

The Impact of Financial Education on Savings and Asset Allocation

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Abstract

The responsibility to save and contribute to a pension is increasingly left to the individual worker. Understanding how households save and prepare for retirement is of paramount importance. There is concern in the U.S. that many families have little or no wealth even close to retirement. In this project, I use data from the Health and Retirement Study (HRS), a nationally representative sample of the cohort born between 1931 to 1941, to examine the financial situation of older households and their retirement plans. I first show that many families have not thought about retirement even though they are a few years away from retirement and the event is imminent. This finding confirms the results of other surveys, such as the Retirement Confidence Survey, that show that a large majority of workers have not made any plans for retirement.

INTRODUCTION

The responsibility to save and contribute to a pension is increasingly left to the individual worker. For example, the large majority of pension plans are currently defined contribution pensions. As a percentage of all private pension plans, defined contribution plans increased from 66.8% in 1975 to 92.3% in 1998.¹ When looking at the number of active participants, 69% of them have a defined contribution plan by 1998. In defined contribution plans, workers have to choose not only the amount of contributions but in many cases also how to allocate their pension wealth. The current debate on the privatization of Social Security considers putting individuals in charge of allocating a portion of their Social Security wealth. There is little research, however, on the difficulties that people face in making decisions about pensions and saving and how they overcome the complexities of devising saving plans. Many employers, in particular large ones, have started offering financial education to workers.² However, there is no clear evidence on the effectiveness of financial education in the workplace.

Understanding how households save and prepare for retirement is of paramount importance. There is concern in the U.S. that many families have little or no wealth even close to retirement. Much research is needed to understand the determinants of saving and to assess the effectiveness of financial education policies to foster saving.

In this project, I use data from the Health and Retirement Study (HRS) to examine the financial situation of older households and their retirement plans. I first show that many families have not thought about retirement even though they are a few years away from retirement and the event is imminent. There are important gender differences that

¹ Data is from the U.S. Department of Labor's Abstract of 1998 Form 5500 Annual Reports.

emerge in the data; women are less likely to plan for retirement and to have attended a retirement seminar. Additionally, women display characteristics that may be conducive to low savings. I then examine two measures of wealth holdings—financial and total net worth—and report that many families arrive close to retirement with little or no wealth. Portfolios are also rather simple: the major asset that families own is the house and close to 30% of families hold stocks. However, many families, in particular low-education, low-income families and Blacks and Hispanics, hold neither high returns assets (stocks, IRAs, business equity), nor basic assets such as checking accounts.

What are the reasons for such low wealth accumulation and simple portfolios? Throughout the paper, I argue that, in addition to many of the traditional explanations, planning costs can play a role in explaining the financial situation of these older households. In previous works (Lusardi (1999, 2000, 2002), I have shown that planning costs affect whether or not people plan, which in turn affects wealth accumulation and portfolio choice. In this paper, I examine whether retirement seminars, by affecting planning costs, can foster savings and the allocation of portfolio in risky assets, such as stocks. Using econometric techniques that account for the fact that attending retirement seminars is a choice variable and that seminars are likely to be offered to the workers who most need them, I show that seminars are an effective way to foster savings and stock holdings. This is particularly the case for those with low education and those who save little. My estimates suggest that, by offering financial education, the ratio of non-pension wealth to permanent income can be increased by 50% for the families at the bottom of the distribution and those with low education. Retirement seminars increase the ratio of total wealth (comprehensive of pension and Social Security) over permanent

income by 15-20% for both high and low education families. Taken together, this evidence suggests that retirement seminars are an effective way to foster wealth accumulation and bolster financial security.

PREVIOUS WORK

According to the 2001 Employee Benefit Research Institute's (EBRI) Retirement Confidence Survey (RCS), a large proportion of workers have done little or no planning for retirement. Only 39% of workers have tried to determine with some accuracy how much they need to save to fund their retirement. This figure is a bit higher than in previous years. In the early 1990s, often less than one third of workers tried to calculate how much money they needed to save for retirement. When asked why the calculation was not attempted, many respondents replied that it was too difficult and that they did not know where to find help to do it.

Using data from the HRS, Lusardi (2000a, 2000b) reports that lack of planning is pervasive even among older workers, who are 5 to 10 years away from retirement. These findings are consistent with several other studies, which document that many workers do not possess the information necessary for making saving decisions. Gustman and Steinmeier (1999b) report that many workers are not well informed about their Social Security and pension benefits. Workers are often incorrect about the type of pension plan they have and the benefits associated with it. The 2001 RCS documents that more than half of current workers expect to reach full eligibility for Social Security benefits sooner (age 65 or earlier) than they actually will. An earlier survey from EBRI in 1996 shows that only 55 percent of workers knew that U.S. government bonds have provided a lower

rate of return averaged over the past 20 years than the U.S. stock market. Bernheim (1998) surveys several studies and shows too that workers are often ill-equipped to make saving plans.

An important finding by Lusardi (1999, 2000a) is that planning has effects on both saving behavior and portfolio choice. Households whose head has not planned for retirement accumulate much less wealth than households whose head has done some planning. This result holds true even after accounting for many determinants of wealth and after accounting for pension and Social Security wealth. In addition, households that do not plan are less likely to invest in high return assets such as stocks. Examining data for workers who have already retired, Lusardi (2000a) also shows that those who did not plan report experiencing a less satisfying retirement. Consistent with these findings, the 2001 RCS reports that half of those who reported having made calculations of retirement saving needs have subsequently made changes in their behavior. Of these, more than half say they have started to save more.

Other studies have also shown that households do not make provisions for retirement and adverse events. Weir and Willis (1998) use data from the HRS to show that many women are vulnerable to the death of their spouse. A husband's death can precipitate his widow's entry into poverty. Warshawsky and Ameriks (2000) perform the experiment of importing the current wealth holdings of U.S. households, as reported in the Survey of Consumer Finances (SCF), into one of the most popular financial planners. They find that about half of working middle class American households will not have fully funded retirements. Some will actually run out of resources very shortly after retirement. One of the problems that these authors as well as Lusardi (2000a) emphasize

is that many households have limited resources until late in their life-cycle or start saving very late when it is not possible to accumulate much. These results are consistent with the work by Hurd and Zissimopoulos (2000), who examine subjective information about past saving behavior. When asked to evaluate their saving, a stunningly high proportion of respondents (73%) in the HRS report having saved too little over the past 20 and 30 years. Similar findings are reported by Moore and Mitchell (2000). They use data from the HRS to determine how much wealth (including Social Security and pensions) older households have, and how much they would need to save if they wished to preserve consumption levels after retirement. They conclude that the majority of older households will not be able to maintain current levels of consumption into retirement without additional saving. In particular, the median HRS household would still have to save an additional 16 percent of income to smooth consumption after retirement.

Empirical work on consumption suggests that these predictions may turn out to be accurate. There is mounting evidence that consumption falls sharply at retirement, and at a greater level than can be rationalized by explanations consistent with traditional models of saving and/or extensions that take into account non-separabilities between consumption and leisure such as the costs of going to work (see, among others, Hamermesh (1984), and Bernheim, Skinner, and Weinberg (2001)). Most importantly, Bernheim, Skinner, and Weinberg (2001) show that there exists a strong negative correlation between retirement savings and the magnitude of the consumption drop; consumption falls sharply for those with little wealth.

There are many reasons why households accumulate little for retirement but, as Lusardi (1999, 2000a, 2000b) argues, planning costs may play an important role in

explaining household saving behavior. Not only do households have to spend time collecting data and information about the variables that are needed for making saving decisions, but they may also have to overcome the stress of dealing with an unpleasant event. Retirement is not an event that many people look forward to. This may represent a time when individuals are lonely, unattractive and unhealthy. There is evidence in the HRS that respondents are very worried about illnesses and health problems after retirement (Lusardi (2000a)).

How large must planning costs be to prevent so many individuals from planning for retirement? A model taken from the literature in behavioral economics suggests that even small costs can have large effects. For agents that display hyperbolic discounting, even small costs that have to be paid immediately lead to wide regions of inaction: agents postpone actions that imply immediate costs (Akerlof (1991), Laibson (1997), O'Donoghue and Rabin (1999a,1999b). In this alternative model, consumers discount the immediate future at a high rate, and this high rate combined with a cost that has to be paid immediately gives rise to much inaction. In fact, contrary to the predictions of traditional models, some actions may never be taken; if planning takes time and effort, consumers may continue to procrastinate indefinitely and never put any effort into planning. This may be particularly relevant for behavior such as saving and portfolio choice. There are usually no deadlines or specific periods when decisions have to be made. Decisions can be made every day, but since one needs to put time and effort into them, decisions can be substantially delayed and perhaps never made.

As additional evidence that planning for retirement is considered an important but difficult task, many employers have started offering financial education to their

employees. Financial education is particularly prevalent among firms offering defined contribution pensions, where workers have to make their own decisions on how to allocate pension funds. An important question, however, is whether these initiatives have any effect on workers' behavior.

A few studies have looked at the effects of financial education in the work-place on private savings or contributions to pension funds (see, among others, McCarthy and Turner (1996), Bernheim (1995, 1998), Bayer, Bernheim and Scholz (1996), Bernheim and Garrett (2002), Clark and Schieber (1998), and Madrian and Shea (2001)). The empirical findings are still mixed. There is evidence of some effects of financial education, but the form of education seems to matter. For example, Bernheim and Garrett (2002) and Bayer, Bernheim and Scholtz (1996) find that programs that rely on print media (newsletters, plan description, etc.) have generally no effect on participation or contributions to pensions. While retirement seminars are found to be effective, they seem to affect only certain aspects of behavior, for example participation in pensions and the amount of contributions, but not, for example, total savings (Bernheim and Garrett (2002), McCarthy and Turner (1996)). However, these and other similar studies suffer from severe data shortcomings. For example, they often have very limited information about workers' characteristics and the characteristics of their pension plan. Most importantly, they have limited information about private wealth. There is still a debate on what is the appropriate measure of wealth to consider when looking at accumulation for retirement and whether, for example, one should include housing when calculating retirement wealth, since housing has a consumption in addition to an investment purpose. In addition, a series of studies show that there is a limited downsizing of housing after

retirement and a limited use of contracts such as reverse mortgages.³ Most importantly, many studies do not consider pension and Social Security wealth, which are two major components of total household retirement savings. As reported by Gustman and Steinmeier (1999a), pension and Social Security wealth accounts for approximately half of total accumulation. Leaving these components of wealth out and/or concentrating on narrow definitions of accumulation can have important effects on the empirical findings. In the next section, I look at data from the HRS and report some simple statistics about savings and planning for retirement.

