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Beliefs and actions: expectations and savings decisions by older Americans

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Abstract

To understand the interaction of savings behavior, pension fund participation and expectations of retirement well being, we ask two questions. Are expected pension benefits a substitute for accumulated savings in replacing preretirement income? Are individuals' expectations concerning their retirement standard of living realistic based on their accumulated savings and pension plan participation? First-wave data from the Health and Retirement Study (HRS) are analyzed using a probit regression. The results are consistent with the idea that pension benefits are substitutes for saving and that accumulated savings have a significant impact on the expected standard of living but pension plan participation does not. © 2000 Elsevier Science Inc. All rights reserved.

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1. Introduction

Survey data as well as anecdotal evidence indicate the existence of a significant discrepancy between the expectations of economic well being in retirement and the savings behavior of Americans. The ability of a retiree to maintain his preretirement standard of living depends on his ability to replace preretirement income from a combination of Social Security, private retirement benefits and income from investments. Social security benefits serve as the

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primary source of retirement income for many, but for most—especially higher income individuals—those benefits do not provide sufficient income to maintain the preretirement standard of living. Income from accumulated savings, liquidation of capital and private pension benefits must fill the gap.

The divergence of individual expectations and the level of accumulated savings has at least two potential sources. The first is that people do not perceive the need to accumulate savings, because they expect pension benefits to "fill the gap." The second is that people have unrealistic expectations concerning their likely standard of living in retirement. In this paper, data from the first wave of the Health and Retirement Study (HRS) are used to analyze savings behavior and the formulation of expectations concerning retirement well being. The HRS is an excellent resource for the examination of these issues, since it is a longitudinal database of households in which at least one member was age 51 to 61 at the time of the start of the survey (1992). The data contained in the survey include information on economic and demographic characteristics, as well as detailed information on individual health and disabilities, employment history, and retirement plans, including the individual's expectations about his standard of living in retirement.

The first section of our analysis focuses on past savings behavior as reflected in accumulated savings. If individuals use savings and pension participation as a means of smoothing consumption over their lifetimes, then savings and pension participation may be substitutes. We assess the impact on accumulated savings of pension participation, as well as such economic and demographic characteristics as income, occupation, education, race, marital status and number of children. The second section of the paper focuses on whether individuals have realistic expectations of their standard of living after retirement. If individuals have realistic expectations of the effect of retirement on their standard of living, then factors that affect their ability to replace their preretirement income should be systematically related to their expectations. The impact of accumulated savings and pension participation on the individual's expectations is tested in an ordered probit model that includes demographic characteristics.

Our results are consistent with the notion that individuals view pension plan participation as an alternative to savings even when differences in income, education, gender, age, number of children and health are taken into account. In forming their expectations of retirement well being, the results indicate that individuals do take into account their own levels of accumulated savings but do not consider pension plan participation.

These results can potentially provide useful information about the extent of the divergence between beliefs and actions in savings decisions. It can also provide insights as to the impact of this behavior on the economic status of the upcoming cohort of older Americans. Such information could play an important role in public policy making, particularly as it relates to the proposals to reform the Social Security system.

2. The analysis of savings, consumption and retirement

The literature that addresses the issues surrounding savings and retirement is vast. Hurd (1990) and Poterba (1996) provide good overviews of the literature, along with insights into

the direction of future research. Some researchers like Lazear (1994) focus on the level of aggregate savings and the potential impact on economic growth. Others, like Cantor and Yuengert (1994), are more interested in the adequacy of individuals' saving for retirement. Regardless of the perspective, most of the work in this area has the life-cycle theory of consumption and savings as its theoretical foundation.

According to the life-cycle theory, individuals make decisions to maximize lifetime utility. Thus, during years when income is earned, savings decisions are made so that part of the income can be consumed after retirement. The main goal of saving is to smooth consumption over the lifetime. This theory takes the view that individuals have foresight and the planning capability to project future income streams, future price changes, future expected returns on investments, and to make utility maximizing decisions.

