10-2000

Private Long-Term Care Insurance and the Asset Protection Motive

Jennifer M. Mellor
William & Mary, jmmell@wm.edu

Recommended Citation

Mellor, Jennifer M., Private Long-Term Care Insurance and the Asset Protection Motive (2000). *The Gerontologist*, 40(5), 596-604.
https://doi.org/10.1093/geront/40.5.596

The Gerontologist
Vol. 40, No. 5, 596–604

Private Long-Term Care Insurance and the Asset Protection Motive

Jennifer M. Mellor, PhD[1]

This research examined the role of assets in the decision to purchase insurance for long-term care using survey data from the Asset and Health Dynamics Among the Oldest Old (AHEAD) study. Previous research suggests that assets matter, but the size and direction of the effect varies. An important issue regarding the role of assets has not been explored adequately—whether the effect of assets differs between less wealthy and very wealthy individuals. A methodology to control for this type of variation is employed in this analysis. Results suggest that increases in assets have the greatest influence on the probability that less wealthy individuals own long-term care insurance, and have a negligible impact on the wealthy. This has important implications for policies designed to increase long-term care insurance ownership.

Key Words: Nursing home care, Public–private partnerships

The combined cost of nursing home care and home health care in the United States was more than $117 billion in 1998. Out-of-pocket expenses by individuals accounted for about one third of this figure, government expenditures contributed about 59% and third-party payments by private insurance covered just 7% (Health Care Financing Administration, 2000). The small contribution from private insurance is not unexpected, as only 4% to 5% of elderly people are thought to have insurance policies that cover long-term care (Cohen, Kumar, McGuire, & Wallack, 1992; Wiener, Illston, & Hanley, 1994). Current policies aimed at reducing the public portion of long-term care costs focus on expanding private insurance. For example, four U.S. states—California, Connecticut, Indiana, New York—are experimenting with a program that allows individuals who buy a given amount of private insurance coverage to protect their assets even if their long-term care costs exceed what is covered by the insurance. Called "public–private partnerships" for long-term care, these plans are designed to encourage individuals to buy a moderate amount of private coverage by providing a form of guaranteed asset protection.

Policies focusing on increasing private insurance coverage generally raise the question of which factors influence the decision to purchase this insurance (see Appendix, Note 1). In the case of public–private partnerships for long-term care the question is, more specifically, what role does asset protection play in the purchase of insurance? While a motive such as asset protection is difficult to measure, it can be observed in part by quantifying the relationship between actual assets and insurance ownership. This study examined the role of assets in the decision to purchase insurance for long-term care using data from the study of Asset and Health Dynamics Among the Oldest Old (AHEAD; Myers, 1997). (See Myers 1997 for a description of the survey and initial research findings). The next section details the importance of examining the role of assets from a policy perspective. In addition, the quantitative evidence reported in previous literature regarding the role of assets is reviewed. Existing studies have produced mixed results, most suggesting that assets matter but showing that the size and direction of the effect varies. An important issue regarding the role of assets—whether the effect of assets differs for those with high wealth as compared to low wealth—has not been explored adequately.

A methodology to control for this important type of variation was employed in this analysis. The results lead to quite different conclusions than reported elsewhere regarding the role of assets in the purchase of long-term care insurance. That is, assets matter most for those in the lowest fourth of the asset distribution and least for those in the upper fourth of distribution. Finally, this research examined whether the role of assets is linked to asset protection for heirs, by examining how long-term care insurance ownership is related to expectations about financial transfers to family members. The analysis reported here does not support the view that long-term care insurance purchase is motivated by a desire to protect assets for heirs.

Background

Several policy initiatives are aimed at increasing private insurance coverage for long-term care. Recent changes in federal tax laws allow individuals to deduct part of the cost of long-term care insurance

The author thanks the National Institute on Aging for research support (Grant R03-AG16868) and is grateful to three anonymous referees for helpful comments.

[1]Address correspondence to Jennifer M. Mellor, Assistant Professor of Economics, The College of William and Mary, P.O. Box 8795, Williamsburg, VA 23187-8795. E-mail: jmmell@wm.edu

premiums on income tax returns. At the state level, four states have implemented "public–private partnerships" for long-term care that encourage individuals to purchase partial private insurance coverage for long-term care. If private coverage fails to provide for all of their long-term care needs, these individuals can become eligible for Medicaid coverage of long-term care without having to spend down their assets (not including their home) to the typical eligibility threshold of $2,000. For example, an individual with private insurance coverage for $50,000 in long-term care costs can retain $50,000 of his or her assets and become eligible for Medicaid when the private insurance coverage runs out. This is referred to as a "dollar-for-dollar" plan, where every dollar of private insurance coverage protects one dollar of assets. Three states (Connecticut, Indiana, and California) have implemented dollar-for-dollar partnerships; a fourth state, New York, has implemented a partnership program that offers protection of all assets with the purchase of limited private insurance coverage.

