THE SURVEY OF INCOME AND
PROGRAM PARTICIPATION

INCOME AS A PROXY FOR THE ECONOMIC STATUS OF THE ELDERLY

No. 58

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Employee Benefit Research Institute

U. S. Department of Commerce BUREAU OF THE CENSUS

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July 1988

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Income as a Proxy for the Economic Status of the Elderly

by

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and

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Paper presented to the Society of Government Economists, the American Economic Association, Chicago (December 27, 1987).

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TABLE OF CONTENTS

Introduction..... 1

The Research Data File..... 3

The Distribution of Wealth Among the Elderly..... 6

Table 1 - Mean and Median Wealth and Debt Among Selected Elderly by Marital Status and Living Arrangement, 1984..... 8

Table 2 - Mean and Median Wealth and Debt Among Selected Single Elderly by Living Arrangements, 1984..... 9

Table 3 - Correlation of Adjusted Family Income with Net Worth and Annuitized New Wealth: Selected Elderly by Marital Status and Living Arrangement, 1984 a,b.... 11

Table 4 - The Distribution of New Wealth Among the Elderly by Marital Status and Family Income, 1984 a..... 12

Table 5 - Average and Annuitized Net Wealth and Home Equity Among Among Elderly Families by Family Income and Marital Status, 1984 (in thousands)..... 14

Testing the Importance of Assets: A Model of Medigap Insurance Purchase..... 16

Table 6 - Logit Regression Coefficients: Dependent Variable - Private Health Insurance Coverage..... 18

Summary and Concluding Comments..... 20

Appendix 1

References

Introduction

The availability of data that provide detail about the income and wealth status of American households has enabled researchers during the last several years to more carefully examine income variability and the relationship between income and wealth. These data--the 1979 panel survey of households conducted by the President's Commission on Pension Policy, the 1983 and 1985 Surveys of Consumer Finances, the 1979 Income Survey Development Program (ISDP), and its daughter survey, the longtitudinal Survey of Income and Program Participation (SIPP)--have begun to refine the way researchers approach various issues related to economic well-being and decision-making.

Collecting data on household wealth, however, is costly. Consequently, asset data are not obtained in our largest ongoing population survey, the Current Population Survey, while questions about income are asked regularly. Reported wealth may also more include more error and/or nonresponse than reported income (Radner, 1985). Cleaning and imputing asset data, therefore, are major tasks that delay release of the data for public use. The infrequency of survey information about assets (and the delay with which these data are available for public use) means that public policy decisions which require current information about a target population typically omit consideration of wealth or make presumptions about the distribution of wealth based on data that are several years old. The volatility of asset values can invalidate inferences from such data.

This paper explores the importance of having asset data to evaluate the

the economic situation of the elderly. We attempt to test the role of assets in evaluating economic status behaviorally, in the context of a common decision made by elderly families and individuals--the decision to purchase health insurance. A simple model of insurance purchase is proposed, incorporating both net wealth and a proxy for desired bequest. Past research has hypothesized bequest-oriented consumer behavior (Blinder et al., 1981; Kotlikoff, 1987); our model represents an application of that concept to the demand for supplemental insurance among the elderly. Past analyses of supplemental coverage among Medicare beneficiaries have related coverage to income (Long et al., 1982; Rice and McCall, 1985; Huang, et al., 1987), but not assets.

The omission of a relevant explanatory variable may introduce both bias and inconsistency in multiple regression coefficient estimates. For example, a strong positive correlation between income and assets would bias upward both the coefficient estimate for income and the variance of the estimate. While the magnitude of the effect of income would be exaggerated, the upward-biased variance of the estimate might lead to overly conservative conclusions about the variable's significance.

This paper is divided into four parts. Part 1 describes the SIPP calendar-year data file that underlies the empirical work presented in this paper. The variability in family incomes during the year reported in other analyses of SIPP data (Ruggles, 1987) suggests the advisability of merging SIPP waves to obtain an extended profile of income for the elderly population as well as the nonelderly. However, the authors warn that the estimates

presented in this paper are preliminary; verified estimates will be released at a later date.