This leads directly to the first question addressed in this paper: are pension benefits a substitute for accumulated savings? Because the goal of saving is to maintain the preretirement standard of living, many researchers focus on the replacement ratio, the ratio of postretirement income to preretirement income. Retirement income is provided by social security benefits and pension benefits as well as income generated by accumulated saving. If the individual approaches retirement with a desired replacement ratio, the amount of saving she will need to have accumulated will be less if pension benefits will replace part of the preretirement income.

To attempt to answer this question, we look at the impact of participating in a pension fund on the level of accumulated savings. The amount of savings necessary to replace an acceptable portion of income will be related to the level of income, how much income will be replaced by pension benefits and the time remaining to save. Demographic and life situation (marital status, number of children and health) may also be systematically related to accumulated savings.

In the second part of our analysis, we address the question: do individuals have realistic expectations of their economic well being in retirement? Two recent papers by Banks, Blundell and Tanner (1998) and Bernheim, Skinner and Weinberg (1997) raise questions about how realistic individuals are in the formation of their expectations. They consider the consumption drop at retirement as evidence that the individuals may not be the far-sighted, utility maximizers represented in the life-cycle theory. Banks, Blundell and Turner explain the observed drop in consumption in terms of the "systematic arrival of adverse information," while Bernheim, Skinner and Weinberg write of a "surprise" at retirement. Either explanation would imply that individuals' expectations are not realistic.

Whether an individual expects to be better off, the same, or worse off after retirement should be based on his ability to replace preretirement income and continue preretirement levels of consumption. To form realistic expectations, the individual should consider her claim on retirement benefits and accumulated saving. These variables along with demographic and life situation variables should have an impact on the expected living standard in retirement.

3. Data and empirical model

The HRS is a survey specifically designed by an interdisciplinary panel to gather a broad range of information pertinent to savings and retirement decisions. The National Institute on Aging (NIA) is the sponsoring organization and the data are collected by the Institute for Social Research at the University of Michigan. Juster and Suzman (1995) provide an introduction to the data in a supplemental issue of the *Journal of Human Resources* that is devoted to the HRS. Current information about the data collection process and the data itself can be downloaded from the Institute for Social Research web site, http://www.umich.edu/~hrswww/.

The survey includes questions on retirement planning, pension participation, net worth, income and employment history, as well as health status and familial relationships. Alternative data sets, such as the Panel Study of Income Dynamics and the Surveys of Consumer Finances, were designed to focus on households' economic decisions and, accordingly, do not include questions about many important noneconomic factors.

In this paper, the first wave of the HRS, collected in March 1992, is used. To be age-eligible at that time a person had to be between 51 and 61 years of age. Partners were also interviewed, so some of the respondents are not "age eligible." From the 12,652 total respondents, 5,600 were age-eligible and answered that they were "not retired at all." Of those, 4,978 had complete data and are included in our analysis.

The subset of the HRS data used in our statistical analysis includes income and net worth information, expected standard of living in retirement and demographic information. Definitions, means and standard deviations for the variables used in this study are contained in Table 1. In the HRS, income and wealth information is collected on a household level, so both the respondent's and the partner's (if there is one) income and net worth are included. The individual's expected standard of living reflects that one person's perception. Demographic information is also on an individual level.

3.1. Wealth and income measures

The household income figure includes income from all sources—earnings, pensions and social security, investment income, and welfare payments. Accumulated savings or net worth measures reported in the HRS include both financial assets and housing equity.

The question of which assets should be regarded as accumulated savings for retirement is the subject of some debate. Because of this debate, we will use several measures of accumulated saving. Along with many researchers, we assume that individuals are unwilling or unable to consume housing equity and so exclude housing equity from accumulated saving. We also exclude the value of any vehicles, since they are generally not used to provide resources for consumption during retirement. In the results presented below, housing equity is excluded; however, the inclusion of housing equity does not significantly affect the results.