DATA AND EMPIRICAL FACTS

The HRS offers a unique set of information that overcomes many of the shortcomings of previous research on savings. This survey, which covers a sample of U.S. households whose respondents were born between 1931 and 1941, provides detailed information on wealth and the retirement process with a focus on health, labor markets, and economic and psycho-social factors. Questions about wealth are asked to the financially knowledgeable person in the household.⁴

Below, I briefly examine five important sets of information that provide insights into household saving behavior and explain the differences in patterns of accumulation:

³See, among others, Venti and Wise (1990, 1991), and Sheiner and Weil (1992).

⁴There are several advantages in using the HRS. First, there is rich information about household characteristics, which is not present in other U.S. data sets. Second, since it concentrates on a specific cohort, the sample size is bigger than in other household data sets that report information about wealth and cover the entire population. Third, the implementation of new techniques to elicit information about wealth has led to rather accurate wealth reports. For a thorough examination of the HRS, the quality of the data, and comparisons with other data sets, see Juster and Smith (1997) and Smith (1995). See also the data appendix.

1) Planning: Three indicators of planning activities are provided in the survey: information on how much respondents have thought about retirement, whether they have attended a retirement seminar, and whether they have asked Social Security to calculate their retirement benefits. Since planning can be the result of choice, it is also important to have information about variables that influence choice such as planning costs. Variables that can proxy for these costs, such as sibling data and location and characteristics of firms, are available in the HRS as will be explained in detail later.

2) Past economic circumstances: The HRS provides information on past economic circumstances such as past shocks. Respondents are asked whether they have been unemployed in the past. In addition, they are asked to report whether they faced any episodes that made it difficult to meet financial needs. The survey also reports positive shocks in the past that affect household wealth, such as receiving inheritances, money from insurance settlements, or money from relatives and friends.

3) Expectations about the future: In addition to the past, it is important to have information about future resources. This is critically important to evaluate models of savings. In the HRS, respondents are asked to report the chances that home prices will increase more than the increase in the general price level, and that Social Security (SS) will become less generous in the future. Respondents are also asked to report their expectations of living up to 75 and 85.⁵ In addition, respondents report the chance they will have to give major financial help to family members in the next 10 years and to work full time after age 62 and 65.

⁵An excellent examination of subjective probabilities in the HRS is provided in Hurd and McGarry (1995).

Respondents are asked about the chance of losing their job in the next year. I use this variable to construct a measure of income variation.⁶ If households have a precautionary saving motive, they care not only about the decline in income at retirement, but also about risk, which can be measured empirically by the variance of earnings. In Lusardi (1998), I show that that precautionary saving is an important motive, even among this sample of older households.

4) Preferences: Another not yet well-explored dimension along which households can differ is preferences. While it is very hard to measure individual preferences, it is also the case that parameters, such as the coefficient of risk aversion or the rate of time preference, play a pivotal role in many models of intertemporal optimization. There is a way to infer this information in the HRS and therefore to account for variation in preferences when explaining household financial decisions. In particular, I use the analysis provided in Barsky, Kimball, Juster, and Shapiro (1997) on willingness to take gambles to construct proxies for the coefficient of risk aversion. The HRS also provides information on the strength of the bequest motive, since respondents are asked to report whether they plan to leave a bequest to future generations. Information about inter- and intra-generational transfers can be proxied using information on parents. Demographic variables that could be related to the rate of time preference, such as education, race, and country of origin, are also present in the survey. Additionally, data on smoking, drinking, caring about one's health, and exercising regularly can be used to proxy for individual heterogeneity.

⁶See Lusardi (1998).

5) Pension and Social Security wealth: Using the HRS, it is possible to link to the Social Security records of respondents and use that information to calculate Social Security wealth.⁷ However, not every household has given authorization to access their Social Security records, and I have used imputed Social Security wealth data for those households.⁸ It is also possible to construct pension wealth from the self-reported pension information.⁹ Thus, I can rely on a complete measure of household accumulation when examining savings behavior. Many of the calculations involved in deriving pension and Social Security wealth are quite lengthy and require assumptions about the future and what households know. Gustman, Mitchell, Samwick and Steinmeier (1999) describe the pension and Social Security data in detail and show they are two important components of total accumulation for retirement.

WHAT EXPLAINS LACK OF PLANNING?

As mentioned before, the HRS provides information on indicators of planning. I consider the sample of households in the first wave of the HRS, excluding those where respondents are partially or fully retired, and those with respondents younger than 50 or older than 61. Since the HRS oversamples Black and Hispanic households as well as households from Florida, I use household weights to obtain statistics representative of the population throughout the empirical work.

⁷Special authorization is needed to access Social Security records. For detail on the construction of Social Security wealth, see Mitchell, Olson and Steinmeier (2000).

⁸I thank Al Gustman and Tom Steinmeier for providing the imputed Social Security wealth data. For more information on pension and Social Security wealth in the HRS, see Gustman and Steinmeier (1999a,b).

⁹For a detailed explanation of the construction of the pension data, see Venti and Wise (2000).

In section K on “Retirement Plans,” respondents are asked to report how much they have thought about retirement. Respondents (who plan to retire) can only choose from four different answers, which are reported at the top of Table 1. The first feature to notice is that 12% of respondents (629 out of 5,118) do not plan to retire, at least completely. A large proportion of respondents in this group consist of business owners and the self-employed.¹⁰ Second, approximately 30% of respondents in the sample that plan to retire (1,331 out of 4,489 respondents) have "hardly thought" about retirement. This is a large percentage, in particular considering the age of respondents. Many respondents are only a few years away from retirement and the event is imminent.

Since the wording of the question under consideration is rather generic and can lead to several interpretations, I also report the characteristics of respondents across different answer modes (the figures are the mean characteristic in each response group). Respondents who do not think about retirement are more likely to be female and a minority. Consistent with the fact that education and financial literacy can be more conducive to planning (planning costs are lower for these households), respondents who do not think about retirement are more likely to have low education. Not only is their education low, but also the education of their family of origin tends to be low (father or mother does not have a high school education). Individuals who have not thought about retirement are also less likely to be married. Additionally, they are less likely to have older siblings (older than 62) that could provide some guidance or experience on what happens after retirement. Lusardi (2000a) uses the age difference between the respondent and his/her oldest sibling to proxy for planning costs. Households who can learn from

¹⁰ Most of them will be excluded from the empirical work as they are not asked questions about their expectation of losing their job in the coming year. See also the data appendix.

their older siblings face lower planning costs. These costs can help explain some of the differences in wealth accumulation in this cohort of older households.

The bottom three rows of the table report the average scores on the measures of cognitive abilities available in the HRS: 1) ability to think quickly (the score goes from 1 to 5, where 1 means excellent and 5 poor); 2) memory, which measures the numbers of words one person is able to recall in two subsequent trials (the total number of words is 20, and the total score therefore goes from 0 to 40); and 3) analogy questions, which measure one's ability to report how some things are alike (there are 7 questions totaling 2 points each for a total score of 14). Overall the people who have not thought about retirement receive the worst average score on all questions. In particular, this group scores lower on analogy questions. Again, this indicates that there are several important differences across households. Those differences can, in turn, affect the effort and time one has to put into retirement planning.

The other two indicators of planning activities available in the HRS--whether the respondent has attended a meeting on retirement and retirement planning organized by his/her spouse's employer and whether he/she has asked Social Security to calculate retirement benefits (of husband or spouse)-- are considered in Table 2. Since these indicators are the focus of the empirical work, I consider a larger set of household characteristics.

Respondents who are male, white, and married are more likely to have done some planning activities. Findings concerning education are similar to what was reported in the previous table. Households whose head has low education or comes from a family of low education are less likely to have attended retirement seminars. Of course, this could result

from the fact that these families are less likely to work in firms that offer such seminars. Similar findings are obtained when considering those who have asked Social Security to calculate their retirement benefits. Again, those who have high education, high income, are white and married are more likely to get information about Social Security benefits and attend retirement seminars. These households are also more likely to have a pension and to invest in retirement assets, such as IRAs and Keoghs. Variables connected to cognitive abilities indicate that those who do not plan perhaps face higher planning costs in terms of time and effort spent in planning (as their cognitive abilities are lower).

When considering some other household characteristics, such as whether the financially knowledgeable person in the household smokes or stopped smoking, drinks heavily, thinks he/she should cut down on drinking, does not exercise, and has talked to a doctor about health, one finds that they correlate strongly with planning activities. These findings indicate that individual heterogeneity should be taken into account in the empirical work.

When looking at subjective probabilities, another important and unique source of information in the HRS, one finds that those who attend a retirement seminar or asked Social Security to calculate retirement benefits are less likely to work full-time after age 62. Those who plan are also less likely to report that they expect house prices to increase more than the general price level in the next ten years. This may be an important factor for wealth accumulation, as those who expect to receive big capital gains on their house (one of the most important assets in household portfolios, as will be reported later) are likely to save less and, thus, accumulate less wealth.

Fundamentally, these tables indicate that there is a lot of heterogeneity in household behavior and, if one cannot account properly for it, one could get a limited analysis of what determines planning behavior and incorrect estimates of the effects of planning on saving behavior.

GENDER DIFFERENCES IN PLANNING

Table 1 and 2 show some gender differences in planning. These differences can be rather important. Women's greater longevity implies that wealth must support a longer period of retirement than men. In addition, women have lower lifetime earnings, lower participation in the labor market, and lower pension coverage rates (see Gustman, Mitchell, Samwick and Steimeier (1999) for evidence on the HRS cohort). Thus, women stand to benefit a lot from careful planning. Table 3 reports some simple statistics across gender in planning indicators as well as other demographic characteristics that can be related to planning.