Part 2 describes the level and distribution of net wealth among the elderly and explores the joint distribution of income and wealth. The distributions of various assets, debt and net wealth among the elderly are presented separately for elderly in different marital situations and living arrangements. Following accepted literature in this area (e.g., Weisbrod and Hansen, 1968; Moon, 1977), annuitized values of the elderly's assets are also presented. Annuitizing the elderly's assets has the general effect of equalizing the asset positions of elderly of different ages.

Part 3 develops and estimates a simple model relating Medigap insurance purchase among the elderly to assets and insurance purchase. Two estimates are presented, alternatively including and omitting assets as explanatory variables. Part 4 provides a summary and concluding comments.

The Research Data File

The Survey of Income and Program Participation (SIPP), a panel survey of the noninstitionalized population, provides detailed information about the demographic, social and economic features of U.S. households. The survey routinely asks a set of core questions on, alternatively, a 4-month or 1-month response basis. Core questions include questions about family structure, living arrangements, income from various sources, health insurance status and

public program benefit recipiency. Special topical modules (e.g., asset questions) are added to the core questions at scheduled intervals; the asset module, in particular, has been included twice, with a one-year interval.

Our research file is based on the 1984 SIPP panel, which contains 19,878 sample households first surveyed in October 1983 and followed through July 1986. Our file selected individuals that responded to questions in December 1983 and were age 65 or older in January 1984, together with their spouses of any age. Various SIPP waves and rotation groups were then restructured to achieve a 1984 calendar-year research file. Our file captures data for the twelve months of 1984 reported for the various rotation groups in SIPP Waves 2 through 5. Individuals in this file are weighted to national totals using the Census's December 1983 population weights.

The process of creating a calendar-year file is complicated by several aspects of the data structure. A SIPP wave is unlike most other public use cross-sectional data bases; each wave contains four rotation groups that each respond to the same questions, but for different reference months. The complexity of the data structure is amplified by the changes in households and families that occur over time. With each interview the household and family structure is recorded; pointers in the data enable the user to follow family changes due to marriage, divorce, remarriage, children leaving the household, etc. In the process of creating a calendar-year file, we retained enough information to know that a change in marital or family status had occurred; however, we did not follow the incorporation of new families or family members. Consequently, our research file loses some transitions in household

composition as a compromise to the cost and difficulty of managing a very large data file.

Our research file of people age 65 or older and their spouses includes data for 6,195 individuals, representing a weighted total population of 26.2 million elderly people and their spouses. This total is approximately 1.8 million people less than the population age 65 or more reported by the Census (Statistical Abstract, 1987). The difference may reflect the fact that our file excludes people that became 65 during 1984, although it retains information for elderly individuals and their spouses that left the survey household during the year.

The tabulations presented in this paper are based on a synthetic family record created from the research file described above. The synthetic family record is the reference person record (in the case of a married couple) or the individual record (in the case of an unmarried person or a married person with no spouse present). We adopted this file structure as the simplest way to append information from the asset module to the core SIPP data, since information about jointly held assets appears only on the reference person's record. To capture information about the nonreference spouse's own assets, we added spouses' individually held assets to the individually held assets of their reference person. Similarly, the spouse's income was added to the income reported by the reference person. For the few couples in which neither person was a SIPP reference person, we designated the individual whose record contained the joint-asset data as the reference person. Home equity was divided equally among identified owners; we added spouses' equity together to

produce total equity for the family unit.

Individuals that died or otherwise left the survey during 1984 are retained in the file, and any reported monthly income data are averaged and annualized. However, for the purpose of this paper, we have deleted from the file all people that experienced a marital status change during 1984: eighteen percent of the base population. Deletion of these people from the data serves two purposes: (1) it reduces the opportunity for error associated with annualizing income data (our file does not include any information about a spouse acquired during 1984); and (2) it potentially maximizes the correlation between income and assets for all subgroups presented in the paper.