The household's current level of accumulated financial assets (SAVEFIN) is measured by the sum of liquid assets, such as bank accounts, CDs, Treasury bills, stocks, mutual funds and

Table 1
Variable definitions, means and standard deviations

Variable name	Variable definition	Mean (std. dev.) n = 4978
MALE	Binary variable that takes on a value of one if the respondent is male and zero otherwise.	.504 (.500)
WHITE	Binary variable that takes on a value of one if the respondent is white and zero otherwise.	.741 (.438)
MARRIED	Binary variable that takes on a value of one if the respondent has a partner and zero otherwise. ''Partner'' refers to a spouse or live-in companion of the same or opposite sex.	.756 (.429)
AGE	Number of years of age.	55.5 (3.10)
EDYRS	Number of years of education completed.	12.50 (2.93)
HLTH	Binary variable that takes on a value of one if the respondent states that their current health is excellent, very good or good, and zero otherwise.	.925 (.263)
HHINC	The total household income from all sources including earned income, investment income, pensions and transfers payments. (The log of HHINC is actually used in the estimates.	$56,537 (50349)
TOTKIDS	Number children, either living at home or outside household	1.74 (2.14)
KIDSAH	Number of children living at home	.312 (0.680)
YRSEMP	Number of years employed with the current employer.	15.41 (10.97)
SELFEMP	Binary variable that takes on a value of one if the respondent is self-employed and zero otherwise.	.128 (.334)
RETPLAN	Binary variable that takes on a value of one if the respondent participates in a retirement plan offered through the place of employment and zero otherwise.	.626 (.484)
SEVEFIN	The value of the household's liquid assets plus stocks plus bonds.	$41,073 (157,783)
SAVETOT	The value of the households assets, less housing equity, IRA value and the value of household vehicles.	$130,797 (448,760)
RETSAVE	The respondent's expectation of the household's liquid assets and reserves at retirement without IRA or pension funds.	$108.669 (346,774)
NWIRA	The value of all of household's IRA assets.	$19,041 (55,419)
WLTHINC	The ratio of SAVEFIN to HHINC.	.722 (3.50)
INCREP	The ratio of the future value of SAVEFIN to RETSAVE.	1.75 (12.51)
STANDRD	Coded response to the question, ''Do you expect your living standards to increase a lot (4), increase somewhat (3), stay about the same (2), decline somewhat (1) or decline a lot (0)?''	1.60 (0.750)

bonds. A second, more inclusive measure of accumulated savings is also examined. This measure, SAVETOT, includes financial assets as well as such nonfinancial assets as business equity and real estate (other than equity in the household's first or second residence). Finally,

the part of savings that is specifically set aside in an IRA (NWIRA) is used as another measure of accumulated retirement saving.

In planning to replace some percentage of preretirement income, the dollar amount of savings may not be as important as the accumulated savings relative to the income that needs to be replaced. The same dollar amount of savings might be sufficient to replace all of a low-income individual's income but might replace only a very small percentage of a high-income individual's income. To capture the relative need for saving, the ratio of nonpension financial assets to household income (FINSAVE/HHINC) is used.

Because the sample consists of those who are "not at all retired," additional savings may be accumulated in the period prior to retirement. As part of the retirement planning section of the survey, individuals were asked what they expected to have in "savings and reserves" exclusive of IRA and pension fund assets. This variable (RETSAVE) reflects the individual's expectations concerning future savings. Individuals may have unrealistic expectations of their ability to save in the future. To try to capture how reasonable those savings goals are we compute the ratio of the future value of the actual accumulated savings to the expected savings at retirement (INCREP). The numerator is what they will have at retirement if they simply invest what they have already accumulated. The denominator is what they expect to have at retirement. The larger INCREP, the larger the percentage of their expected savings and reserves have already been accumulated.

3.2. Expectation standard of living

The second part of our research focuses on the expectation of the standard of living after retirement. The HRS provides two methods to assess the individual's expectations. The first is simply to ask, "Do you expect your living standard to increase a lot (4), increase somewhat (3), stay about the same (2), decline somewhat (1), or decline a lot (0)?" The second method is to proxy the individual's expected ability to replace preretirement income with pension benefits. We use a binary variable indicating pension plan participation and the number of years employed by the current employer to proxy expected pension benefits. A binary variable for self-employed is also included to indicate the individual's work situation.