Every indicator of planning shows that women are much less likely to plan for retirement (even though differences are not always statistically significant). A large percentage of women indicate they have hardly thought about retirement. Overall, they are (somewhat) less likely than men to have attended a retirement seminar and to have asked SS to calculate retirement benefits. Note that households whose financially knowledgeable person is a woman are more likely to be Black or Hispanic and have experienced a family split (divorce or separation). This is rather important as far as wealth accumulation is concerned. Using HRS data, both Smith (1995) and Lusardi (1999, 2000a) show that wealth accumulation is particularly low for these types of

families. Lusardi, Cossa and Krupta (2001) find similar results among younger families, suggesting that low accumulation close to retirement may be the result of low savings at younger ages. While there are many reasons why this is the case, it is a potential concern that many families headed by a woman arrive close to retirement with extremely low amounts of wealth. As Table 3 shows, more than 20% of households whose financially knowledgeable respondent is female arrive close to retirement with as little as \$10,000 in total net worth (excluding pension and Social Security wealth). Note, however, that female-headed households are also likely to have lower income and lower education than households headed by men.

As already reported by Barsky, Kimball, Juster and Shapiro (1997), women display a higher aversion to risk than men. This may play some role not only in the accumulation of wealth, but also in portfolio choice. For example, female-headed families in the HRS are less likely to hold stocks. They are also less likely to hold IRAs. While the preference parameter of one person may not reflect well the decision process of the household (see, for example, Mazzocco (2002)), many female-headed household are split families and/or families with one adult person only.

Women are less likely to be heavy smokers or drinkers and are more likely to talk to a doctor about their health. These attitudes correlate with planning and with wealth accumulation, as some of the empirical work considered later will show. Women's subjective probabilities of living after 75 are higher than men's (as expected), while they do not differ as regards to men in the subjective expectation about future changes in Social Security and in home prices. With respect to men, they are less likely to give financial help to family members in the future and also to leave bequests. These

characteristics may again play a role in explaining the gender differences in patterns of wealth accumulation.

HOUSEHOLD SAVINGS CLOSE TO RETIREMENT.

Before considering the effects of planning and of attending retirement seminars, I examine household accumulation and portfolio choice. As mentioned before, it is very difficult to define an appropriate measure of household accumulation. Each component of wealth displays different characteristics in terms of, for example, liquidity and accessibility. Some components of wealth, such as housing equity and vehicles, have consumption in addition to investment components. Others, such as business equity, display specific features and it is not obvious they should be included in household wealth without some modeling of entrepreneurial activity.

Given the research question under investigation, I first consider two measures of household (non-pension) accumulation: financial wealth and total net worth. The first measure of wealth (liquid net worth) is defined as the sum of checking and saving accounts, certificates of deposits and Treasury bills, bonds, stocks, and other financial assets minus short-term debt. The second measure (total net worth or simply net worth) is obtained by adding IRAs and Keoghs, housing equity, other real estate, business equity, and vehicles to financial wealth. To look more closely at major components of wealth, in Table 4, I also report the amount of wealth in retirement assets (IRAs and Keoghs) and housing equity. All values are in 1992 dollars.¹¹

¹¹ I also use a more comprehensive measure of wealth and consider total accumulation that includes pension and Social Security wealth in the empirical work reported later.

The first important feature to note is that there is a tremendous amount of heterogeneity in household wealth holdings, even when looking at a narrow age group in the population. While some households have amassed large amounts of wealth, others have accumulated very little. Considerable differences in wealth are to be expected because income varies widely. But the actual variation, from \$850 in net worth for households at the 10th percentile to \$475,000 in the 90th percentile, is far larger than variation in income.

It is also apparent from Table 4 that housing is an important asset in many household portfolios, and many have little in anything besides home equity. Retirement assets, such as IRAs, have been one of the fastest growing components of household wealth in the 1980s and 1990s. However, ownership and the amount invested in these tax-favored assets are heterogeneous across the sample. Even though not shown in the table, a substantial portion of total net worth is also accounted for by business equity.¹² Even though households owning one or more businesses account for only 15 percent of the population in this sample, their wealth holdings are large. The conditional median and mean are \$75,000 and \$281,620, respectively. Again, it is not clear that business equity characterizes accumulation for retirement since, in this case, the retirement motive is mixed with the enterprise motive.

A second important feature to note in Table 4 is the proportion of households that arrive close to retirement with little or no wealth. A quarter of the households in the sample have less than \$30,000 in total net worth. While total net worth is only a partial measure of accumulation because it does not include wealth in Social Security and

¹² For a more detailed discussion of the importance of business owners to explain wealth accumulation, see Hurst and Lusardi (2002) and Gentry and Hubbard (2001).

pensions, it is hard to borrow against retirement assets and it is not obvious how households with only \$850 (the first decile of the distribution of net worth) can offset potential shocks to income, health, or family circumstances, and how quickly they can accumulate a stock of wealth in the remaining years up to retirement.

In Table 5, I report wealth holdings across some observable household characteristics such as education and marital status, which could serve as crude proxies for permanent income. Even when considering this classification, disparities in wealth remain huge. Wealth holdings are very low for households whose financial respondent has less than a high school education. Households whose head has a college degree have more than twice the wealth (considering medians) of households with high school education. When one considers a restricted measure of wealth such as liquid net worth, the scenario worsens considerably. Many of the households with low education have little or zero holdings of financial assets and little total net worth. Wealth is particularly low for those that experienced a family split. For example, divorced or separated households have little liquid net worth. Looking at medians, married couples have more than 3 times the net worth of divorced couples and six times the net worth of separated couples.

As mentioned before, there are large differences in wealth accumulation between genders. Households whose financially knowledgeable person is a woman accumulate much less liquid and total net worth. Some of the reasons for these different patterns of accumulation can be traced to the differences reported in Table 3, which indicate that women differ not only in economic status but also in preferences.

Given the information on the components of wealth provided in the HRS, one can examine the levels as well as the composition of household portfolios (Table 6). I have

already mentioned the importance of housing and retirement assets for many of these older households, and Table 6 shows that these assets are concentrated among households whose financial respondent has at least a high school education. Only a fraction of the population hold stocks and bonds, and those assets are also heavily concentrated among households whose head has a high school education. Most importantly, the less educated respondents are not only less likely to hold stocks and bonds, but they also do not hold basic assets such as saving and checking accounts.

Note that a sizable proportion of households (15%) do not hold any of the conventional financial assets (i.e., checking and saving accounts, certificates of deposit and Treasury bills, bonds, stocks, IRAs and Keoghs, and other assets). In fact, the composition of many portfolios is rather naive: as many as 32% have all of their financial wealth in one asset (the proportion goes to 47% if we consider households with zero or only one asset). A large fraction of households (49%) do not hold any of the assets that have delivered relatively high returns throughout the years (not only real estate and businesses, but also bonds and stocks).

When looking at households with low education, some groups stand out. For example, a very large proportion of Hispanics report that they have an elementary school education. As many as 36% of Hispanics have an elementary school education and more than 58% have less than a high school education. Among blacks, 40% have less than a high school education.

Another important and striking feature among these groups is that they not only lack many of the assets that are common to the portfolios in the whole sample (for example, stocks, bonds and IRAs), but they do not even hold checking accounts. In this sample, 57%

of Black households have a checking account and only 47% of Hispanic households have a checking account. Other studies have reported similar findings for younger households (Lusardi, Cossa and Krupka (2001)) and this feature seems to remain constant across the life-cycle. Similarly, Caskey and Peterson (1994) show that economic circumstances and demographic characteristics alone cannot explain why so many Black families do not hold a checking account. In addition to many other reasons, this suggests that financial literacy may also play a role in explaining household behavior, particularly among those that display low wealth and very simple portfolios.

ARE RETIREMENT SEMINARS EFFECTIVE?

How can we explain the wide heterogeneity displayed by the data and, in particular, the very low wealth holdings that many households report even when they are few years away from retirement? In addition to many of the traditional explanations, for example that households have low permanent income, have been hit by many shocks, are impatient or expect huge capital gains on their assets, differences in planning costs can explain some of the differences in wealth holdings (Lusardi, 2000a). Households that face high planning costs because of low financial literacy or high search costs may not only save little but also follow simple rules of thumb such as setting consumption equal to income, as has been found in several studies using macro and micro data.¹³ Additionally, households who face high planning costs may invest in very different portfolios than households who face low planning costs. The empirical findings reported in Lusardi (2000a) support these claims.

¹³ See Campbell and Mankiw (1990) for the evidence on macro data, Lusardi (1996) for evidence on micro data and the review of this evidence in Browning and Lusardi (1996).

Many employers have started offering some form of financial education in the workplace. By providing information and improving financial literacy, seminars should reduce planning costs and foster savings. However, there is still much uncertainty about the effects of seminars on savings. While several studies have found a positive correlation between attending a retirement seminar and private wealth or contributions to pension funds, it is not clear what this correlation means. Since attending retirement seminars is largely voluntary, it is possible that those who attend seminars are more likely to have an interest in them, for example because they have large wealth holdings. Thus, it may be wealth that affects participation in retirement seminars and not the other way around. Similarly, attending retirement seminars could simply reflect some individual characteristics such as patience and diligence, which are also likely to affect wealth accumulation. Thus, attending a retirement seminar could simply be a proxy for individual characteristics and attitudes towards saving rather than a measure of the effects of providing information, improving financial literacy, and/or reducing planning costs. Furthermore, as reported by Bernheim and Garrett (2002), retirement education is often remedial and thus offered in firms where workers do very little savings. Very few data sets have enough information to allow researchers to sort these effects out. Consequently, empirical results about the effects of retirement seminars are mixed and often difficult to interpret.

There are several advantages in using the HRS to examine the effectiveness of retirement seminars. First, as reported in the previous tables, the HRS provides a richness of information on individual characteristics that can affect savings. The HRS also reports retirement seminar attendance. This information can help alleviate the problem of broad

heterogeneity in individual behavior that we observe in micro data (see Tables 2 and 3). It can also alleviate the fact that attending retirement seminars could simply reflect some individual characteristics. Second, the detailed information about wealth allows me to overcome some severe shortcomings of previous papers on this topic. For example, Bernheim and Garrett (2002) have limited and noisy data about private savings. Other studies have only information about pension contributions and pension wealth, but no information about private wealth. Third, this is the group of households where the retirement motive should be most important. Finally, the HRS provides information that can be used to perform several estimation strategies (for example, instrumental variables estimation).