Various criticisms have been directed toward the public–private partnerships since their inception and implementation in the 1990s. Some dispute the cost-effectiveness of the partnerships and believe that these programs may in fact raise the overall amount of long-term care spending by Medicaid. Another concern is that the public will not be interested in participating in this type of program, owing to fears of reduced access and lower quality of care, and the possible "welfare stigma" associated with Medicaid.

Additional criticisms of the public–private partnership programs concern the relevance of asset protection in purchasing long-term care insurance. Wiener and Hanley (1992) argue that asset protection is a relatively unimportant reason for buying long-term care insurance, and that increased asset protection opportunities will not induce a large number of individuals to purchase new policies. They cite evidence from a survey of long-term care insurance policyholders suggesting that only 14% of the sample respondents listed protection of assets as the "most important" reason for buying insurance. Wiener and Hanley also question the use of Medicaid to protect the assets of middle and upper income elderly people. Finally, Wiener and colleagues (1994) write that "back-end coverage provides asset protection for heirs—arguably a less appropriate role for government" (p.144; see Note 2).

Research Question

Evidence that only 14% of purchasers report asset protection as the primary reason for buying long-term care insurance is not enough to support the conclusion that assets are an unimportant factor. This statistic does not reflect the relative contribution of other factors in the purchase of long-term care insurance, nor does it take into account the factors that lead an individual to choose not to purchase the insurance. For this reason, several studies have used multivariate models of long-term care insurance purchase to estimate the effect of assets, controlling for other individual characteristics such as income, age, and health status. This research expands upon these types of studies by examining whether the effect of assets differs among individuals with different levels of wealth. As stated in the background section, there is some concern about whether partnership programs use Medicaid to protect the assets of the middle and upper classes. To explore this concern, it is necessary to determine how the effect of assets in the decision to purchase insurance varies across different asset groups. For example, among individuals with very low levels of assets (who thus have little to protect from Medicaid), assets may have less of an influence on long-term care insurance decisions. Those with assets over a certain minimum amount may have the greatest incentive to protect assets from the spend-down process associated with qualifying for Medicaid. And, among very wealthy individuals, assets may have a small effect on insurance purchase. Those with the most wealth may elect to self-insure—that is, to use their savings to finance long-term care needs and forego the purchase of insurance policies. These potential nonlinearities in the asset–insurance relationship can suggest whether asset protection plays more or less of a role for the wealthy, compared to the poor. The results reported here can thus shed light on whether policy makers need to be concerned about using liberalized Medicaid eligibility (via the partnerships) to protect the assets of wealthy elders.

Previous Research

To date, only a few quantitative studies have examined the role of assets in long-term care insurance ownership. Sloan and Norton (1997) used the AHEAD study and the Health and Retirement Survey to examine many factors linked to ownership of long-term care insurance, such as adverse selection, bequests, and crowding out by the Medicaid program, in addition to income and assets. Their results suggest that the level of nonhousing assets has a significant positive effect on the probability of having long-term care insurance. However, the size of the effect was small: A $10,000 increase in assets led to a 1% increase in the probability of having insurance, from 2.20% to 2.22%. Sloan and Norton also examined assets in the form of housing and found them to have no effect on long-term care insurance coverage. This finding may be explained by the fact that Medicaid eligibility is determined by the level of assets excluding the value of the individual's home. As a result, housing wealth is protected from the spend-down process.

If the relationship between assets and insurance purchase is nonlinear, then the linear specification used by Sloan and Norton may to some degree understate the true effect of assets in the decision to purchase insurance. Two other quantitative research studies attempt to control for nonlinearities in the relationship between assets and long-term care insur-

ance ownership, but with opposite results. These studies are described below.

Kumar, Cohen, Bishop, and Wallack (1995) used data obtained from several insurance companies on individuals who owned long-term care insurance policies and individuals who declined to purchase such policies when approached by insurance agents. A logistic regression of the purchase decision was performed, controlling for demographic and socioeconomic characteristics, attitudes, and Medicaid characteristics. Assets were measured with categorical dummy variables, which allowed for variation in the magnitude of asset effects. Relative to the omitted category of assets over $100,000, several categorical dummies had significant and positive effects: assets under $20,000, assets between $30,000 and $50,000, and assets ranging from $75,000 to $100,000. These results support the conclusion that those with assets under $100,001 are more likely to purchase insurance relative to those with higher levels of assets. Unfortunately, these results may not be generalizable to the population as a whole because those approached by insurance agents are a nonrandom sample of the population. Individuals approached by agents are more likely to have higher incomes and to be in better health than most elderly individuals.