The HRS contains the information necessary to estimate a dollar amount of expected pension benefits; however, the computation is complicated. Mitchell and Moore (1997) discuss the complexities of estimating pension wealth as well as the problems of estimating "adequate" retirement saving. McGarry and Davenport (1997) deal specifically with some of the assumptions involved in the estimation process. A question of interest in future research is how well individuals understand their pension benefits and whether their expectations correspond with the benefits projected by their employers.

3.3. Demographic variables

In addition to the variables that directly reflect the ability to replace income, variables reflecting demographic and life situation differences are included in both the accumulated saving and standard of living models. The respondent's race is coded as one if white and zero otherwise. The education level is measured in years of education. Since marital and health

status may both affect the need for accumulated savings, "married" is used to designate those who indicate they have partners of the same or opposite sex, and health status is an indicator variable that is based upon a self-reported scale of physical health. The total number of children and the number of children at home may affect the ability to save for retirement.

4. Statistical methodology

In the first part of our analysis, the level of accumulated savings is modeled using a sample selection technique rather than a simple regression. The level of accumulated savings is a function of the binary variable for pension plan participation and other explanatory variables. The use of this binary variable may introduce a sample selection bias if pension plan participation is systematically related to the other explanatory variables. To take account of this potential problem, a two-stage Heckman procedure is used. In the first stage, a probit model of pension plan participation is estimated using the other explanatory variables as right hand side variables. From this estimate, the inverse Mills ratio (generally referred to as "lambda") is calculated and included as an explanatory variable in the second-stage, least-squares regression. If the lambda variable is significant, the use of the pension plan participation variable in a simple regression model would introduce a sample selection bias.

The second component of the analysis investigates the "expected standard of living in retirement" equation, by estimating an ordered probit model. As can be seen in the form that the question about retirement living standard is posed (see above), respondents provide information about their expected standard of living based upon an ordinal ranking of the choices, choosing the selection that most closely corresponds to their true level of expectations. An ordered probit model can provide useful insights about this type of question (see Zavoina & McElvey, 1975). This model is a latent regression procedure that assumes that an underlying measure of expectations exists but that its value cannot be observed. Thus, the true model is

$$y^* = \beta' x + \epsilon, \tag{1}$$

but y^* is unobserved. Instead, we observe values of y, which correspond to this person's expected standard of living, with values starting at 0 and increasing by units of one as the expected standard of living increases. These responses correspond to a set of parameters, usually labeled μ's, that partitions the distribution of y^*. The estimation procedure thus determines the probability that the value y^* falls into a range of the μ_i's as established by the observed values of y (in this case, the responses to the questions of expected standard of living). This model assumes that ϵ is normally distributed and the mean and variance of ϵ are normalized to zero and one, respectively.

5. Empirical results

5.1. Actual and expected savings accumulations

Before examining the findings concerning the factors affecting accumulated savings by the respondents, it may be helpful to consider the determinants of pension plan participation.

Table 2
Sample selection model of accumulated savings

Dependent variable	First stage probit estimates RETPLAN	Second stage estimates			
		SAVEFIN	SAVETOT	NWIRA	RETSAVE
Constant	−4.02	−695746	2301408	−265833	1297383
	(7.485)	(12.696)	(14.768)	(14.047)	(10.724)
MALE	.1376	−1253.0	−33406.7	−8610.4	33820.6
	(2.281)	(0.205)	(1.921)	(4.084)	(2.507)
WHITE	.0051	1596.5	22759.8	6257.1	24592.4
	(0.099)	(3.030)	(1.516)	(3.439)	(2.112)
MARRIED	−1953	−22525.8	−79910.2	−0.400	−87628.5
	(3.423)	(3.815)	(4.755)	(0.000)	(6.719)
AGE	−0313	2490.5	3023.6	1697.1	−3455.5
	(4.400)	(3.340)	(1.426)	(6.590)	(2.099)
EDYRS	.0829	3222.8	7753.8	1187.5	6619.3
	(9.545)	(3.156)	(3.684)	(3.366)	(2.945)
HLTH	—	−1144.7	−12920.4	1331.1	9505.3
		(0.139)	(0.577)	(0.467)	(0.537)
LOGHHINC	.4446	55160.5	224918	15913.3	154362
	(22.766)	(11.702)	(16.915)	(9.770)	(14.904)
YRSEMP	.0514	697.9	4778.6	−32.15	−3221.3
	(22.233)	(1.776)	(4.343)	(0.237)	(2.700)
SELFEMP	−2.58	−0607.1	74967.4	17944.1	10932.1
	(28.238)	(0.529)	(1.481)	(2.859)	(0.276)
TOTKIDS	.0002	−830.7	577.2	−406.5	471.0
	(0.014)	(0.568)	(0.139)	(0.805)	(0.146)
KIDSAH	−.0985	1516.6	−39746.6	−3349.0	−28208.5
	(2.766)	(0.396)	(3.647)	(2.532)	(3.335)
RETPLAN	—	−52172.8	−374513	6700.2	−224576
		(1.980)	(5.110)	(0.735)	(3.911)
LAMBDA	—	288842.1	207961	−7552.3	129951.8
		(1.855)	(4.824)	(1.404)	(3.842)
Chi-squared statistic/ Adjusted R^2	2174.0	0.068	0.144	0.094	0.104