To construct the final sample for the empirical estimation, I deleted respondents who do not report information on the variables mentioned in the previous sections and listed in the data appendix. The self-employed are not asked many of the questions about subjective future probabilities and are thus deleted from the sample. The question about job loss in the future is only asked to respondents who are working, so the final sample is restricted to respondents who are currently working. Since the distribution of the ratio of wealth to permanent income is so wide, I trim the distribution and exclude the top and bottom 1%.¹⁴

As in the majority of empirical studies on savings, I first use as my dependent variable the ratio of (non-pension) wealth over permanent income, but will use more

¹⁴ See the data appendix for a detailed description of the final sample and some simple statistics about the variables I use in the empirical work.

comprehensive measures of wealth in later sections.¹⁵ I consider a measure of financial net worth, where I add IRAs and Keoghs to liquid net worth (see Table 4) and also consider total net worth and divide them by permanent income. In Table 7, I report the results of regressing this ratio on a large set of explanatory variables and a retirement seminar dummy. Among the set of explanatory variables, I consider not only age and age squared to capture the hump-shaped profile of wealth holdings, but also some simple demographics, such as the total number of children, and the number of children still living at home, gender, race, country of birth, marital status, and education that can account for heterogeneity in tastes. I also include dummies for regions of residence.¹⁶ Permanent income is included among the regressors to account for the fact that accumulation can vary across levels of permanent income and that, contrary to the simple life-cycle permanent income model, rich households are not simply a scaled-up version of poorer households. I also account for health status, past shocks, preferences (risk aversion and impatience) and expectations about the future using the variables I explained in the previous section. Additionally, I account for whether households have pensions since, as mentioned in Table 2, they are more likely to work at firms that offer retirement seminars.

As emphasized in Browning and Lusardi (1996), there are other motives to save apart from providing for retirement. Households may save to leave a bequest to future generations, and I account for this motive by using information on the intentions of

¹⁵Permanent income is constructed by regressing total household income on a set of demographics, firm characteristics, occupation and education dummies and those dummies interacted with age, and subjective expectations of income changes in the future.

¹⁶For brevity, the estimates of these demographic variables are not reported, but are briefly discussed in the text.

leaving bequests to heirs.¹⁷ Additionally, I consider a precautionary saving motive and proxy for it using the subjective variance of earnings risk. I also account for the fact that households accumulate little because they can rely on help from relatives and friends in case they run into severe financial difficulties in the future. I consider the possibility of receiving bequests in the future by using a dummy for whether at least one parent is alive, and I account for the expectation of giving financial help to family members in the future. I also include the subjective expectation of future events that can affect wealth accumulation (expectation that Social Security will be less generous and that house prices will increase more than the general price level).

To understand the effect of retirement seminars, I consider regressions in the whole sample and, most importantly, quartile regressions. If, as reported by Bernheim and Garrett (2002), retirement education is remedial, it is offered to workers who most need it. Thus, one should find an effect at the lower quartiles of the wealth distribution.

Even after accounting for a large set of controls, which are not present in other data sets,¹⁸ I found that seminars affect wealth accumulation. The effect of seminars is positive and significant for the first quartile of total net worth, but dies out for higher quartiles of the distribution (Table 7). The effect is sizable economically. Attending a retirement seminar increases the net worth to permanent income ratio in the sample by 6%. However, the effect is mostly coming from those at the bottom of the wealth

¹⁷ HRS respondents are asked whether “they plan to leave a sizable inheritance to their heirs” and I have grouped together all respondents that have answered with a “yes” to this questions, even though with several degrees of certainty (very likely, likely, etc.).

¹⁸ Many of these controls play a role in explaining household savings. Even after accounting for many determinants of wealth, households whose head has a high education have higher savings. This again emphasizes the important role of education in explaining wealth holdings. Married couples have high savings, while children have a depressing effect on wealth. Blacks and Hispanics have much lower amounts of wealth. After accounting for permanent income and many variables that affect wealth holdings, women are found to be more likely and not less likely to accumulate higher amounts of wealth than men.

distribution. For the lowest quartile, attending a retirement seminar increases the wealth to income ratio by 40%. The reason for such large change is that households at the bottom of the wealth distribution accumulate very little and even a small addition of wealth constitutes a large increase. For example, up to the first decile of the wealth to permanent income ratio, the ratio was 0.14 and becomes only 0.77 for the first quartile.

To further investigate this effect, I also consider regressions across education groups since, as mentioned before, there are very wide disparities across households with different education attainments. Again, I consider the effect of retirement seminars in the whole sample and across wealth quartiles (Tables 7a-b). Results are similar and again point to the fact that, since financial education is remedial, it affects mostly those at the bottom of the wealth distribution. The effect is important and sizable, particularly for those with less than a high school education. As reported in the previous table (Table 5), the accumulation of wealth is particularly low among households with low education. Individuals with low educations are disproportionately clustered at the bottom of the wealth-permanent income ratio distribution. Consistent with the previous estimates, seminars increase the ratio by 45% for those who have low education and rank at the bottom of the distribution. For those with high education but low wealth-permanent income ratios, seminars increase the ratio of wealth to permanent income by 30%.

Similar results are found when considering financial net worth. Retirement seminars affect the lowest two quartiles of the wealth distribution in the total sample (Table 8). They also affect the lowest two quartiles of the distribution across education group, again suggesting that seminars are effective for those with low wealth (Tables 8a-b). The effects are again sizable, particularly for those at the bottom of the distribution,

who mostly have no financial wealth (and are often in debt). In the total sample, attending seminars increases the ratio of financial wealth to permanent income by approximately 18%. This effect is coming mostly from the bottom of the distribution. Overall, the median ratio is increased by approximately 50%. Again, the effect is coming from those with low education, where increases are also as high as 50%.

These estimates are remarkable and could well be a lower bound of the effectiveness of retirement seminars. Unfortunately, the HRR does not provide information about when the seminars were attended. If seminars were attended recently, wealth measures may not have fully incorporated the effects of seminars yet. Given that wealth is a stock, it takes time for seminars to affect it. Similarly, I do not have information on what were the content, length, and features covered in seminars.

On the other hand, the HRS is particularly valuable for evaluating the effects of retirement seminars, as it provides information not only about attending seminars but also about a rich set of variables that can influence savings. These variables matter for the empirical regressions and for evaluating the significance as well as the economic relevance of seminars. For example, if I account for a small set of demographics (age, gender, race, marital status, region, health status and education) and economic status (permanent income) only, I find that retirement seminars are significant in every regression for the whole sample and across education groups.¹⁹ However, when adding variables proxying for individual heterogeneity (smoking, drinking, exercising, checking health), the bequest and precautionary saving motive, and also subjective expectations about the future, the retirement seminars lose their significance for the whole sample. The importance of these variables can be seen in Table 7 and Tables 7a-b (and also Table 2).

Estimates for smoking and drinking are negative and strongly significant, in particular for those with low education and for those at the lower quartiles of the wealth distribution. The bequest motive is important in explaining accumulation, particularly for those with high education and for richer households. Among the subjective expectations variables, expectations that house prices will increase in the future is highly important. The sign is negative and significant in most regressions. This is again consistent with the observation made earlier that households have relatively little in financial assets, while their wealth is mostly in their house.²⁰ Conversely, those who report a high expectation to give financial help to a family member in the future tend to accumulate more wealth.²¹ These results hold true for both total and financial net worth. Another notable result is that households that have a pension accumulate more rather than less wealth, showing that households that have high retirement wealth also have more in other forms of accumulation. These results are similar to those reported by Gustman and Steinmeier (1999a), who use HRS pension data from the Pension Provider data set rather than the self-reported pension data.

These findings suggest that data sets that do not provide information to control for the large amount of heterogeneity present in savings data may lead to incorrect estimates of the effects of retirement seminars. This also hints at a potential selection problem: those who attend seminars may do so because they have a lot of wealth. They display characteristics, such as patience, discipline, and caring about future generations that shape not only the decision to attend seminars but also how much to save. In a later section, I perform Instrumental Variables (IV) rather than OLS estimation to overcome

¹⁹ For brevity, these estimates are not reported but are available from the author upon request.

²⁰ Similar results are reported by Hurst and Stafford (2001) using data from the PSID.

²¹ For this variable, the causality may also go the other way.

this problem. Before turning to those estimates, I consider the influence of seminars on portfolio choice.

PORTFOLIO CHOICE

As shown before, retirement seminars affect not only total (non-pension) net worth, but also financial wealth. This may be due to the fact that households not only save more after attending seminars but also may invest their wealth differently. Several papers have emphasized that there are transaction and learning costs in investing in stocks and that it is a puzzle why so many households do not invest in stocks.²²

In Table 9, I examine whether retirement seminars have an effect on whether or not households invest in stocks.²³ In the sample under consideration, approximately 29% of households have invested in stocks. The median holdings of stock-owners is \$15,000 and one fourth have \$4,000 or less in stocks. The percentage of stock ownership varies strongly across education groups (Table 6). I consider the same rich specification of variables as for total wealth. These variables include those considered in many studies on portfolio choice and I add several other important controls. To again account for the fact that retirement education is remedial, I consider estimates in the total sample and split the sample across wealth group. I also consider investment in stocks across education groups, a very important predictor of stock ownership, and again across wealth groups.

What emerges from these simple estimates is that the theory has some predictive power in explaining stock ownership, but mainly for those with high education or high wealth. For example, for these households, high risk-aversion discourages stock

²² See Haliassos and Bertaut (1995).

ownership, while high income or a bequest motive encourages stock ownership. Again, if people have pensions, they are also more likely to invest in stocks (Table 9).

Retirement seminars influence the ownership of stocks: those who have attended seminars are more likely to hold stocks. The analysis across sub-samples indicates that it is those with low wealth holdings that are affected by seminars, suggesting again that education is remedial and mainly influences those households who often do not hold stocks. The analysis across education groups confirms this finding. For those with low education and lower wealth (those with less than \$60,000), retirement seminars foster ownership of stocks, while there is no effect of seminars for those with high education (Table 9a).

As far as the economic importance is concerned, attending seminars raises the chance of investing in stock from 2 to 4 percentage points. This is not a small percentage given the baseline of 29% in the sample; attending seminars increases stock-ownership by 7-14%. However, the estimates are again affected by the large set of controls included in the estimation. While these controls are not always strongly significant (or as significant as for wealth), they affect the empirical estimation. In general, estimates are much higher (and significant) both in the total sample and across education groups when considering only a set of controls that include the main demographic and economic variables. In the case of stocks, while they are not strongly significant, it is the variables proxying for individual heterogeneity (smoking, drinking, talking to a doctor about own health) that decreases the size and statistical significance of retirement seminars.

²³ Tables 9 and 9a report the marginal effects of probit estimates of stock ownership on the variables reported in the text.