In McCall, Mangle, Bauer, and Knickman (1998), data for a random sample of partnership program participants (merged with nonparticipants) were used to examine the factors associated with the purchase of long-term care insurance through the partnerships. The authors controlled for a variety of respondent characteristics in a logistic regression of insurance purchase. Assets levels were measured by three categorical dummy variables ($100,001–$200,000, $200,001–$400,000, and over $400,000) compared to the omitted category of assets less than $100,000. Odds ratios for the asset dummy variables were statistically significant and suggest that having assets greater than $100,000 increases the odds of purchasing insurance. The largest effect was for assets between $200,000 and $400,000. At the highest asset levels (over $400,000), the effect of assets remains positive but is smaller in size than the effect of having assets between $100,001 and $200,000. Together with results regarding the effect of income on long-term care insurance ownership, the authors interpret this finding as evidence "that the Partnership is having its desired effect of attracting middle-income and asset consumers" (McCall et al., 1998, p.200). These results are in contrast to Kumar and colleagues' findings, but the study has some significant differences in the sampling. The full sample included an oversample of purchasers, who made up as much as 58% of all observations. In addition, 38% of the observations in the McCall and colleagues' sample have missing data for assets (see Note 3).

In summary, previous research on the relationship between assets and long-term care insurance produces mixed results. Evidence from Sloan and Norton (1997) shows that assets have a small positive effect on the likelihood of having long-term care insurance. Other research that addresses the nonlinearity in the asset and insurance relationship produces contrasting results. In one case, assets less than the omitted category of $100,000 are significant and positive; in another case, assets greater than the omitted category of $100,000 are significant and positive. This difference may be driven by the use of different samples, but in both cases the samples used are nonrandom.

Methods

This research adds to the existing literature on the effect of assets in the decision to purchase long-term care insurance by using several methods to address the nonlinearity in this relationship. The data that are used in this study are similar to those used by Sloan and Norton (1997); the methods of estimation differ from their linear specification, and from other studies that rely solely on categorical dummies for asset levels. The primary method of analysis in this research is the estimation of a probit model of long-term care insurance where a spline function is used in the estimation of asset effects. The spline function allows for the estimation of asset affects at varying ranges, and is equivalent to estimating the model in several subsamples based on asset levels, and then using restrictions to "tie" the coefficients at the "knots" (breakpoints or cutoffs in assets) in the sample (see Note 4). The knots can be chosen at various levels; some studies suggest breaking the sample into groups of equal numbers of observations or groups of equal ranges in the explanatory variable. In this case, the knots are first set at the quartiles in the asset distribution for the sample; several other options are also reported.

Data from Wave 1 of the AHEAD study (Public Release Version 2.10) are used in the analysis. AHEAD is a nationally representative longitudinal study of persons age 70 and older (in 1993) and their spouses. The survey contains a wide variety of information on health conditions, insurance coverage, family composition, and financial resources for 8,222 individuals in 6,047 households. Variable definitions and means are reported in Table 1 for a sample of 8,121 respondents from the AHEAD survey with nonmissing data. All respondents in the AHEAD survey were asked whether or not they owned an insurance policy for long-term care. Of those who answered this question, 2.3% reported that they had a long-term care insurance policy (see Note 5). Nonhousing assets are defined as the sum of financial assets less debt (see Note 6). The mean of nonhousing assets in the sample is $114,855 and is much higher among the insured than the uninsured, as data in columns 2 and 3 suggest. Those with insurance have nonhousing assets at twice the level of those without insurance.

In addition to age and nonhousing assets, covariates included in the probit model are education, race, marital status, health status, income, housing equity, and dummies for urban residence and region of residence. Education is measured in years and has

Table 1. Variable Definitions and Means

Variable Name	Definition	Full Sample	Insured	Uninsured
LTC policy	Equal to 1 if individual reports having a long-term care insurance policy	0.023	1	0
Age	Age, in years	76.52	75.09	76.56
Education	Years of education of individual	10.79	12.90	10.74
Non-White	Equal to 1 if individual reported race as other than White	0.151	0.060	0.153
Married	Equal to 1 if individual is married	0.547	0.639	0.545
Female	Equal to 1 if the respondent is a woman	0.632	0.612	0.633
Number of children	Number of respondent's children	2.77	2.61	2.77
Poor health	Equal to 1 if individual reports that health status is poor	0.129	0.033	0.132
Any ADLs	Equal to 1 if respondent reports difficulty in any activity of daily living	0.290	0.175	0.293
Any IADLs	Equal to 1 if respondent reports difficulty in any instrumental activity of daily living	0.297	0.202	0.299
MSA	Equal to 1 if the respondent resides in a (metropolitan statistical) area	0.756	0.754	0.756
Income	Household income from all sources	$24,605	$36,199	$25,358
Assets	Assets (not including value of housing equity)	$114,855	$269,339	$111,249
Housing equity	The value of the respondent's home less mortgage debt	$70,022	$104,071	$69,227
Sample size		8,021	183	7,838