Note: Absolute value of t-statistics in parentheses.

While these estimates are produced primarily to evaluate and control for selection bias, they also provide a profile of the type of individuals who are more (or less) likely to receive pension benefits upon retirement. These results, as are the accumulated and expected savings estimates, are displayed in Table 2.

In general, the results shown in these estimates, found in the first column of the table, are quite consistent with one's intuition about a typical individual who is a participant in a pension plan. The estimates show that participants are more likely to be male, to have more education and higher income, and to have worked longer for their employers. As one would expect, individuals who are self employed are significantly less likely to be involved in a pension plan. Interestingly, younger individuals are more likely to participate in a pension plan. Along the same lines, married respondents are significantly less likely to participate. The total number of children (TOTKIDS) is not significant but the number of children in the home (KIDSAH) has a significant negative impact on pension participation. It may be that

children at home represent a drain on resources so that pension fund participation is delayed or foregone entirely. Once children have left the home they no longer have an impact on participation.

Table 2 also contains the estimates of the relationship between accumulated savings and participation in a pension plan for four measures of accumulated savings: financial assets (SAVEFIN), all assets except equity in one's residence and IRA accumulations (SAVETOT), estimates of accumulated IRA assets (NWIRA), and anticipated financial assets at retirement (RETSAVE). These estimates are generally consistent across most of the variables, though there are some notable differences between "ordinary" savings and IRAs. Accordingly, these will be discussed separately.

Accumulated savings portray a consistent and intriguing picture of savings behavior. Individuals who have accumulated more total dollars of savings are significantly more likely to be white, older, have more formal education, have higher income, and have more work experience. Notably, males have significantly higher levels of savings than females, and married respondents have lower levels of savings than their unmarried counterparts. The more children in the home, the lower the level of accumulated saving as measured by SAVETOT. Health status (current) does not play a significant role in the level of savings, and interestingly, the results show no statistically measurable differences in the level of savings for self-employed individuals as compared to those who are employed by others. This is noteworthy, because self-employed individuals are far less likely to have pension assets to draw on in their retirement. Their savings may, however, take a different form, as the IRA estimates indicate.

For the first two measures of savings accumulations (SAVEFIN and SAVETOT), there are indications that individuals treat their savings and pension benefits as substitutes. The coefficient on the pension participation variable is negative and significant in both estimates of accumulated savings. One should note that many of the studies using techniques to detect and control for the presence of selection bias provide separate estimates for the two groups—in the case here, this would be pension plan participants and nonparticipants. The approach we take is to determine what is usually called the "treatment" effect and estimate only one equation with a dummy variable. See Barnow, Cain and Goldberger (1981) for a discussion of this approach.

The results show convincing evidence of selection bias at work in this process, as shown by the statistical significance of LAMBDA. Taken together, RETPLAN and LAMBDA show that the impact of pension plan participation is larger than estimates that do not take into account the selection effects on savings. In general, the estimates show that those who participate in a pension are more likely to save than those who do not, so the impact of pensions on savings accumulation would be understated if this bias were not controlled in the estimates. A simple way to check this is to examine an ordinary least squares estimate of the accumulated savings equations. The OLS estimates show that little or no substitution behavior is present. (These estimates are available from the authors upon request.)

