0.281)	0.203 (0.330)	0.143 (0.333)
Wife's estimate * 1993 financial assets $13,296 - $66,480	-	0.256 (0.335)	0.326 (0.378)	0.348 (0.379)
Husband's estimate * 1993 financial assets $66,480 - $132,960	-	-0.042 (0.502)	-0.568 (0.528)	-0.648 (0.525)
Wife's estimate * 1993 financial assets $66,480-$132,960	-	0.256 (0.335)	0.767 (0.567)	0.903 (0.556)
Husband's estimate * 1993 financial assets over $132,960	-	0.059 (0.556)	0.045 (0.611)	0.035 (0.613)
Wife's estimate * 1993 financial assets over $132,960	-	0.903 (0.524)	1.29** (0.645)	1.29** (0.645)
Resides in state where 1993 spousal protection = $132,960	-	-	-	0.020 (0.088)
Resides in state where 1993 spousal protection > $13,296 and 1993 financial assets $13,296 - $66,480	-	-	-	-0.182 (0.176)
Resides in state where 1993 spousal protection > $13,296 and 1993 financial assets $66,480 - $132,960	-	-	-	-0.558** (0.227
Husband's expectation of requiring LTC went from 0% in 1993 to +ve% in 1995	-	-	-0.057 (0.092)	-0.055 (0.093)
Wife's expectation of requiring LTC went from 0% in 1993 to +ve% in 1995	-	-	0.156* (0.085)	0.148 (0.085)

Husband's expectation of requiring LTC went from +ve% in 1993 to 0% in 1995	-	-	-0.283** (0.116)	-0.269** (0.117)
Wife's expectation of requiring LTC went from +ve% in 1993 to 0% in 1995	-	-	0.135 (0.121)	0.136 (0.121)
Husband believes he has better than average life expectancy	0.130** (0.065)	0.131** (0.065)	0.157** (0.075)	0.165** (0.075)
Wife believes she has better than average life expectancy	-0.023 (0.068)	-0.017 (0.068)	-0.017 (0.078)	-0.014 (0.078)

TABLE 7-A – Married couples- savings quintiles

Regression results:

Coefficient estimates on financial variables

Dependent variable: savings quintile	7.1	7.2	7.3	7.4
Other financial variables:				
1993 financial assets $0	0.299**	0.325**	0.338**	0.277**
	(0.092)	(0.105)	(0.124)	(0.137)
1993 financial assets $1-$13,296	0.139**	0.260**	0.122	0.064
	(0.077)	(0.093)	(0.100)	(0.117)
1993 financial assets $66,480-$132,960	-0.304**	-0.301**	-0.244	-0.108
	(0.115)	(0.147)	(0.155)	(0.180)
1993 financial assets > $132,960	-0.679**	-0.780**	-0.821**	-0.885**
	(0.130)	(0.162)	(0.172)	(0.183)
Home owner	0.251**	0.255**	0.267**	0.285**
	(0.074)	(0.074)	(0.090)	(0.090)
1993 value of house $000	-0.0003	-0.0003	-0.0002	-0.0002
	(0.0003)	(0.0004)	(0.0004)	(0.0004)
Total household income $000	0.011**	0.011**	0.010**	0.010**
	(0.002)	(0.002)	(0.003)	(0.003)
Husband still working	-0.192**	-0.197**	-0.205**	-0.218**
	(0.090)	(0.091)	(0.102)	(0.102)
Husband has pension from former employer	0.002	0.005	0.017	0.030
	(0.074)	(0.075)	(0.087)	(0.087)
Husband's pension inflation protected	0.044	-0.044	-0.021	-0.034
	(0.093)	(0.094)	(0.101)	(0.102)
Husband's pension provides benefit to surviving spouse	-0.112	-0.113	-0.042	-0.070
	(0.091)	(0.092)	(0.102)	(0.103)
Wife has pension from former employer	0.033	0.033	0.033	0.049
	(0.079)	(0.080)	(0.087)	(0.087)
Wife's pension inflation protected	-0.169	-0.168	-0.263**	-0.283**
	(0.106)	(0.106)	(0.123	(0.103)
Household has retiree health insurance	0.074	0.066	0.065	0.043
	(0.094)	(0.093)	(0.111)	(0.111)
Husband has long-term care insurance	-0.084	-0.096	-0.151	-0.141
	(0.094)	(0.094)	(0.104)	(0.104)
Wife has long-term care insurance	-0.058	-0.053	-0.047	-0.043
	(0.098)	(0.098)	(0.104)	(0.103)
Medical costs 1993-95 $000	-0.001	0.007	0.006	0.006
	(0.005)	(0.006)	(0.007)	(0.007)
Household has a financial adviser	0.164	0.174	0.197	0.224*
	(0.111)	(0.111)	(0.122)	(0.120)