The Distribution of Wealth among the Elderly

This section describes the distribution of net wealth and its relationship to income among 16.5 million elderly family units in 1984: 6.5 million married couples and nearly 10 million individuals. Slightly more than a third of these family units (38 percent) were age 75 or older in 1984; one third were between the ages of 65 and 69. As described earlier, these family units were selected both on the basis of age and marital stability during the year; as a result of this selection (omitting 18 percent of the elderly population), family units age 70 to 74 may be slightly underrepresented in our data.

Most of the family units age 75 or older (62 percent) were either

widowed or divorced; fewer than one quarter of the families age 75 or older were married couples. Nearly 81 percent of all single persons age 75 or older were women and two-thirds of these women (68 percent) lived alone.

Among these family units age 65 or older, mean net wealth was $54,415 in 1984. This mean includes families with zero or negative net wealth (13 percent), as well as a like number (13 percent) with net wealth of $100,000 or more. Aggregately, home equity is the elderly's single greatest asset; among all elderly families, home equity averaged 52 percent of aggregate net wealth. Among widowed elderly, home equity averaged more than 72 percent of net wealth.

Mean net wealth among married couples ($102,447) was more than double the mean net wealth of other family types (see table 1). While married couples represented 36 percent of all elderly family units, they held 42 percent of net wealth. The greatest absolute discrepancy in wealth-holding between married couples and single elderly occurred in their holding of illiquid assets (including nonresidential, nonbusiness real property and life insurance) and home equity. Average debt among married couples (exclusive of home mortgages) was, in absolute terms, similar to that among unmarried elderly ($611 versus $324).

Unmarried elderly living alone consistently averaged lower net wealth than elderly in the same marital status group living with others (see table 2). This pattern held both for elderly that were divorced or widowed and for never-married elderly. However, never-married elderly regardless of living

Table 1
Mean and Median Wealth and Debt Among Selected Elderly
By Marital Status and Living Arrangement, 1984

Type of Wealth	Mean (in thousands)	Median (in thousands)	Coefficient of Variation
	Couples (n = 6.5 million)		
Total net wealth	102.4	59.4	359.8
Home equity	52.2	43.0	104.1
(Home equity among owners)	64.5	50.0	82.9
Liquid assets	17.1	0.2	1,775.4
Illiquid assets	32.0	7.0	352.7
Business equity	1.0	0.0	925.5
Other debt	0.6	0.0	615.5
	Divorced (n = 1.2 million)		
Total net wealth	28.3	6.0	169.5
Home equity	17.4	0.0	151.8
(Home equity among owners)	37.1	30.0	73.9
Liquid assets	3.0	0.0	449.2
Illiquid assets	7.8	1.0	348.9
Business equity	0.2	0.0	793.5
Other debt	0.4	0.0	286.0
	Widowed (n = 7.4 million)		
Total net wealth	41.3	26.3	131.7
Home equity	29.9	21.9	123.1
(Home equity among owners)	44.3	38.7	83.3
Liquid assets	3.7	0.0	449.2
Illiquid assets	7.3	0.8	347.4
Business equity	0.5	0.0	1,418.7
Other debt	0.3	0.0	762.9
	Never Married (n = 1.3 million)		
Total net wealth	49.8	17.9	206.4
Home equity	28.7	5.0	144.7
(Home equity among owners)	51.6	42.5	84.9
Liquid assets	13.4	0.1	545.0
Illiquid assets	7.3	0.5	432.8
Business equity	0.4	0.0	1,232.9
Other debt	0.1	0.0	460.4

Source: Authors' tabulations of the Survey of Income and Program Participation (U.S. Department of Commerce, Bureau of the Census), Waves 2-5, 1984.
Note: Data exclude all elderly that experienced a marital status change during 1984.