a mean of 10.8. Race is measured with an indicator variable, non-White; about 15% of respondents are non-White. More than half of the individuals in the sample are married, and 63% are women. Health status is measured by an indicator variable equal to one if the respondent's self-reported health status is listed as poor on a scale ranging from poor to excellent. Additional measures of health status include whether the respondent reported difficulties in any of six ADLs (activities of daily living) or five IADLs (instrumental activities of daily living). Poor health status was reported by 12.9% of all respondents, and 29% and 30% of respondents reported difficulties with at least one ADL and IADL, respectively. Average household income in the sample was $24,605. For a discussion of the expected relationships between these covariates and long-term care insurance, see Mellor (2000).

Results

In Table 2, results from probit models of the probability of owning a long-term care insurance policy are reported. Marginal effects and *t* statistics are reported; standard errors of all estimates are adjusted for the use of multiple observations per household (see Note 7). For simplicity, the term "assets" will be used to reference nonhousing assets, and "housing equity" will be used to refer to the net value of the home. The first column of Table 2 reports the results using a linear specification in assets similar to Sloan and Norton's (1997) study. The estimated effect of a $10,000 increase in assets on the probability of having a long-term care insurance policy is an increase of 0.0001 percentage points over the baseline probability of 0.0230. This is a small 0.43% increase [(0.00001 × 10)/0.023]. In the second column, both linear and squared values for assets are included to account for nonlinearities in the relationship between assets and insurance. The marginal effect for assets doubles in size, and the squared term has a negative coefficient. This suggests that although assets increase the probability of having long-term care insurance, the effect decreases as assets increase (see Note 8).

The third column reports results from a probit model where assets are measured with three categorical dummy variables. Instead of the typical definition and interpretation of each dummy relative to one omitted category of assets, these dummies are formulated to reveal differences in the effect of assets relative to the previous asset category. Here, the categories are defined as quartiles in the asset distribution. The first variable is equal to one if assets exceed the first quartile in the distribution; the second is equal to one if assets exceed the second quartile; the third equals one if assets exceed the third quartile (see Note 9). For example, a person with assets at the 70th percentile in the distribution will have a value of 1 for the first two dummies, and a 0 for the third. A respondent with assets at the 90th percentile will have a value of 1 for all three dummies. The results from this specification also reveal a nonlinear relationship between assets and insurance. The effect of having assets in successive quartiles has a positive effect on insurance, but the marginal impact becomes very small and is statistically insignificant at higher levels of assets.

The fourth column of Table 2 reports results from the preferred specification of a probit model with a spline function in assets, where the knots of the spline are based on the quartiles. This specification again suggests that the marginal effect of assets becomes smaller at higher ranges in the asset distribution. For example, a $10,000 increase in assets leads