There is a good deal of heterogeneity in household investing behavior and this may also lead to self selection in attending seminars and also in investing in stocks. I turn to the IV estimation in the next section, which could potentially take care of some of the selection problems at both the firm and individual level.

INSTRUMENTAL VARIABLES ESTIMATION

One of the potential issues of evaluating the effectiveness of retirement seminars is that seminars are often not exogenous variables. As mentioned before, firms are more likely to give seminars when they think workers are not financially prepared for retirement. Bayer, Bernheim and Scholz (1996) examined a panel sample of employers and found that low participation in pensions among non-highly compensated employees was a strong predictor of the adoption and/or enhancement of educational offerings. Moreover, workers who attend those seminars are more likely to display (observable and un-observable) characteristics that also affect wealth, as shown in Table 2. If, as stated in Bernheim and Garrett (2002), one can identify a portion of the variation in attending retirement seminars that does not result from differences in savings, then it should be possible to distinguish between the hypothesis that knowledge causes the accumulation of wealth, and the hypothesis that wealth causes the acquisition of knowledge. This is done using instrumental variables.

There are two sets of instruments I can use in the HRS to assess the effects of attending retirement seminars on savings. The first set includes firm characteristics. I use variables that can predict the availability of retirement seminars in firms. Thus, I will try to capture the supply of these seminars. I use variables such as the size of firms (whether working in a firm with less than 25 employees) and whether the workers belong to a

union. In addition, I have obtained authorization to use geo-code identifiers and thus identify the state of residence for each household in the survey. I have constructed variables such as the proportion of large firms in the state as instruments. Since large firms are more likely to offer retirement seminars, I can rely on a proxy of availability rather than the use of retirement seminars.

The second set of instruments is based on sibling data. If households face planning costs or difficulties in planning, they will be more likely to attend retirement seminars. Workers who can learn from the experience of older siblings face lower planning costs. Older siblings that have already gone through retirement can provide information on what is needed when one stops working. Those who can exploit that information may not attend retirement seminars. On the other hand, unpleasant circumstances regarding siblings, such as witnessing them in financial difficulties, can induce workers to attend retirement seminars. I have already used these variables in previous work (Lusardi (2000a)) and shown that they are successful instruments in predicting planning (and planning indexes) that include attending retirement seminars.

Given the large set of controls already included in the empirical regressions, it is very hard to find high predictive power for the instruments. Even when I consider all the instruments together, their predictive power in the first stage regression is not very high. This has to do not just with the property of the data, but with the theory as well. If we enrich the models with many reasons why people save (heterogeneity in preferences, differences in the budget constraints, the occurrence of shocks, different expectations about the future, inter and intra-generational transfers, etc.), we are left with no instruments for financial education since many variables can, in principle, predict wealth

directly. This again highlights the importance of a rich data set, like the HRS, that reports proxies for planning costs.

IV estimates are reported in Tables 10, 10a-b. For brevity, only the estimates about retirement seminars are provided.²⁴ Overall, estimates are statistically significant for net worth in the total sample and for the high education group. The empirical estimate is much higher than in the OLS case, indicating that there is a significant downward bias, but perhaps pointing also to the problem of weak instruments. Note, however, that the instruments have predictive power in the first stage and that an F-test of the joint significance of the instruments takes values always greater than 2.²⁵ While the IV estimates are not significant for financial net wealth, they are significant for stock ownership, confirming that seminars can influence whether or not households invest in stocks. It is difficult to look at sub-groups of this sample, as it is even harder for instruments to have predictive power. I find some significance of seminars for the high education sample. Given the low predictive power, IV estimation should be used with some caution.

A COMPREHENSIVE MEASURE OF ACCUMULATION

One of the potential drawbacks of the empirical work performed so far is that financial and total net worth are a limited measure of accumulation. For the median 10% of wealth holding households in the HRS, as much as 60% of total wealth is accounted

²⁴ The list of instruments is as follows: proportion of big firms across states and this proportion squared and to the power of three, dummy for working in a small firm, dummy for belonging to a union, age difference between oldest sibling and respondent, number of siblings older than 62, siblings who are male, number of siblings who work, number of siblings who own a home, dummy for siblings who live nearby, dummy for whether the financial situation of siblings is better or worse than the financial situation of the respondent. See Lusardi (2000a) for a detailed discussion of these instruments.

for by Social Security and pensions (Gustman and Steinmeier (1999a)). Pension wealth is rather unevenly distributed, accounting for 7% for those in the bottom quarter of wealth holders, but 31% for those in the 75th to the 95th percentile of households (Gustman, Mitchell, Samwick and Steinmeier (1999)). The share of Social Security in total accumulation (which includes private, pension and Social Security) is only slightly greater than the share of pensions. However, the effect of Social Security on the distribution of wealth is equalizing. What Gustman, Mitchell, Samwick and Steinmeier (1999) found in the HRS sample is that as one moves up the wealth distribution, their share of total accumulation due to pensions increases while the share of Social Security falls. Overall, pensions and Social Security account for half or more of total accumulation for households in all but the top decile of the wealth distribution

There are several problems in considering a measure of total wealth accumulation that includes both pension and Social Security wealth. First, pensions and Social Security are not liquid or liquidable. It is often hard to borrow against these measures of wealth and it is not clear that households with large pension wealth can use it to smooth consumption before retirement. Second and most importantly, difficult and lengthy calculations are required to determine pension and Social Security wealth. As reported several times in the text and as described by Gustman and Steinmeier (1999b), many workers lack information on their pension.²⁶ However, these two components are so sizable that it may be very limiting to analyze the effects of seminars by looking only at non-pension financial and total net worth.

²⁵ See Staiger and Stock (1997) and Bound, Jaeger, and Baker (1995) for a thorough discussion of instrumental variables estimation in the presence of weak instruments.

²⁶ Social Security wealth is calculated as the present value of the Social Security benefit payable in the form of an annuity from retirement until death. The variable I consider refers to the HRS respondents'

In the empirical work that follows, I consider two measures of total accumulation. First, I consider a measure of pension wealth, as reported by the workers, and I sum it to total net worth. Second, I add Social Security wealth (the value of wealth at the time of the interview) to the previous measure. In the empirical regressions, I aim to assess whether attending a retirement seminar influences not just private wealth but also accumulation in pension and Social Security wealth. Estimates are reported in Tables 11 and 11a. For brevity, only the estimates about retirement seminars are reported since they are the focus of the analysis.

Both the OLS and IV estimates indicate that retirement seminars affect total accumulation. As before, the IV estimates are very high and given the weakness of instruments, they should be taken with caution. Note, however, that the estimates are always statistically significant for every measure of accumulation and for every subsample. Estimates are also significant for every quartile of total accumulation (for brevity, estimates are not reported). The economic significance is in line with previous estimates. In the total sample, attending seminars increases the ratio of pension and total net worth over permanent income by approximately 20% and the ratio of pension, Social Security, and total net worth by 15%. Every education group is affected by retirement education when using these comprehensive measures of wealth.

To check the robustness of these results, I perform the estimation on the sample of households whose financially knowledgeable person has a pension. As the estimates of several authors show, households with pensions usually have more private wealth as well and thus, perhaps the variable for seminars is capturing mostly the differences between

entitlements as of 1992. See Mitchell, Olson and Steinmeier (2000) for detail on the calculations of Social Security wealth.

workers who have pensions and those who do not. As explained previously, firms which offer pensions are more likely to offer a retirement seminar. As reported by Gustman and Steinmeier (1999a), in the total HRS sample, the mean value of total accumulation for the median 10 percent of wealth-holding households is \$406,259 for those who have pensions, while it is only \$106,345 for those without pensions. For brevity, I report and discuss the result below without constructing another table.

Estimates for the retirement seminars remain statistically significant; the OLS estimates are 0.856 (s.e. 0.188) for the first measure of total accumulation and 0.995 (s.e. 0.211) for the second measure. IV estimates are much higher than the OLS estimates and the problem of weak instruments worsens in a smaller sample. Overall, however, the estimates in the sample of households with pensions confirm the previous finding of the effects of retirement seminars on total accumulation.

CONCLUDING REMARKS

In this project, I examine the planning activity of households whose head is close to retirement. I find that a large percentage of households have done little or no planning for retirement. Women, in particular, are less likely to have planned for retirement. In my empirical work, I examine whether retirement seminars play a role in explaining the wide differences in wealth that we observe among older households. I find that seminars are remedial and they have effects for those at the bottom of the wealth distribution.

Seminars are effective not only in influencing wealth, but also in affecting portfolio choice. Those who attend retirement seminars are more likely to hold stocks and, again, the effect is stronger for those at the bottom of the wealth distribution. When looking at

different estimation methods and a measure of accumulation that includes pension and Social Security wealth, the effects become even stronger, becoming significant for every education group and every quartile of the wealth distribution.

My estimates suggest that retirement seminars are a potentially important vehicle to influence the accumulation of both private and pension wealth. The ratio of non-pension wealth to permanent income can be increased by 50% for the families at the bottom of the distribution and those with low education by offering financial education. The ratio of total wealth (inclusive of pension and Social Security) to permanent income can be increased by 15-20% for both high and low education families. While the range of estimates is sometimes large, the results of the empirical work indicate that the provision of information and the reduction of planning costs may play a role in improving the financial security of many U.S. households.

Data Appendix

The data used in this paper are from the first wave of the Health and Retirement Study (HRS). The HRS is a representative sample of individuals born in the year 1931-1941 (approximately 51-61 at interview), but blacks, Hispanics, and Floridians were over-sampled. The individual deemed most knowledgeable about the family's assets, debts, and retirement planning was asked questions on housing, wealth, and income.

As described in more detail in the text, one distinctive feature of the HRS is the attention paid to expectations about future events. A second innovation of the HRS is the use of bracketing or unfolding techniques to reduce the size of the missing data problem in the measurement of financial variables. It is well known that missing data represent a major problem in survey measurements of household wealth. In the HRS respondents who reported they did not know or refused to provide an estimate of the size of a net worth component were asked to report the value in a set of brackets. Smith (1995) and Juster and Smith (1997) report an evaluation of these techniques and a detailed description of their advantages in improving the accuracy of information about household wealth.