Table 2

Mean and Median Wealth and Debt Among Selected Single Elderly
By Living Arrangement, 1984

Type of Wealth	Living Alone			Living with others		
	Mean	Median	Coefficient of Variation	Mean	Median	Coefficient of Variation
Divorced						
Total net wealth	26.1	3.0	175.4	33.3	17.3	159.6
Home equity	15.8	0.0	165.9	21.9	9.0	119.5
(Home equity among owners)	36.9	32.5	77.9	37.5	30.0	64.7
Liquid assets	3.5	0.7	434.0	1.3	0.0	284.0
Illiquid assets	7.0	1.0	291.8	10.3	0.2	402.5
Business equity	0.1	0.0	869.0	0.2	0.0	623.4
Other debt	26.1	3.0	175.4	33.3	17.3	159.6
Widowed						
Total net wealth	39.2	24.7	139.1	45.3	33.7	118.7
Home equity	27.6	20.0	132.5	35.3	29.0	103.8
(Home equity among owners)	44.1	38.0	85.2	44.8	39.4	79.7
Liquid assets	4.3	0.1	460.8	2.3	0.0	596.8
Illiquid assets	7.1	0.7	342.3	7.9	1.0	355.8
Business equity	0.6	0.0	1,334.7	0.2	0.0	1,457.5
Other debt	0.4	0.0	822.3	0.3	0.0	549.8
Never Married						
Net wealth	40.8	8.3	246.8	61.7	34.0	169.2
Home equity	22.3	0.0	177.5	37.4	25.0	113.8
(Home equity among owners)	53.8	45.0	84.9	50.0	40.0	84.7
Liquid assets	11.8	0.1	594.7	15.7	0.0	492.7
Illiquid assets	6.5	0.0	357.0	8.3	0.7	480.8
Business equity	0.4	0.0	1,119.5	0.5	0.0	1,299.5
Other debt	47.0	0.0	392.8	0.1	0.0	169.2

Source: Authors' tabulations of the Survey of Income and Program Participation (U.S. Department of Commerce, Bureau of the Census), Waves 2-5.

Note: Data exclude all elderly that experienced a marital status change during 1984.

arrangement averaged substantially higher net wealth ($49,800) than widowed ($41,343) or divorced ($28,320) elderly.

Although married couples average substantially higher net wealth than unmarried individuals, variation in wealth among married couples is greater than among unmarried individuals. The coefficient of variation in net wealth calculated for couples (presented in table 1) is more than twice that calculated for divorced or widowed elderly, and 75 percent higher than that calculated for never-married elderly. The greater variation in net wealth among couples reflects some very high values of net wealth in the data. In 1984, more than half of married couples reported net wealth of $50,000, and 30 percent reported net wealth of $100,000 or more. About 9 percent of couples reported zero or negative net wealth.

The principal locus of wealth variation among couples is their holding of liquid assets--at the median and on average, a relatively small component of most family units' net wealth. The most important component of net wealth--home equity--is more evenly distributed among couples relative to other asset types, and is comparably distributed (but about lower means) within various groups of unmarried elderly.

Correlation coefficients calculated alternatively for (1) family income and net wealth and (2) family income and annuitized net wealth are presented in table 3. For most elderly, the correlation between income and wealth, although positive, is moderate--about 0.5. Never-married elderly living alone demonstrate the highest correlation between income and net wealth--0.7. In

Table 3

Correlation of Adjusted Family Income
with Net Wealth and Annuitized Net Wealth: Selected Elderly by
Marital Status and Living Arrangement, 1984[a,b]

Living Arrangement	Net Wealth	Annuitized Net Wealth[c]
Couples	0.54	0.55
Divorced		
Living alone	0.64	0.59
Living with others	0.40	0.38
Widowed		
Living alone	0.43	0.40
Living with others	0.47	0.39
Never Married		
Living alone	0.70	0.66
Living with others	0.43	0.38

Source: Authors' tabulations of the Survey of Income and Program Participation (U.S. Department of Commerce, Bureau of the Census), Waves 2-5.