Table 2. Effect of Assets on Ownership of Long-Term Care Policy

Explanatory Variable	(1)	(2)	(3)	(4)
Assets (in 000s)	0.00001**	0.00002*		
	(2.69)	(2.15)		
Assets squared		−1.91e-9		
		(1.17)		
Assets greater than $3,000			0.011**	
			(2.54)	
Assets greater than $25,000			0.007^{+}	
			(1.90)	
Assets greater than $105,000			0.003	
			(1.04)	
Spline effects:				
1st quartile: assets < $3,000				0.006**
				(2.58)
2nd quartile: $3000 ≤ assets < $25,000				−0.00004
				(0.19)
3rd quartile: $25,000 ≤ assets < $105,000				0.0001*
				(2.05)
4th quartile: assets ≥ $105,000				0.000004
				(1.53)
Housing equity (in 000s)	2.39e-07	1.93e-07	1.05e-07	8.85e-08
	(1.31)	(0.99)	(0.62)	(0.60)
Housing equity squared	−1.97e-13	−1.60e-13	−8.13e-14	−8.28e-14
	(1.24)	(0.93)	(0.63)	(0.74)
Household income (in 000s)	0.0004**	0.0004**	0.0003*	0.0003*
	(3.29)	(2.90)	(2.53)	(2.50)
Household income squared	−0.000003*	−0.000002*	−0.000002^{+}	−0.000002^{+}
	(2.33)	(2.16)	(1.88)	(1.94)
Age	0.007*	0.007*	0.007*	0.006*
	(2.30)	(2.30)	(2.39)	(2.34)
Age squared	−0.00005*	−0.00005*	−0.00005*	−0.00004*
	(2.40)	(2.39)	(2.48)	(2.43)
Education	0.002**	0.002**	0.001**	0.001**
	(3.75)	(3.64)	(2.83)	(2.76)
Non-White	−0.005	−0.004	−0.001	−0.0003
	(1.03)	(0.96)	(0.21)	(0.07)
Married	−0.001	−0.001	−0.003	−0.002
	(0.40)	(0.46)	(1.11)	(1.10)
Female	0.001	0.001	0.002	0.001
	(0.57)	(0.57)	(0.87)	(0.86)
Number of children	−0.0005	−0.0005	−0.0003	−0.0003
	(0.82)	(0.76)	(0.53)	(0.55)
Poor health	−0.010*	−0.010*	−0.008^{+}	−0.007^{+}
	(2.23)	(2.20)	(1.94)	(1.90)
Help with any activity of daily living	−0.003	−0.003	−0.002	−0.002
	(0.83)	(0.82)	(0.57)	(0.63)
Help with any instrumental activity of daily living	0.002	0.002	0.002	0.002
	(0.56)	(0.56)	(0.82)	(0.81)
Metropolitan statistical area	−0.003	−0.003	−0.002	−0.002
	(0.92)	(0.84)	(0.74)	(0.71)
Southern U.S. state	0.017**	0.016**	0.015**	0.012**
	(3.13)	(3.10)	(3.06)	(2.94)
Central U.S. state	0.024**	0.024**	0.020**	0.017**
	(3.81)	(3.78)	(3.52)	(3.48)
Western U.S. state	0.027**	0.027**	0.023**	0.020**
	(3.74)	(3.72)	(3.51)	(3.51)

Notes: Marginal effects from probit models are calculated as $\varphi(\mathbf{x}\beta)\beta$ where **x** is a vector of mean values for all explanatory variables. Marginal effects for binary variables are calculated as the discrete change as the dummy goes from 0 to 1. The reported *t* statistics (in parentheses) are for the hypothesis test of the underlying coefficient being equal to zero. The sample contains 8,021 observations. The mean of the dependent variable is 0.023.

$^{+}p < .10$; $*p < .05$; $**p < .01$.

to a 0.06 percentage point increase in the likelihood of having long-term care insurance for individuals at the bottom fourth of the asset distribution, but only a 0.000004 percentage point increase for individuals in the top fourth of the distribution. The difference suggests that the same absolute increase in assets has a smaller effect for the wealthy than the poor, but this may be expected because (in relative terms) the effect of an extra $10,000 is much smaller for those with the most assets. (A likelihood ratio test of the linear

model versus the spline model rejects the linear model in favor of the spline model.) To compare the size of relative increases in assets, Table 3 reports simulated effects of a 10% increase in assets (from the mean in each quartile) on the percentage increase in the probability of having long-term care insurance.

The first three columns of Table 3 report (1) the marginal effect from the probit model with a spline in assets, (2) the mean level of assets, (3) the mean probability of owning long-term care insurance, in each quartile. The fourth column calculates the effect of a 10% increase in assets in each range; the fifth column expresses that effect in terms of percentage increases in the probability of having long-term care insurance. As reported here, the same 10% increase in assets has the largest effect for those in the bottom fourth of the distribution where the probability of having long-term care insurance increases by 10%. At the next quartile, the effect of assets is insignificant, and small. In the third quartile (assets ranging from $25,000 to $105,000), the effect of a 10% increase in assets is a 2.1% increase in the probability of long-term care insurance. Among those in the top fourth of the distribution, the effect is again small—0.4%—and based on a statistically insignificant coefficient.

To test the sensitivity of these results to the chosen knots in the spline function, Table 3 also reports results from two additional specifications. In Model 2, the knots are chosen at the 50th and 90th percentiles (see Note 10). Because only six individuals in the bottom 4th of the asset distribution had long-term care insurance, this specification combines the bottom two fourths of the distribution. The use of a knot at the 90th percentile tests the effect of assets among the top 10% of the asset distribution. A similar pattern appears in these results: For those in the bottom half of the distribution, assets have the strongest effect, and for those at the very top of the distribution, assets have the smallest effect. In Model 3, the observations are divided into three groups based on the 33rd and 66th percentiles of assets. Here, the effect of a 10% increase in assets on the probability of having insurance is 1.4% for the bottom third and somewhat higher at 1.8% for the middle third. Again, the effect is smallest (0.5%) for the highest asset range.

To test the magnitude of these asset effects relative to other factors influencing long-term care insurance ownership, the effects of 10% increases in household income and education were calculated from the marginal effects reported in Table 2, using changes from mean values of income and education. The effect of a 10% increase in income ranges from a 3% to 4.3% increase in the probability of having insurance; the effect of a 10% increase in education ranges from 4.7% to 9.4%. The effects of a 10% increase in assets, while large in some ranges, are generally smaller than the effects of income and education.