To construct the final sample, I deleted the respondents who are partially or fully retired at the time of the interview. I also deleted the respondents that do not report information on the variables used in the empirical estimation. The self-employed are not asked many of the questions about subjective future probabilities and they are deleted from the sample. Similarly, expectations about changes in income are not asked to respondents who are not working and they are also excluded from the sample. Since the distribution of the ratio of total and financial net worth to permanent income is so wide, I

trim the distribution and exclude the top and bottom 1%. The number of observations in my main final sample 3,265. The following table reports simple statistics of the variables used in the empirical estimation. The original sample where I only excluded respondents who are retired or younger than 50 and older than 61 had 5,292 observations. The decrease in the number of observations to 3,265 is mostly due to the fact that some questions are only asked to respondents who are working. I have examined whether the final sample suffers from self-selection. I found very little evidence of self-selection. With respect to the original sample, my final sample cover respondents who are a little younger, more likely to be white (the fraction of white is 0.79 in the original sample versus 0.818 in my sample), more likely to be born in the US (0.89 in the original sample versus 0.924 in my sample), a bit more educated (0.11 have a college degree versus 0.129 in my sample). Overall, differences between these two samples are small.

Descriptive statistics of the final sample		
Variables	mean	(std.dev.)
Financial net worth/permanent income	.758	(1.261)
Total net worth/ permanent income	2.590	(2.628)
(Total n. worth + pension)/perm. income	4.214	(3.512)
(Total n. worth + pension + SS w.)/ p. income	6.727	(3.741)
Stock ownership	.290	(.454)
Have not thought about retirement	.224	(.417)
Attended a retirement seminar	.126	(.332)
Age	54.40	(3.857)
# of children at home	.806	(1.009)
Male	.507	(.500)
White	.818	(.385)
U.S. born	.924	(.264)
Married	.624	(.484)
Divorced	.185	(.389)
Widowed	.086	(.282)
Separated	.035	(.177)
Northeast region	.224	(.417)
Midwest region	.249	(.433)
West region	.185	(.389)
High school	.388	(.487)
Some college	.214	(.410)
College	.129	(.336)
More than college	.106	(.308)
Excellent health	.276	(.447)
Very good health	.331	(.470)
Good health	.275	(.447)
Past unemployment	.361	(.481)
Past shocks	.328	(.469)
Received inheritances	.197	(.397)
Received money from relatives	.080	(.271)
Received money from insurance settlements	.057	(.233)
High risk aversion	.647	(.478)
Moderate risk aversion	.130	(.336)
Medium risk aversion	.108	(.311)
Permanent income /1000	51.846	(20.990)
Expectation n to live to 75	.660	(.276)
Expectation that SS will be less generous	.605	(.289)
Expectation that house prices will go up	.480	(.286)
Expect. to give major financial help to family	.406	(.307)

Descriptive statistics of the final sample (cont.)		
Heavy smoker	0.168	0.374
Heavy drinker	.048	(.214)
No regular exercise	.416	(.493)
Talks to doctors about health	.783	(.412)
Bequest	.420	(.493)
Parents still alive	.686	(.464)
Variance of income	2.010	(7.687)
Can rely on help from relatives & friends	.431	(.495)
# of observations	3,265	

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Table 1: Planning for retirement

	How much have you thought about retirement?				Will never retire completely
	A lot	Some	A little	Hardly at All	
Characteristics					
Age < 54	0.32	0.38	0.40	0.39	0.36
Female	0.46	0.44	0.50	0.60	0.45
Black	0.12	0.06	0.11	0.13	0.07
Hispanic	0.05	0.05	0.09	0.13	0.05
Elementary	0.03	0.01	0.05	0.09	0.03
Less than high school	0.17	0.12	0.17	0.23	0.14
High School	0.38	0.35	0.37	0.36	0.33
Some college	0.21	0.21	0.20	0.17	0.27
College	0.11	0.16	0.12	0.08	0.13
More than college	0.10	0.15	0.08	0.06	0.09
Parents have high school education	0.45	0.53	0.46	0.40	0.57
Married	0.64	0.68	0.61	0.53	0.57
# siblings older than 62	0.23	0.28	0.22	0.19	0.22
Ability to think quickly	2.29	2.20	2.26	2.42	2.04
Memory (# words recalled)	12.94	13.85	12.88	12.64	13.80
Analogy (# correct anal.)	6.32	6.97	6.43	5.82	6.62
# of obs	1,331	1,039	681	1,438	629

Note: This table reports the percentages of respondents across the types of responses listed in the first row. All figures are weighted using the survey weights.

Table 2: Planning activities

Characteristics	Attended retirement seminar	Asked SS to calculate benefits	Total sample
Age 50-53	0.32	0.28	0.36
Age 54-57	0.38	0.34	0.36
Age 58-61	0.29	0.38	0.27
White	0.85	0.90	0.79
Male	0.58	0.54	0.51
Married	0.72	0.73	0.61
Less than high school	0.06	0.09	0.22
High school	0.30	0.38	0.36
More than high school	0.63	0.53	0.42
Family of origin has high education	0.58	0.55	0.47
Income < \$25,000	0.11	0.14	0.29
Have pension	0.84	0.60	0.49
Have IRAs or Keoghs	0.63	0.63	0.41
# of siblings older than 62	0.19	0.29	0.23
Ability to think quickly	2.05	2.12	2.27
Memory	14.44	13.89	13.14
Analogy	7.49	7.19	6.37
Heavy smoker	0.10	0.15	0.18
Stopped smoking	0.45	0.42	0.37
Drink heavily	0.04	0.05	0.05
Feel should cut down on drinking	0.21	0.20	0.20
Do not exercise	0.27	0.37	0.46
Talk to a doctor about own health	0.83	0.81	0.77
Expectation that health will limit work activity in the next 10 years +	0.36	0.38	0.39
Expect. to live to 75 or more	0.68	0.67	0.65
Expect. to work full-time after age 62 +	0.43	0.49	0.52
Expectations that SS will become less generous	0.59	0.62	0.59
Expect. that house prices will increase faster than prices in the next 10 years	0.46	0.48	0.49
# of observations	506	1,191	5,292

Note: This table reports the proportion of respondents who have attended a retirement seminar or asked Social Security to calculate retirement benefits.

+ indicates that the means are calculated on the sample of workers only.

Table 3: Gender differences in the HRS

Characteristics	Female	Male
Has thought a lot about retirement	0.24	0.27
Has thought some about retirement	0.19	0.23
Has thought a little about retirement	0.13	0.12
Has hardly thought about retirement	0.31	0.20
Has attended a retirement seminar	0.08	0.11
Has asked SS to calculate retirement benefits	0.23	0.26
White	0.76	0.82
Black	0.13	0.08
Hispanic	0.09	0.07
Divorced	0.24	0.12
Widowed	0.17	0.02
Separated	0.05	0.03
Less than high school education	0.26	0.19
High school education	0.39	0.33
More than high school	0.35	0.48
High risk aversion	0.65	0.58
Moderate risk aversion	0.11	0.12
Low risk aversion	0.10	0.10
Very low risk aversion	0.11	0.13
Ability to think quickly	2.39	2.16
Memory	13.55	12.74
Analogy	6.21	6.54
Family has stocks	0.23	0.34
Family has IRAs	0.38	0.45
Family owns a home	0.73	0.80
Income < \$25,000	0.40	0.19
Total net worth < \$10,000	0.22	0.12
Would like to leave a bequest	0.37	0.47
Heavy smoker	0.16	0.20
Heavy drinker	0.02	0.08
Talk to doctor about own health	0.82	0.73
Expectation to live to 75 or more	0.66	0.64
Expectation that SS will become less generous	0.58	0.61
Expectation that house prices will increase faster than prices in general in the next 10 years	0.50	0.49
Expectation to give financial help to family members in the future	0.36	0.43
# of observations	2,637	2,655

Note: This table reports gender differences across the characteristics listed in the first column. Figures are weighted using survey weights.

Table 4: The distribution of household wealth

Components of household wealth				
Percentile	Liquid Net Worth	IRAs & Keoghs	Housing Equity	Total Net Worth
5	-6,000	0	0	0
25	0	0	0	27,980
50	6,000	0	42,000	96,000
75	36,000	15,000	85,000	222,200
90	110,000	45,000	150,000	475,000
95	199,500	75,000	200,000	785,000
Mean (Std. Dev.)	46,171 (178,654)	16,492 (49,754)	61,613 (100,646)	227,483 (521,467)

Note: This table reports the distribution of total net worth and some of its components across households whose head is 50-61 years old and not fully or partially retired. The total number of observations is 5,292. All figures are weighted using survey weights

Table 5
Household wealth across education, marital status, and gender

	Number of Observations	Liquid Net Worth		Net Worth	
		Median	Mean	Median	Mean
Education Level					
Elementary	329	0	-707	9,000	82,215
Less than High School	1,042	100	16,429	39,000	110,324
High School	1,876	5,500	29,668	90,000	183,678
Some College	1,041	10,000	47,312	122,700	243,571
College	800	28,000	90,910	186,000	358,848
More than College	204	41,000	175,160	234,000	636,366
Marital Status					
Married	3,265	10,600	55,950	133,500	289,113
Partner	120	2,000	26,498	60,000	228,928
Separated	241	0	21,810	19,500	95,892
Divorced	895	1,400	28,348	38,000	124,227
Widowed	473	3,000	31,553	58,000	126,295
Never Married	298	3,000	45,509	41,000	148,107
Gender					
Female	2,637	3,000	34,310	75,000	174,356
Male	2,665	10,000	57,627	118,700	278,795

Note: This table reports the distribution of financial and total net worth across education, marital status, and gender. The number of observation is 5,292. Figures are weighted using survey weights.

Table 6: Ownership of assets across education groups

	Element.	Some H .School	High School	Some College	College	More than College	Total
Assets & liabilities							
Check. & saving	0.30	0.63	0.85	0.90	0.95	0.95	0.82
CDs	0.03	0.14	0.28	0.29	0.34	0.30	0.26
Bonds	0.00	0.01	0.04	0.07	0.14	0.27	0.07
Stocks	0.01	0.10	0.24	0.34	0.51	0.55	0.28
IRAs & Keoghs	0.05	0.16	0.41	0.48	0.62	0.71	0.41
Other Assets	0.02	0.07	0.13	0.20	0.25	0.36	0.16
Businesses	0.05	0.09	0.13	0.20	0.18	0.29	0.15
Housing	0.48	0.64	0.80	0.80	0.82	0.83	0.74
Real Estate	0.15	0.18	0.27	0.37	0.41	0.49	0.30
Vehicles	0.59	0.79	0.92	0.94	0.95	0.97	0.89
Debt	0.24	0.36	0.40	0.44	0.38	0.37	0.39

Note: This table reports the ownership of assets across education groups. The number of observations is 5,292. Figures are weighted using survey weights.