Note: Data exclude all elderly that experienced a marital status change during 1984.

a For unmarried elderly, family income and wealth equal personal income and wealth. For married couples, family income and wealth are calculated as, respectively: (1) the sum of each spouse's income and (2) the sum of each spouse's individually held wealth plus jointly held wealth.

b The Pearson true product-moment correlation is defined as:
cov(x,y)/(var(x)var(y))**0.5

c Implicit annuity factors are from the Social Security Administration, Office of the Actuary (Wade, 1986) and reflect a 7-percent rate of discount. For married couples, life-expectancy was based on the age of the reference person, usually the husband. Use of the husband to annuitize wealth among married couples probably overstates the couple's true annuitized wealth, since husbands are commonly older than wives and women have longer life expectancies at every age.

Table 4
The Distribution of Net Wealth Among the Elderly
by Marital Status and Family Income, 1984[a]

Family Income	Total, all families (percent)	Percent of Families with Net Wealth: $0 or less	$1-$9,999	$10,000-$49,999	$50,000 or more
		Married			
Total	100.0%	8.0%	10.0%	24.3%	57.6%
$0-$4,999	2.7	1.8	0.5	0.3	0.2
$5,,00-$9,999	15.4	2.7	3.9	5.4	3.3
$10,000-$14,999	23.8	1.5	3.4	7.2	11.8
$15,000-$24,999	33.7	1.4	1.9	9.3	21.2
$25,000 or more	24.3	0.7	0.5	2.1%	21.1%
		Divorced			
Total	100.0	24.8	29.9	24.8	20.5
$0-$4,999	27.6	10.4	9.7	6.1	1.4
$5,000-$9,999	37.0	11.1	12.3	10.2	3.4
$10,000-$14,999	18.5	2.1	4.7	5.5	6.2
$15,000-$24,999	11.8	0.4	2.8	2.8	5.9
$25,000 or more	5.1	0.7	0.4	0.3	3.6
		Widowed			
Total	100.0	10.7	16.9	24.3	48.2
$0-$4,999	20.6	5.3	4.8	7.5	2.9
$5,000-$9,999	33.4	4.4	8.5	11.9	8.6
$10,000-$14,999	37.3	0.7	2.4	3.1	31.1
$15,000-$24,999	6.0	0.1	1.0	1.1	3.8
$25,000 or more	2.6	0.1	0.2	0.6	1.7
		Never Married			
Total	100.0	18.0	24.7	27.3	30.0
$0-$4,999	27.3	10.5	6.7	7.1	3.0
$5,000-$9,999	33.7	6.9	9.7	9.3	7.7
$10,000-$14,999	17.8	0.6	4.5	5.7	7.0
$15,000-$24,999	14.0	0.0	3.5	4.2	6.3
$25,000 or more	7.2	0.0	0.2	1.0	6.0

Source: Authors' tabulations of the Survey of Income and Program Participation (U.S. Department of Commerce, Bureau of the Census), Waves 2-5.

Note: Data exclude all elderly that experienced a marital status change during 1984.

[a] For unmarried elderly, family income and wealth equal personal income and wealth. For married couples, family income and wealth are calculated as, respectively: (1) the sum of each spouse's income and (2) the sum of each spouse's individually held wealth plus jointly held wealth.

most cases, annuitizing net wealth reduces its correlation with family income. This shift reflects the more even distribution of assets among elderly of different ages within marital-status living-arrangement groups relative to the distribution of income by age. In general, annuitizing net wealth improves the apparent wealth position of older family units relative to equally wealthy, younger family units.

The joint distribution of income and assets among elderly in different marital situations presented in table 4 demonstrates the dispersion of wealth and income among the elderly. While the likelihood of higher net wealth at higher levels of family income is apparent in each group, a significant minority, regardless of marital status, are located "off-diagonal" with, in particular, relatively high levels of net worth at relatively low levels of income. The high variance in both income and assets among married couples is largely concealed by the concentration of married couples in the highest, open-ended income and net wealth groups: 42 percent of couples reported income of $15,000 or more and net worth of $50,000 or more in 1984.