Table 3. Assets Effects on LTC Insurance Ownership Tests of Robustness to Thresholds

Assets, by Range (in 000s of $s)	Marginal Effect (1)	Mean of Assets in Range (in 000s of $s) (2)	Mean Probability of LTC Insurance (3)	Effect of a 10% Increase in Assets From Mean… (Col 1) × (10% × Col 2) (4)	…Expressed as a Percentage Increase in Probability of LTC Insurance (Col. 4/Col. 3) × 100 (5)
Model 1					
1st–24th percentile	0.006**	−0.575	0.003	0.0003	10%
(n = 1999)	(2.58)				
25th–49th percentile	−0.00004	11.236	0.014	−0.00004	0.3%
(n = 1974)	(0.19)				
50th–74th percentile	0.0001*	56.883	0.028	0.0006	2.1%
(n = 2029)	(2.05)				
75th–100th percentile	0.000004	388.712	0.046	0.0002	0.4%
(n = 2019)	(1.53)				
Model 2					
1st–49th percentile	0.0005**	5.293	0.008	0.0003	3.8%
(n = 3973)	(2.77)				
50th–89th percentile	0.00002	102.576	0.033	0.0002	0.6%
(n = 3245)	(1.63)				
90th–100th percentile	0.000004	706.558	0.052	0.0003	0.6%
(n = 803)	(1.22)				
Model 3					
1st–32nd percentile	0.002*	.667	0.007	0.0001	1.4%
(n = 2624)	(2.33)				
33th–65th percentile	0.0001*	28.204	0.017	0.0003	1.8%
(n = 2669)	(2.07)				
66th–100th percentile	0.000005^{+}	309.468	0.044	0.0002	0.5%
(n = 2728)	(1.82)				

Notes: All models include the following explanatory variables: income, income squared, age, age squared, housing equity, housing equity squared, education, female, married, number of children, non-White, poor health, and whether the respondent has difficulty with any activity of daily living (ADL) or instrumental ADL, and dummies for residence in a metropolitan statistical area and by region.

$^{+}p < .10$; $*p < .05$; $**p < .01$.

Explaining the Effect of Assets

The general positive effect of assets reported in Tables 2 and 3 may represent the role of asset protection as a motive for insurance. Or, the relationship may be observed because individuals with more wealth have stronger preferences for insurance. One way to distinguish between these two explanations is to examine the difference in the effect of nonhousing assets compared to housing assets. Results reported in Table 2 show that "protected assets," that is, assets in the form of housing equity that are protected from the Medicaid spend-down process, do not have a significant effect on long-term care insurance. Because assets unprotected from the Medicaid spend-down process appear to matter in the long-term care insurance decision and protected assets do not, these results are consistent with evidence of asset protection. That is, asset protection cannot be ruled out based on these tests, although asset protection may not be the only explanation consistent with these findings. Nonhousing assets differ from housing assets in terms of determining Medicaid eligibility, and they also differ in terms of liquidity. Thus, these results do not offer exclusive support for the relevance of asset protection.

Another test of asset protection is whether asset effects are significantly different for those with heirs, such as children or spouses, compared to individuals without children or spouses. To test this, two series of interaction terms were added to the model specification shown in Table 2, column 3. The first set of three interaction terms is calculated by multiplying each of the asset dummy variables by a dummy variable equal to one if the respondent has any children; the second set is calculated by multiplying the asset dummies by a dummy variable equal to one if the respondent is married. In separate models not reported here, the null hypotheses that either set of interaction terms was jointly equal zero cannot be rejected. These results do not suggest any difference in the effect of assets for those with heirs in the form of children or a spouse and those without.

Finally, an asset protection motive for purchasing long-term care insurance may be apparent through the relationship between long-term care insurance ownership and the respondents' expectations about events such as leaving an inheritance or lending financial support to a relative. Table 4 shows the effects of four variables reflecting expectations about: (1) providing financial help to family members; (2) leaving an inheritance; (3) living in a nursing home within 5 years; and (4) living an additional 10 to 15 years. The first two variables serve as proxy measures for the individual's desire to protect assets for heirs (see Note 11). The information from the latter two variables is used to identify those individuals who expect to enter a nursing home in 5 years, and those who expect to live more than a decade from the interview. Finally, a dummy variable is set equal to one for individuals who expect more than a 50% probability of entering a nursing home in 5 years *and* more than a 50% probability of living an additional 10 to 15 years. As the average nursing home stay is 29 months (Gabrel & Jones, 2000), this variable may capture expectations of returning home after a nursing home stay and also reflect an individual's motivation to protect assets for his or her own future use.