Table 7: Explaining household savings

Total sample								
	Total Net worth							
	Total Sample		1 st quartile		Median		3 rd quartile	
	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err
constant	-2.044	6.148	-2.061	3.112	-4.044	5.454	-1.904	7.108
seminar	0.149	0.133	0.308**	0.069	0.175	0.124	0.019	0.164
excellent health	0.560**	0.164	0.304**	0.088	0.455**	0.149	0.907**	0.195
very good health	0.195	0.154	0.186**	0.081	0.291**	0.139	0.407**	0.181
good health	0.170	0.152	0.218**	0.078	0.264*	0.136	0.432**	0.177
permanent inc./1000	-0.033**	0.006	-0.001	0.003	-0.013**	0.006	-0.036**	0.008
past unemployment	-0.290**	0.096	-0.142*	0.050	-0.313**	0.088	-0.344**	0.117
past shocks	-0.522**	0.093	-0.293**	0.050	-0.392**	0.087	-0.571**	0.115
received inheritances	0.672**	0.112	0.293**	0.061	0.507**	0.106	0.813**	0.138
money from relatives	0.723**	0.158	0.359**	0.085	0.728**	0.150	0.794**	0.200
money from insurance	0.797**	0.208	0.561**	0.108	0.760**	0.198	0.641**	0.252
high risk aversion	0.009	0.139	0.124*	0.072	0.131	0.128	0.369**	0.165
medium risk aversion	0.106	0.173	0.140	0.092	0.166	0.161	0.421**	0.208
moderate risk aversion	-0.093	0.181	0.167*	0.095	0.231	0.168	0.103	0.218
variance of income	0.007	0.005	0.003	0.004	0.021**	0.005	0.026**	0.005
expect. live to 75	0.078	0.166	-0.128	0.088	0.036	0.153	-0.018	0.198
expect. SS more gener.	-0.125	0.149	0.021	0.078	0.045	0.137	-0.139	0.184
expect. house price up	-0.452**	0.153	-0.236**	0.082	-0.447**	0.141	-0.489**	0.186
exp. give help to fam.	0.359**	0.143	0.079	0.074	0.284**	0.132	0.551**	0.176
bequests	1.115**	0.089	0.543**	0.047	0.877**	0.083	1.288**	0.110
can rely on help	0.008	0.088	0.084	0.046	0.135*	0.082	0.194*	0.109
parent alive	-0.142	0.102	0.034	0.053	0.023	0.094	-0.180	0.124
heavy smoker	-0.479**	0.119	-0.287**	0.065	-0.433**	0.112	-0.702**	0.146
heavy drinker	-0.324	0.203	-0.232**	0.110	-0.102	0.188	-0.094	0.238
no regular exercise	-0.268**	0.093	-0.176**	0.050	-0.219**	0.087	-0.286**	0.114
talk to doc about health	0.309**	0.106	0.084	0.056	0.157	0.099	0.460**	0.129
pension	0.174*	0.102	0.189**	0.054	0.186**	0.094	0.164	0.126
Adjusted/Pseudo R ²	0.158		0.112		0.113		0.130	

Note: This table reports OLS and quantile regressions of total net worth over permanent income on the variables listed in the first column. Even though not reported, regressions include several demographic variables. Refer to the text for a complete list of the variables used in the estimation.

* indicates significance at the 10% level

** indicates significance at the 5% level

Table 7a: Explaining household saving

Low education sample								
	Total Net worth							
	Total Sample		1 st quartile		Median		3 rd quartile	
	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err
constant	4.485	8.556	-1.939	3.418	0.915	5.813	0.632	14.238
seminar	0.085	0.209	0.272**	0.089	0.134	0.146	0.131	0.373
excellent health	0.561**	0.207	0.243**	0.084	0.464**	0.145	0.862**	0.373
very good health	0.233	0.190	0.203**	0.084	0.451**	0.131	0.355	0.338
good health	0.052	0.182	0.113	0.079	0.304**	0.125	0.271	0.321
permanent inc./1000	-0.038**	0.007	0.004	0.003	-0.012**	0.086	-0.038**	0.014
past unemployment	-0.225*	0.124	-0.109**	0.054	-0.269**	0.086	-0.275	0.224
past shocks	-0.452**	0.128	-0.270**	0.058	0.344**	0.091	-0.420*	0.231
received inheritances	0.895**	0.169	0.474**	0.075	0.658**	0.121	0.993**	0.310
money from relatives	0.736**	0.246	0.436**	0.113	0.825**	0.178	0.757*	0.450
money from insurance	0.994**	0.288	0.602**	0.129	0.971**	0.203	0.519	0.516
high risk aversion	0.022	0.202	0.192**	0.088	0.110	0.141	0.440	0.343
medium risk aversion	0.275	0.254	0.253**	0.111	0.337*	0.178	0.331	0.451
moderate risk aversion	-0.056	0.258	0.265**	0.114	0.053	0.182	0.059	0.449
variance of income	0.043**	0.017	0.031**	0.007	0.030**	0.012	0.062**	0.027
expect. live to 75	0.137	0.213	-0.116	0.095	0.049	0.149	-0.078	0.377
expect. SS more gener.	-0.071	0.199	0.101	0.086	0.096	0.137	-0.047	0.355
expect. house price up	-0.568**	0.200	-0.277**	0.090	-0.537**	0.139	-0.425	0.357
exp. give help to fam.	0.107	0.191	0.059	0.082	0.255*	0.133	0.198	0.353
bequests	1.118**	0.124	0.513**	0.055	0.860**	0.087	1.280**	0.226
can rely on help	-0.035	0.121	0.024	0.053	0.070	0.085	0.321	0.223
parent alive	0.006	0.134	0.035	0.059	0.175*	0.095	0.120	0.243
heavy smoker	-0.367**	0.151	-0.284**	0.070	-0.357**	0.108	-0.481*	0.277
heavy drinker	-0.422	0.276	-0.256**	0.125	-0.221	0.190	-0.269	0.460
no regular exercise	-0.227*	0.123	-0.091*	0.054	-0.165*	0.086	-0.271	0.224
talk to doc about health	0.183	0.137	0.073	0.061	0.063	0.096	0.247	0.250
pension	0.392**	0.130	0.269**	0.057	0.220**	0.091	0.397*	0.237
Adjusted/Pseudo R ²	0.158		0.112		0.113		0.130	

Note: This table reports OLS and quantile regressions of total net worth over permanent income on the variables listed in the first column. Estimates refer to the sample of respondents with high school education or lower. Even though not reported, regressions include several demographic variables. Refer to the text for a complete list of the variables used in the estimation.

* indicates significance at the 10% level

** indicates significance at the 5% level

Table 7b: Explaining household saving

High education sample								
	Total Net worth							
	Total Sample		1 st quartile		Median		3 rd quartile	
	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err
constant	-8.398	8.803	-7.014	5.773	-9.750	5.595	-14.730	12.091
seminar	0.196	0.175	0.297**	0.111	0.139	0.116	0.131	0.255
excellent health	0.670**	0.292	0.386*	0.198	0.464**	0.193	0.936**	0.402
very good health	0.307	0.281	0.176	0.188	0.260	0.185	0.399	0.383
good health	0.457	0.285	0.302*	0.188	0.313*	0.187	0.544	0.387
permanent inc./1000	-0.009	0.006	-0.002	0.004	-0.005	0.004	-0.004	0.009
past unemployment	-0.355**	0.154	-0.198*	0.102	-0.365**	0.103	-0.447*	0.230
past shocks	-0.637**	0.137	-0.309**	0.092	-0.313**	0.092	-0.652**	0.200
received inheritances	0.436**	0.152	0.179*	0.103	0.285**	0.103	0.588**	0.222
money from relatives	0.640**	0.208	0.228*	0.139	0.709**	0.142	0.785**	0.316
money from insurance	0.679**	0.303	0.402**	0.203	0.352*	0.210	0.541	0.429
high risk aversion	-0.052	0.194	0.155	0.127	0.110	0.129	0.082	0.283
medium risk aversion	-0.099	0.238	0.141	0.161	0.118	0.160	0.241	0.349
moderate risk aversion	-0.201	0.256	0.096	0.169	0.411*	0.173	0.268	0.380
variance of income	0.001	0.006	0.002	0.002	0.008**	0.004	0.013**	0.006
expect. live to 75	-0.059	0.271	-0.161	0.185	-0.102	0.181	0.388	0.374
expect. SS more gener.	-0.268	0.229	-0.047	0.149	0.042	0.154	-0.247	0.339
expect. house price up	-0.276	0.243	-0.133	0.165	-0.054	0.161	-0.825**	0.343
exp. give help to fam.	0.650**	0.217	0.100	0.143	0.241*	0.146	0.599*	0.309
bequests	1.123**	0.129	0.572**	0.085	0.957**	0.087	1.188**	0.192
can rely on help	0.064	0.129	0.213**	0.087	0.221**	0.087	-0.007	0.187
parent alive	-0.340**	0.159	0.048	0.105	-0.144	0.108	-0.442*	0.228
heavy smoker	-0.648**	0.195	-0.364**	0.137	-0.598**	0.133	-0.880**	0.212
heavy drinker	-0.093	0.302	-0.012	0.206	0.112	0.202	0.0561	0.454
no regular exercise	-0.321**	0.144	-0.243**	0.097	-0.410**	0.098	-0.211	0.212
talk to doc about health	0.508**	0.171	0.136	0.117	0.308**	0.116	0.669**	0.245
pension	-0.320*	0.169	0.139	0.114	0.038	0.113	-0.586**	0.253
Adjusted/Pseudo R ²	0.164		0.107		0.110		0.145	

Note: This table reports OLS and quantile regressions of total net worth over permanent income on the variables listed in the first column. Estimates refer to the sample of respondents with more than high school education. Even though not reported, regressions include several demographic variables. Refer to the text for a complete list of the variables used in the estimation.