Average net wealth and home equity by family income are presented in table 5. The significant correlation between family income and net wealth is apparent across all marital status groups, as is persistent differences in mean net wealth and home equity between groups. Annuitizing net wealth and home equity preserves the relative wealth status of elderly in different marital status groups, but of course lowers absolute wealth differences among groups. Significant and sizable differences among elderly in different income categories also persist.

Table 5

Average and Annuitized Net Wealth and Home Equity Among Elderly Families by Family Income and Marital Status, 1984 (in thousands)

	Family Income[a]					
Marital Status	Total	$0-$4,999	$5,000-$9,999	$10,000-$14,999	$15,000-$24,999	$25,000 or more
Net Wealth						
Married couples	$101.8	$ 9.6	$35.4	$56.6	$82.5	$226.2
Divorced	27.9	8.6	14.8	42.1	64.1	93.4
Widowed	41.0	23.4	34.9	53.9	75.4	120.0
Never married	49.7	15.2	31.9	59.4	61.4	215.6
Annuitized Net Wealth						
Married couples	16.1	1.8	6.0	9.7	13.0	34.8
Divorced	4.1	1.3	2.3	6.1	9.1	12.7
Widowed	6.9	4.3	5.8	9.0	12.3	20.0
Never married	8.1	2.6	5.4	8.4	10.7	35.6
Home equity (among all elderly)						
Married couples	52.3	7.0	27.2	42.2	52.9	82.2
Divorced	17.4	7.3	11.6	24.8	32.5	51.5
Widowed	29.9	20.1	27.7	38.0	47.5	57.0
Never married	28.7	14.3	26.2	31.5	35.1	75.6
Annuitized Home Equity (among all elderly)						
Married couples	8.5	1.2	4.6	7.2	8.4	13.1
Divorced	2.5	1.0	1.9	3.5	4.5	7.1
Widowed	5.0	3.7	4.6	6.2	7.5	9.3
Never married	4.5	2.5	4.3	4.5	5.3	11.9

continued

Table 5 (continued)

	Family Income[a]					
	Total	$0-$4,999	$5,000-$9,999	$10,000-$14,999	$15,000-$24,999	$25,000 or more
Home Equity (among homeowners)						
Married couples	64.5	26.8	42.9	52.8	60.4	91.4
Divorced	37.1	21.2	29.8	39.1	50.9	72.4
Widowed	44.3	33.3	41.4	51.3	59.2	81.5
Never married	51.6	31.0	54.7	47.8	56.0	85.9
Annuitized Home Equity (among homeowners)						
Married couples	10.5	4.5	7.2	9.1	9.6	14.5
Divorced	5.4	3.1	4.8	5.6	7.1	10.0
Widowed	7.5	6.2	6.9	8.3	9.4	13.3
Never married	8.1	5.3	9.1	6.8	8.5	13.6

Source: Authors' tabulations of the Survey of Income and Program Participation (U.S. Department of Commerce, Bureau of the Census), Waves 2-5.

Note: Data exclude all elderly that experienced a marital status change during 1984.

[a] Differences between cells are everywhere statistically significant.

Testing the Importance of Assets: A Model of Medigap Insurance Purchase

We propose a single-period model of insurance purchase among the elderly. The decision to purchase insurance maximizes utility from current consumption (C):

$$(1) \qquad \max U(C) = \max U(Y - (S - aW) - i(E(L), W/W^*)) ,$$

where Y is current income and S is current saving. The model allows for dissaving wealth (W) at a periodic rate a. Insurance purchase is a function, i, of expected loss during the period, E(L), and current wealth relative to target wealth W*. Saving, in turn, is determined by current income and relative wealth:

$$(2) \qquad S = s(Y, W/W^*) .$$

Substituting (2) into (1) and maximizing with respect to wealth (W) yields the first-order condition:

$$(3) \qquad \frac{(\partial U/\partial i)}{(\partial U/\partial s)} = \frac{(aW^*-1)}{(\partial i/\partial W)} .$$

We hypothesize that the marginal utility of insurance and saving are both positive, as is $(\partial i/\partial W)$.[1] Higher levels of current wealth W*, therefore,

---

[1] Farley and Wilensky (1984) hypothesize a negative relationship between liquid assets and insurance purchase among the nonelderly population, and find limited evidence of substitution between wealth and insurance.

also induce greater insurance purchase in this model.