TABLE 7-A- Married couples – savings quintiles

Regression results:

Coefficient estimates on other independent variables

Dependent variable: savings quintile	7.1	7.2	7.3	7.4
Other independent variables:				
Husband's age in 1993	0.012*	0.011**	0.019**	0.019**
	(0.006)	(0.006)	(0.008)	(0.008)
Wife's age in 1993	0.008	0.008	0.004	0.004
	(0.005)	(0.005)	(0.006)	(0.006)
Husband's education less than high school	-0.052	-0.051	-0.053	-0.075
	(0.068)	(0.068)	(0.077)	(0.078)
Husband's education – some college	0.285**	0.278**	0.248**	0.252
	(0.104)	(0.106)	(0.116)	(0.116)
No children	-0.030	0.030	0.036	0.025
	(0.097)	(0.098)	(0.111)	(0.112)
Black	-0.368**	-0.369**	-0.399**	-0.385**
	(0.100)	(0.101)	(0.127)	(0.128)
Hispanic	-0.306*	-0.292**	-0.293**	-0.274*
	(0.101)	(0.102)	(0.240)	(0.147)
Husband's 1993 self-assessed health (scale 1-5, 1= excellent, 5 = poor)	0.011	-0.009	-0.003	-0.004
	(0.029)	(0.030)	(0.034)	(0.034)
Wife's 1993 self-assessed health (scale 1-5, 1= excellent, 5 = poor)	-0.051*	-0.050	-0.056	-0.060*
	(0.030)	(0.030)	(0.035)	(0.034)
Change in husband's health 1992-93 (1 = better, 3 = same, 5 = worse)	-0.067**	0.063**	0.063*	0.066**
	(0.028)	(0.028)	(0.032)	(0.032)
Change in wife's health 1993-95 (1 = better, 3 = same, 5 = worse)	0.005	0.005	0.002	0.002
	(0.026)	(0.026)	(0.031)	(0.032)
Either spouse hospitalized once or more 1992-93	-0.025	-0.023	-0.029	-0.017
	(0.068)	(0.069)	(0.079)	(0.079)
Multiple hospitalizations – husband 1992-93	-0.139	-0.145	-0.205	-0.192
	(0.136)	(0.136)	(0.167)	(0.169)
Multiple hospitalizations – wife 1992-93	0.199	0.184	0.062	-0.065
	(0.150)	(0.150)	(0.160)	(0.164)
Husband would have no one to help him if he had problems with ADLs in future	0.099	0.104	0.047	0.062
	(0.072)	(0.072)	(0.085)	(0.085)
Wife would have no one to help her if she had problems with ADLs in future	0.038	0.040	0.041	0.039
	(0.070)	(0.071)	(0.082)	(0.082)
Constant 1	1.352	1.263	1.549	1.484
2	1.872	1.785	2.026	1.964
3	2.404	2.317	2.566	2.506
4	3.115	3.029	3.297	3.241