In the first column, the relationships between long-term care insurance and all four expectation variables are examined. The only significant relationship is found with nursing home expectations. Those who have higher expectations of a nursing home stay are more likely to have long-term care insurance. This should be interpreted with some caution, as having insurance may increase the individual's expectations about staying in a nursing home. In a model including only the financial transfer variables, neither expectations of providing financial help nor expectations of providing an inheritance has a significant relationship with long-term care insurance. Finally, in

Table 4. The Relationship Between Expectations and Long-Term Care Insurance

Variable Name	Explanatory Variables	Model 1	Model 2	Model 3
Financial help	Expected probability of providing financial help to family members in next 10 years	0.00002 (0.37)	0.00003 (0.66)	
Inheritance	Expected probability of leaving an inheritance	0.00003 (0.62)	0.00002 (0.54)	
Nursing home	Expected probability of entering a nursing home within 5 years	0.0003** (4.43)		
Living 10 years	Expected probability of living an additional 10–15 years	–0.00001 (0.20)		
High nursing home expectations	Expects at least a 50% probability of entering a nursing home			0.012* (2.13)
High expectations of living 10 years	Expects at least a 50% probability of living an additional 10–15 years			–0.004 (1.28)
Return	High Nursing Home Expectations × High Expectations of Living 10 years			0.010 (1.25)
Sample size		5,273	6,170	5,622

Notes: All models include the following explanatory variables: income, income squared, age, age squared, housing equity, housing equity squared, education, female, married, number of children, non-White, poor health, and whether the respondent has difficulty with any activity of daily living (ADL) or instrumental ADL, and dummies for residence in a metropolitan statistical area and by region.

*$p < .05$; **$p < .01$.

the last column, where a variable is used to identify those likely to have expectations of returning home after a nursing home stay, there is no significant relationship between this expectation and owning long-term care insurance. This analysis does not support either motivation for protecting assets, whether protection be for the benefit of heirs, or for the benefit of an individual who expects to have a nursing home stay in the next 5 years and live more than 10 years.

Discussion

The results of this study differ substantially from previous research that has examined the relationship between assets and long-term care insurance ownership. Previous research has either specified a linear relationship between insurance and assets, or used categorical dummies to produce mixed results regarding the direction of the asset effect. One study (McCall et al., 1998) suggests that the probability of having insurance increases with wealth, another (Kumar et al., 1995) suggests that it decreases with wealth. In this article, several model specifications, including the use of a spline function in assets, suggest that the effect of assets is to increase the probability of owning long-term care insurance at all levels, but that the effect dampens as assets increase. A difference in the role of assets for those with low wealth compared to those with high values of wealth was consistently shown in several models. Those with the highest levels of wealth are least influenced by assets in the decision to purchase long-term care insurance.

In addition, the estimated effect of assets that are unprotected from the Medicaid spend-down process (financial assets such as checking, savings, IRA accounts, and certificates of deposit) contrasts with the effect of "protected" assets measured as the value of housing equity. While unprotected assets have a sizable effect on long-term care insurance ownership, protected assets have no significant effect. This pattern is consistent with the motive of asset protection. However, there is little evidence to support the view that long-term care insurance is a form of asset protection for heirs. In contrast, the only significant relationship between long-term care insurance and expectations existed among those who had high expectations of a nursing home stay. One explanation that is consistent with these results is that individuals protect assets in order to pay for additional expenses while they are in a nursing home.

These results speak directly to two concerns regarding the public–private partnership program for long-term care. First, it appears that those most influenced by assets in the purchase of long-term care insurance are those with lower levels of assets, and not the very wealthy. This suggests that the concern by some that the partnerships program creates liberalized Medicaid eligibility to protect the assets of the wealthy is not warranted. Those most influenced to protect assets are those with low or middle levels of assets. Second, because assets matter, one cannot rule out asset protection as a motive for purchasing long-term care insurance; however, the effect of assets on insurance is no stronger when heirs are present than not. Long-term care insurance is not associated with having expectations regarding leaving inheritances and providing financial assistance to family members.

Because the partnership programs alter the dynamic of asset effects by making it less costly to protect assets, these results cannot speak to the effects of assets under the partnership programs. The McCall and associates' study (1998) is noteworthy in that it is the first study to examine long-term care insurance purchase under the partnership regime; future research on the potential effectiveness of the partnerships program should incorporate a similar sample but with improved asset data. In addition, it will be essential in future research to address the question of how Medicaid costs are affected by the partnerships.

References

Cohen, M.A., Kumar, N., McGuire, T., & Wallack, S. S. (1992). Financing long-term care: A practical mix of public and private. *Journal of Health Politics, Policy and Law, 17,* 403–438.