We estimate the relationship between insurance purchase and economic status using two alternative specifications. First, we estimate a "fully" specified model, including asset variables as well as income; we then estimate an underspecified version, including only income as a measure of economic status. Each of these specifications is estimated using a LOGIT procedure, with private insurance coverage as the dependent variable. Beta coefficients and chi-square values for each specification are presented in table 6. Comparable OLS coefficients are provided in Appendix 1.

The variables included in the specifications are:

EMPAID	dummy variable indicating coverage from an employer-sponsored retiree health plan (1=yes);
MEDICAID	dummy variable indicating Medicaid coverage for at least one month during the year (1=yes);
INCOME and INCOMESQ	family income and family income squared, equal to (1) personal income for unmarried individuals and (2) the sum of spouses' incomes among married couples;
RACE	dummy variable equal to 1 if the individual (among couples, the reference person) is nonwhite;
SEX	dummy variable, 1=women;
AGE	age of the individual (among couples, the reference person);
WDVALONE	marital status/living arrangement (1=widowed or divorced, living alone);

Table 6

Logit Regression Coefficients:
Dependent Variable = Private Health Insurance Coverage

Variable	Beta	
INTERCEPT	0.20822489	0.21945982
EMPPAID	*	*
MEDICAID	-1.86172113[a]	-1.87879579[a]
INCOME	0.12569919[a]	0.12861750[a]
INCOMESQ	-0.00089957[a]	-0.00094103[a]
RACE	-0.89052453[a]	-0.89552697[a]
SEX	0.68602382[a]	0.69858673[a]
AGE	-0.00385330	-0.00260340
WDVALONE**	0.10165782	0.07491916
WDVOTHER**	0.01595999	0.03054512
NEVERMAR**	-0.16176449	-0.18680742
NETWLTHSQ	-0.00000001	-
PCTHOME	0.00588697[a]	-
PCTHOMESQ	-0.00003591[a]	-

Note: Specification with wealth variables produced a model chi-square of 4820823 and an R value of 0.544. Specification without the wealth variables produced a model chi-square of 4777916 and an R value of 0.541.

*Model failed to converge for this variable within 25 iterations.
**The omitted category is married couples.

[a]Significant at 0.999.

WDVOTHER	marital status/living arrangement dummy (1=widowed or divorced, living with others);
NEVERMAR	marital status dummy (1=never married);
NETWLTHSQ	the square of family net wealth;
PCTHOME and PCTHOMESQ	home equity as a percent of net wealth and the percent squared.

In addition to including wealth variables to explain supplemental health insurance coverage among Medicare beneficiaries, the model specification differs from the existing empirical literature in this area in that it includes a control variable for employment-sponsored retiree health insurance. In effect, this variable reflects a significant price discount available to some retirees. In 1984, 23.5 percent of elderly in our sample had private insurance coverage as a retiree benefit; for most of these retirees, the plan sponsor contributed all or part of the cost of the plan. Retirees without a contribution from the plan sponsor (approximately 20 percent of all retirees with coverage from a past employer) nevertheless receive a price discount associated with access to a group plan vis-a-vis an individually purchased plan, as well as the tax exemption of retiree contributions for coverage in these plans. Although the OLS parameter estimates reported in Appendix 1 behaved as anticipated with respect to this variable, the LOGIT program that we used failed to converge on a coefficient estimate for this variable (EMPPAID) within the program's constraints.

The fully specified model includes two wealth variables, net wealth and a proxy for wealth relative to target wealth: the ratio of home equity to net wealth. Both variables produce coefficients with the expected sign, and the

target wealth variable proved significant.