Now consider the fourth column of the Table 2, in which estimates of accumulated IRA assets are presented. There are several differences in the factors that are important in determining the size of IRA accumulations, as compared to ordinary savings. For instance, while there are no gender differences in the accumulation of ordinary savings, males are

significantly more likely to have higher IRA assets, and, in contrast to the findings for ordinary savings, married and unmarried respondents display no significant differences in the amount of IRA savings. The years of work experience are not statistically significant in the IRA equation, unlike the results for both of the regular savings equations. Most notably, those who are self-employed are significantly more likely to have larger accumulations of IRA assets, though it is reasonable to expect these individuals to use this type of financial vehicle, since pensions are often unavailable. The total number of children is insignificant; however, the number of children at home has a significant negative impact on NWIRA. Finally, participation in a retirement plan is unrelated to IRA accumulations, again different from accumulations of savings outside of retirement plans. Additionally, there is scant evidence of selection bias in the case of IRA savings.

The final column in Table 2 shows estimates based upon the (self-reported) expectations of respondents about the level of savings they will have in retirement. There is remarkable consistency here between the results for this equation and the estimates for both financial assets and overall savings amounts. Note that the question about expected savings explicitly asked the respondent to answer based upon overall savings but not to include either IRAs or pension benefits. Thus, the comparison between columns two, three and five is natural. The only differences in the estimates are found in the gender variable: males are significantly more optimistic about their level of retirement savings, in that males have a significantly higher level of anticipated savings, while there are no significant gender differences in actual accumulations. There are also some slight differences on the basis of age. Older individuals expect to have lower retirement savings than younger respondents do. These individuals are likely to be closer to retirement than are younger individuals; therefore, this may not constitute a real difference in the estimates but, rather, better information about actual accumulations. Indeed, if the similarities across the two types of estimates are any indication, there is consistency between actual accumulations and the expected levels of savings upon retirement. Of course, these results do not address the issue of savings *adequacy*. Additional work on this needs to be done to determine the underlying relationship between the size of accumulated savings and expected retirement levels.

5.2. Expectations about changes in the living standard

The results for the estimates of expected living standard can be found in Table 3. All of the results examine the relationship between the anticipated living standard and objective measures of the individual's ability to replace income. The differences displayed across the columns depend upon the savings or income measures included in the specification. The first column includes income and accumulated financial assets plus the value of IRA assets. The subsequent columns move from absolute measures of income or wealth to relative measures that attempt to measure the extent to which income replacement is to be accomplished.

The dependent variable is defined as a *relative* change in the living standard, that is, whether they expect their standard of living to improve, stay the same or worsen. If one were measuring the absolute standard of living, the results presented in the table may appear counterintuitive, but not in relative terms. An example of this is found in the results for the first column. The income variable is negative and not statistically significant. The anticipated

Table 3
Ordered probit model of expected standard of living retirement

Variable	(1)	(2)	(3)	(4)
Constant	2.420 (6.410)	2.048 (6.698)	2.204 (7.158)	2.202 (7.149)
MALE	.2372 (5.593)	.2306 (5.431)	.2383 (5.620)	.2381 (5.615)
WHITE	−.1833 (5.121)	−.1724 (4.863)	−.1835 (5.151)	−.1839 (5.163)
MARRIED	.0289 (0.737)	.0331 (0.925)	.0193 (0.539)	.0188 (0.525)
AGE	−.0131 (2.5580	−.0110 (2.157)	−.0130 (2.534)	−.0129 (2.523)
EDYRS	−.0098 (1.696)	−.0070 (1.278)	−.0106 (1.935)	−.0107 (1.950)
HLTH	.1356 (2.655)	.1374 (2.697)	.1330 (2.612)	.1327 (2.605)
HHINC (log)	−.0219 (0.872)	—	—	—
TOTKIDS	.0117 (1.163)	.0113 (1.124)	.0123 (1.223)	.0123 (1.228)
KIDSAH	.0133 (0.522)	.0127 (0.512)	.0129 (0.520)	.0129 (0.520)
SELFEMP	.0924 (1.804)	.1085 (2.138)	.0920 (1.804)	.0927 (1.818)
RETPLAN	.0420 (1.140)	.0408 (1.144)	.0396 (1.109)	.0394 (1.103)
SAVEFIN	.3 × E−06 (2.991)	—	—	—
NWIRA	.1 × E−05 (2.586)	—	.1 × E−05 (2.885)	.1 × E−05 (2.862)
WLTHINC	—	.0105 (2.444)	.0092 (1.901)	.0089 (1.768)
INCREP	—	—	—	.0009 (0.669)
Chi-squared statistic	112.5	87.4	107.1	107.7