TABLE 7-B – Single women – Savings quintiles
Regression results:
Coefficient estimates on expectation variables

Dependent variable: quintile into which household savings falls 1993-95	7.1	7.2
Expectation variables:		
Estimate of probability of entering long term care in five years	0.154 (0.184)	-0.010 (0.212)
Estimate * 1993 financial assets zero	-0.054 (0.276)	0.162 (0.317)
Estimate * 1993 financial assets $1 - $16,152	-0.171 (0.238)	0.005 (0.269)
Estimate * 1993 financial assets over $161,520	-0.342 (0.523)	-0.214 (0.551)
estimate * resides in state where 1993 spousal protection > $16,152	-	-
Expectation of requiring LTC went from 0% in 1993 to +ve% in 1995	-	0.225** (0.075)
Expectation of requiring LTC went from +ve% in 1993 to 0% in 1995	-	0.025 (0.090)
Woman believes she has better than average life expectancy	0.042 (0.053)	0.045 (0.059)

TABLE 7-B – Single women - savings quintiles
Regression results:
Coefficient estimates on financial variables

Dependent variable: savings quintile	7.1	7.2
Other financial variables:		
1993 financial assets $0	0.812**	0.777**
	(0.098)	(0.109)
1993 financial assets $1-$13,296	0.654**	0.620**
	(0.081)	(0.088)
1993 financial assets > $132,960	-1.099**	-1.121**
	(0.180)	(0.195)
Home owner	0.133**	0.118**
	(0.062)	(0.069)
1993 value of house $000	0.0005	0.0004
	(0.0004)	(0.0004)
Total household income $000	0.020**	0.019**
	(0.002)	(0.002)
Still working	-0.1521	-0.160*
	(0.101)	(0.108)
Has pension from former employer	0.012	0.036
	(0.069)	(0.076)
Pension inflation protected	-0.079	-0.150
	(0.088)	(0.096)
Has retiree health insurance	0.243**	0.213**
	(0.069)	(0.079)
Has long-term care insurance	-0.015	0.031
	(0.083)	(0.090)
Medical costs 1993-95 $000	0.001	0.001
	(0.001)	(0.001)
Has a financial adviser	0.145*	0.292**
	(0.082)	(0.092)

TABLE 7-B- Single women – savings quintiles
Regression results:
Coefficient estimates on other independent variables

Dependent variable: savings quintile	7.1	7.2
Other independent variables:		
Age in 1993	0.008*	0.011**
	(0.005)	(0.004)
Education less than high school	-0.191**	-0.186**
	(0.060)	(0.068)
Education – some college	0.137	0.187*
	(0.090)	(0.098)
No children	0.111	0.128
	(0.075)	(0.084)
Black	-0.276**	-0.346**
	(0.076)	(0.087)
Hispanic	-0.320**	-0.362**
	(0.119)	(0.136)
1993 self-assessed health (scale 1-5, 1= excellent, 5 = poor)	-0.094**	-0.097**
	(0.025)	(0.028)
Change in health 1993-95 (1 = better, 3 = same, 5 = worse)	0.010	0.037
	(0.022)	(0.024)
Hospitalized once or more 1992-93	-0.008	-0.013
	(0.074)	(0.083)
Multiple hospitalizations – 1992-93	-0.070	-0.067
	(0.123)	(0.141)
Would have no one to help her if she had problems with ADLs in future	0.084	0.095
	(0.056)	(0.062)
Divorced	-0.008	-0.027
	(0.086)	(0.094)
Never married	0.030	0.075
	(0.126)	(0.143)
Constant 1	0.108	0.481
2	1.237	1.552
3	1.590	1.898
4	2.246	2.566

TABLE 8

Percentages of married households lying in each savings quintile

	First quintile	Second	Third	Fourth	Fifth
Husband's and wife's estimates of probability of entering long-term care both zero	11	13	19	28	30
Both 100%	18	17	21	25	20