Omitting wealth from the model changes the magnitude of the estimated coefficients very little. As expected, the relationship between income and coverage is exaggerated when the model is underspecified, as is the relationship between coverage and other significant variables: Medicaid coveage, race and sex. However, the amount by which the income coefficient is overestimated is small--about 2 percent.

The behavior of the model with respect to other variables included in both specifications is largely that found in the existing, if scant, empirical literature. Of primary difference is the significant relationship identified in this paper between coverage and gender: other research on supplemental insurance coverage among Medicare beneficiaries has failed to find significantly different preferences for coverage between men and women. However, the higher probability of supplemental coverage among elderly women that we find is consistent with the greater rates of private insurance coverage among nonelderly women identified in earlier research (Chollet, 1984).

Summary and Concluding Comments

The net wealth position of the elderly population varies systematically with the elderly's income, their marital status and--among single elderly--whether they live alone. Differences in wealth by age (not presented in this paper) are also apparent. Although annuitizing net wealth substantially

reduces age-related wealth differentials, systematic differences in annuitized wealth among different income and marital status groups persist. In each group, income correlates positively both with net wealth and with annuitized net wealth. In general, income correlates more strongly with wealth among single elderly living alone than among couples. The statistical relationship is weakest among single elderly living with others; this group reports lower average income but significantly higher average wealth than single elderly living alone.

We attempt to test the importance of having wealth data empirically, using a model of supplemental insurance purchase among the elderly. Existing literature related to this topic rarely includes wealth even as a theoretic consideration (a notable exception is Huang et al., 1987); no empirical estimates have included wealth as a determining variable.

Our estimates indicate that wealth is significant in explaining supplemental insurance purchase among the elderly. In particular, our measure of target (or bequest) wealth--home equity as a percent of net wealth--is significant and positively related to supplemental coverage. However, omitting wealth variables from the specification produces very little bias in the coefficient estimates. We estimate that the magnitude of the relationship between income and supplemental insurance coverage is biased upward by about two percent when wealth is omitted from the model specification. Other significant relationships--Medicaid eligibility, race and sex--are also biased upward but only slightly.

Variables that proved significant in the model were significant with very high confidence; similarly, insignificant variables were extremely so. The higher variance of the estimates associated with underspecification, therefore, did not jeopardize the recognition of significant variables in the model.

Finally, it is worth noting that OLS coefficients for most variables in this model are very sensitive to the particular form in which wealth variable is entered. The sign, magnitude and significance of the parameter estimates can change when alternative--and apparently similar--forms of the wealth variables are entered. This sensitivity (suggesting inconsistent parameter estimates) is symptomatic of an underspecified model and common in cross-section estimation. However, the cost of estimating LOGIT parameters precluded our testing for sensitivity in the more appropriate LOGIT model.

Appendix 1

Ordinary Least Squares (OLS) Regression Coefficients:
Dependent Variable = Private Health Insurance Coverage

Variable	Beta	
INTERCEPT	0.692416[a]	0.734290[a]
EMPPAID	0.157311[a]	0.162735[a]
MEDICAID	-0.424446[a]	-0.433043[a]
INCOME	0.008838[a]	0.007121[a]
INCOMESQ	-0.000064[a]	-0.000037[a]
RACE	-0.147909[a]	-0.152298[a]
SEX	0.072576[a]	0.072379[a]
AGE	-0.000195	-0.000204
WDVALONE	0.000756	-0.009148
WDVOTHER	-0.014190	-0.018068
NEVERMAR	-0.04148[b]	-0.05141830[b]
NETWLTHSQ	1.16550E-10[b]	-
PCTHOME	0.00051[a]	-
PCTHOMESQ	-.10997E-5[a]	-

Note: Specification with wealth variables produced an F-value for the model of 104.132 and an adjusted R-squared of 0.2648. Specification without wealth variables produced an F-value for the model of 131.731 and an adjusted R-squared of 0.2599.

[a] Significant at 0.999.
[b] Significant at 0.900.

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