Note: Asymptotic t-statistic in parentheses.

change in living standard after retirement is unrelated to income level, even though people with higher incomes are likely to have higher living standards than do people with lower incomes. Their expectations about their future standard of living—relative to their current standard of living—are unrelated to an absolute measure of income.

Many of the other variables work in a manner comparable to these findings. Respondents who are white may expect (because their socioeconomic status may be higher) that this level may not be maintained in retirement, while minority individuals—at a lower level—may view the potential change in their living standard more positively. Similarly, the results for the respondent's education level are negative and (marginally) statistically significant. Education may increase income in absolute levels, but may not positively affect the anticipated retirement living standards.

It does appear that (echoing the results from the expected retirement savings level) male respondents are more optimistic about their living standard than are females. In contrast to the results for the savings estimates in Table 2, marital status is unrelated to expected changes in living standard. Individuals who are self-employed have expectations of an improved living standard. Both the total number of children and the number of children at home are insignificant. Finally, those individuals who consider themselves to be currently in good health view their future living standard positively. It is possible that individuals whose current health is good (which is correlated with future health) do not anticipate significant outlays for health care costs that could impair their ability to consume otherwise.

Turning to the variables related to financial status as it relates to retirement, these variables produce an interesting set of results. The accumulation of assets is, in general, positively related to the expected standard of living. Those who have larger accumulations of IRA assets or other financial assets (SAVEFIN) anticipate an improved standard of living. The relative measure of wealth to income (WLTHINC) is also positively associated with the expected living standard. The ratio of actual accumulated savings to the expected accumulation of savings at retirement, INCREP, is not statistically significant. The more the household has saved, the more likely it is to believe that it will maintain its living standard. On the other hand, what they have saved relative to what they expect to save may not convey as much information as to the direction of their standard of living.

The pension plan participation variable is insignificant in all of the equations. Participation in a pension plan is not statistically related to anticipated changes in standard of living. The lack of significance of this variable is intriguing. Apparently, people believe that their accumulated savings will affect their retirement standard of living but not pension fund participation. This discrepancy may be related to the tendency seen in the first section of our analysis for individuals to substitute saving for retirement participation. One interpretation of this result is that individuals who do not participate in pensions may have made sufficient other arrangements so that their expectations about their future living standard do not differ from those who participate in pension plans. Other potential explanations of the insignificance of the pension plan participation variable could be that they are not certain what benefits they will actually receive. This could be a lack of understanding of their pension plan or a lack of confidence that they will receive the promised benefits. Savings may be given greater weight because saving is controlled directly by the respondent. Alternatively, it may be that the measure of pension benefits is inadequate. Future research should involve a dollar estimate of the expected pension benefits rather than a dummy variable for participation.

6. Summary and conclusion

To understand the discrepancy between the expectations of economic well being in retirement and the savings behavior of Americans, we examined at two questions. First, do individuals view expected pension benefits as a substitute for accumulated savings in the process of replacing preretirement income? Our results are consistent with the idea that pension benefits are seen as substitutes for saving. Second, are individuals' expectations concerning the standard of living they will enjoy in retirement realistic based on their

accumulated savings and pension plan participation? Our results indicate that accumulated savings have a significant impact on the expected standard of living but pension plan participation does not. The insignificance of the pension plan participation variable is intriguing. As is often the situation, a variety of explanations for the lack of significance are possible, but none is satisfying. Future research that focuses on how well individuals understand their retirement plans and how realistically they anticipate the benefits they will receive may explain why pension plan participation does not affect the expected standard of living.

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