Gabrel, C., & Jones, A. (2000). The national nursing home survey: 1997 summary. National Center for Health Statistics. *Vital and Health Statistics, 13* (147).

Greene, W. H. (1993). *Econometric analysis* (2nd ed.). New York: MacMillan.

Health Care Financing Administration. (2000). National health expenditures, by source of funds and type of expenditures. Baltimore Office of the Actuary, National Health Statistics Group.

HIAA (Health Insurance Association of America). (1992). *Who buys long-term care insurance?* Washington, DC: Health Insurance Association of America.

Kumar, N., Cohen, M. A., Bishop, C. E., Wallack, S. S. (1995). Understanding the factors behind the decision to purchase varying coverage amounts of long-term care insurance. *Health Services Research, 29,* 653–678.

McCall, N., Mangle, S., Bauer, E., & Knickman, J. (1998). Factors important in the purchase of partnership long-term care insurance. *Health Services Research, 33,* 187–203.

Mellor, J. M. (2000). Long-term care and nursing home coverage: Are adult children substitutes for insurance? Unpublished manuscript. Williamsburg, VA: The College of William and Mary.

Myers, G. C. (Ed.). (1997). Asset and Health Dynamics Among the Oldest Old (AHEAD): Initial results from the longitudinal study. *The Journals of Gerontology, 52B* (Special Issue).

Sloan, F. A., & Norton, E. C. (1997). Adverse selection, bequests, crowding out, and private demand for insurance: Evidence from the long-term care insurance market. *Journal of Risk and Uncertainty, 15,* 201–219.

Wiener, J. M., & Hanley, R. J. (1992). The Connecticut model for financing long-term care: A limited partnership? *Journal of the American Geriatrics Society, 40,* 1069–1072.

Wiener, J. M., Illston, L. H., & Hanley, R. J. (1994). *Sharing the burden: Strategies for public and private long-term care insurance.* Washington, DC: The Brookings Institution.

Received June 2, 1999
Accepted June 7, 2000
Decision Editor: Vernon L. Greene, PhD

Appendix

Notes

1. Because such a small percentage of the population purchases private insurance, the focus of many research studies has been why individuals do not purchase insurance. Leading explanations include the high cost of premiums due to adverse selection and moral hazard. Reasons for purchasing insurance, reported in surveys of pur-

chasers, include increasing choice of nursing home care, maintaining independence, and avoiding welfare (HIAA, 1992).

2. "Back-end" coverage describes plans in which private insurance or out-of-pocket payments cover some initial period of care, and public insurance covers the costs for the remainder of the care period. The partnership programs are an example of back-end coverage.

3. These observations are not eliminated from the sample; instead, results are based on a model where a dummy variable for "missing assets" is included as an explanatory variable.

4. For more on the use of spline regression, or linear piecewise regression, see Green (1993).

5. This number is lower than the estimated 4% and 5% reported in the studies cited in the introduction. However, the age of the AHEAD sample (at an average of 76.5 years) is consistent with a smaller percentage of individuals having long-term care policies, because (a) few insurance companies sold these policies until the mid-1980s, and (b) premiums increase with age. In addition, the estimate of 4–5% is produced by the Health Insurance Association of America, which derives this estimate from the number of policies sold relative to the population, not accounting for lapses in coverage or deaths.

6. The financial assets included in this measure are: checking, savings, money market accounts, CDs, government savings bonds, T-bills, IRAs, KEOGHs, stocks, mutual funds, investment trusts, business equity, bonds, bond funds, real estate not including the primary home, and the value of vehicles.

7. Marginal effects are calculated as $\varphi(\mathbf{x}\beta)\beta$, where φ is the standard normal density, $\mathbf{x}$ is a vector of mean values for all explanatory variables, and β is the probit coefficient. Marginal effects for binary variables are calculated as the discrete change as the dummy goes from 0 to 1. The reported *t* statistics are for the hypothesis test of the underlying coefficient being equal to zero.

8. Of the additional covariates included in the model reported in Table 2, education has a positive and significant effect on ownership of long-term care insurance. Ownership of long-term care insurance increases with both age and household income. Of the three measures of health status, only the dummy variable for poor health status is statistically significant. Those in poor health are less likely to have long-term care insurance. Relative to respondents living in the eastern United States, respondents in other regions of the country are more likely to own long-term care insurance.

9. The 25th, 50th, and 75th percentiles of the asset distribution are $3,000, $25,000, and $105,000, respectively.

10. The 50th percentile in assets is $25,000, the 90th is $302,000. Also used as knots are the 33rd percentile ($7,000) and the 66th percentile ($65,300).

11. However, some respondents who expect to leave assets for a spouse may not perceive that as either an inheritance or a financial transfer.