* indicates significance at the 10% level

** indicates significance at the 5% level

Table 8: Explaining household savings

Total sample								
	Financial Net Worth							
	Total Sample		1 st quartile		Median		3 rd quartile	
	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err
constant	-0.274	3.000	-0.036	0.494	-0.958	1.753	2.216	3.575
seminar	0.137**	0.065	0.088**	0.011	0.134**	0.040	0.103	0.086
excellent health	0.144*	0.080	0.058**	0.013	0.071	0.048	0.146	0.102
very good health	0.091	0.075	0.076**	0.012	0.073	0.045	0.108	0.095
good health	0.069	0.074	0.048**	0.012	0.025	0.044	0.088	0.093
permanent inc./1000	-0.004	0.003	0.0008	0.0005	-0.0005	0.002	-0.001	0.004
past unemployment	-0.004	0.047	-0.023**	0.008	-0.027	0.028	-0.055	0.061
past shocks	-0.287**	0.045	-0.067**	0.008	-0.13**	0.028	-0.279**	0.059
received inheritances	0.248**	0.055	0.043**	0.009	0.254**	0.034	0.350**	0.072
money from relatives	0.229**	0.077	0.022	0.013	0.118**	0.049	0.301**	0.103
money from insurance	0.490**	0.101	0.089**	0.017	0.359**	0.063	0.570**	0.133
high risk aversion	-0.113*	0.068	0.007	0.011	0.004	0.041	0.021	0.087
medium risk aversion	-0.127	0.084	0.036**	0.014	0.020	0.052	0.042	0.109
moderate risk aversion	-0.186**	0.088	0.014	0.015	-0.019	0.054	-0.126	0.113
variance of income	0.003	0.003	0.003**	0.0007	0.008**	0.001	0.014**	0.003
expect. live to 75	0.022	0.081	-0.020	0.014	-0.029	0.049	0.042	0.103
expect. SS more gener.	0.067	0.073	0.007	0.012	0.015	0.044	0.105	0.095
expect. house price up	-0.261**	0.075	-0.029**	0.013	-0.064	0.045	-0.280**	0.096
exp. give help to fam.	0.167**	0.070	0.031**	0.012	0.025	0.042	0.126	0.092
bequests	0.312**	0.043	0.099**	0.007	0.203**	0.027	0.428**	0.057
can rely on help	0.031	0.043	0.027**	0.007	0.045*	0.026	0.053	0.056
parent alive	-0.068	0.050	0.011	0.008	-0.011	0.030	-0.004	0.064
heavy smoker	-0.179**	0.058	-0.038**	0.010	-0.09**	0.036	-0.190**	0.077
heavy drinker	-0.028	0.099	-0.002	0.017	-0.015	0.060	-0.015	0.127
no regular exercise	-0.091**	0.045	-0.022**	0.008	-0.06**	0.028	-0.099*	0.059
talk to doc about health	0.161**	0.052	0.016*	0.009	0.035	0.032	0.172**	0.067
pension	-0.029	0.050	0.0006	0.008	0.005	0.030	0.008	0.066
Adjusted/Pseudo R ²	0.129		0.049		0.097		0.131	

Note: This table reports OLS and quantile regressions of financial net worth over permanent income on the variables listed in the first column. Even though not reported, regressions include several demographic variables. Refer to the text for a complete list of the variables used in the estimation.

* indicates significance at the 10% level

** indicates significance at the 5% level

Table 8a: Explaining household savings

Low education sample								
	Financial Net Worth							
	Total Sample		1 st quartile		Median		3 rd quartile	
	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err
constant	3.560	4.069	0.094	0.614	0.572	1.582	2.756	4.202
seminar	0.127	0.099	0.051**	0.015	0.088**	0.041	0.070	0.115
excellent health	0.257**	0.099	0.025*	0.015	0.027	0.040	0.137	0.109
very good health	0.198**	0.091	0.060**	0.014	0.064*	0.037	0.114	0.098
good health	0.145*	0.087	0.023*	0.013	-0.004	0.035	0.077	0.094
permanent inc./1000	-0.003	0.003	0.002**	0.0005	0.003**	0.001	0.004	0.004
past unemployment	0.001	0.059	-0.02**	0.009	-0.025	0.024	-0.064	0.067
past shocks	-0.249**	0.061	-0.04**	0.009	-0.115**	0.025	-0.25**	0.069
received inheritances	0.166**	0.080	0.033**	0.012	0.183**	0.034	0.225**	0.093
money from relatives	0.055	0.117	0.052**	0.019	0.034	0.050	0.010	0.137
money from insurance	0.473**	0.137	0.082**	0.021	0.243**	0.058	0.737**	0.157
high risk aversion	-0.038	0.096	0.002	0.014	-0.009	0.039	0.115	0.105
medium risk aversion	-0.038	0.121	0.035*	0.019	0.019	0.050	0.143	0.135
moderate risk aversion	-0.081	0.123	0.010	0.019	-0.050	0.050	-0.011	0.135
variance of income	0.017**	0.008	0.006**	0.001	0.011**	0.003	0.023**	0.011
expect. live to 75	0.017	0.101	-0.010	0.015	-0.035	0.041	0.024	0.112
expect. SS more gener.	0.061	0.095	-0.005	0.014	0.025	0.038	0.0007	0.105
expect. house price up	-0.277**	0.095	-0.04**	0.015	-0.046	0.039	-0.200*	0.105
exp. give help to fam.	0.116	0.091	0.030**	0.014	0.031	0.037	0.093	0.104
bequests	0.291**	0.059	0.063**	0.009	0.148**	0.024	0.341**	0.068
can rely on help	-0.019	0.057	0.008	0.009	0.022	0.024	0.036	0.065
parent alive	-0.038	0.064	0.011	0.010	-0.017	0.026	-0.024	0.072
heavy smoker	-0.165**	0.072	-0.02**	0.011	-0.058*	0.030	-0.194**	0.082
heavy drinker	-0.144	0.131	-0.007	0.020	-0.054	0.053	-0.008	0.138
no regular exercise	-0.049	0.058	-0.012	0.009	-0.06**	0.024	-0.024	0.066
talk to doc about health	0.127*	0.065	0.012	0.010	0.047*	0.027	0.114	0.075
pension	0.021	0.062	-0.002	0.009	-0.001	0.025	-0.005	0.071
Adjusted/Pseudo R ²	0.105		0.028		0.076		0.121	

Note: This table reports OLS and quantile regressions of financial net worth over permanent income on the variables listed in the first column. Estimates refer to the sample of respondents with high school education or lower. Even though not reported, regressions include several demographic variables. Refer to the text for a complete list of the variables used in the estimation.

* indicates significance at the 10% level

** indicates significance at the 5% level

Table 8b: Explaining household savings

High education sample								
	Financial net worth							
	Total Sample		1 st quartile		Median		3 rd quartile	
	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err
constant	-3.429	4.471	0.902	1.225	0.325	1.938	-2.485	6.754
seminar	0.115	0.088	0.119**	0.027	0.101**	0.040	0.127	0.149
excellent health	-0.137	0.148	0.077*	0.045	0.046	0.068	0.104	0.244
very good health	-0.175	0.143	0.067	0.043	0.060	0.065	0.077	0.234
good health	-0.150	0.144	0.062	0.043	0.023	0.066	0.100	0.235
permanent inc./1000	0.003	0.003	0.004**	0.001	0.003**	0.001	0.001	0.005
past unemployment	0.0002	0.078	-0.028	0.024	-0.041	0.036	-0.112	0.134
past shocks	-0.336**	0.070	-0.096**	0.022	-0.175**	0.032	-0.315**	0.115
received inheritances	0.300**	0.077	0.062**	0.025	0.295**	0.036	0.488**	0.132
money from relatives	0.360**	0.106	0.005	0.034	0.141**	0.050	0.586**	0.180
money from insurance	0.508**	0.154	0.179**	0.051	0.300**	0.073	0.339	0.253
high risk aversion	-0.203**	0.098	0.022	0.030	0.014	0.045	-0.087	0.167
medium risk aversion	-0.203*	0.121	0.047	0.037	0.051	0.056	-0.081	0.207
moderate risk aversion	-0.301**	0.130	0.001	0.040	0.032	0.060	-0.221	0.218
variance of income	0.0008	0.003	0.001	0.001	0.006**	0.001	0.012**	0.004
expect. live to 75	0.037	0.137	-0.038	0.043	0.027	0.063	-0.069	0.223
expect. SS more gener.	0.045	0.116	0.019	0.036	0.026	0.054	0.118	0.201
expect. house price up	-0.244**	0.123	-0.035	0.039	-0.127**	0.057	-0.443**	0.206
exp. give help to fam.	0.219**	0.110	0.051	0.035	0.046	0.051	0.155	0.186
bequests	0.357**	0.066	0.124**	0.021	0.222**	0.030	0.517**	0.113
can rely on help	0.076	0.065	0.070**	0.020	0.118**	0.030	0.119	0.112
parent alive	-0.086	0.081	0.037	0.025	-0.022	0.037	0.058	0.134
heavy smoker	-0.194*	0.099	-0.077**	0.032	-0.126**	0.047	-0.268	0.170
heavy drinker	0.162	0.153	0.049	0.048	0.084	0.071	0.023	0.285
no regular exercise	-0.161**	0.073	-0.019	0.023	-0.086**	0.034	-0.245**	0.122
talk to doc about health	0.201**	0.087	0.008	0.027	0.025	0.041	0.185	0.146
pension	-0.162*	0.086	-0.025	0.026	0.015	0.040	-0.098	0.150
Adjusted/Pseudo R ²	0.135		0.065		0.103		0.132	

Note: This table reports OLS and quantile regressions of financial net worth over permanent income on the variables listed in the first column. Estimates refer to the sample of respondents with more than high school education. Even though not reported, regressions include several demographic variables. Refer to the text for a complete list of the variables used in the estimation.

* indicates significance at the 10% level

** indicates significance at the 5% level

Table 9: Explaining stock ownership

Total sample and wealth groups								
	Stock ownership							
	Total Sample		Low wealth w ≤ \$30,000		Medium wealth 30,000 < w ≤ 60000		High wealth w > \$60,000	
	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err
seminar	0.042*	0.024	0.033*	0.027	0.044	0.049	0.034	0.033
excellent health	0.134**	0.038	0.041*	0.037	0.038	0.064	0.133**	0.054
very good health	0.141**	0.035	0.094**	0.049	0.087	0.060	0.122**	0.051
good health	0.091**	0.035	0.041*	0.029	-0.030	0.045	0.085*	0.052
permanent inc./1000	0.004**	0.001	0.0008**	0.0004	0.004*	0.002	0.002	0.002
past unemployment	-0.028	0.018	-0.005	0.007	0.025	0.032	-0.021	0.027
past shocks	-0.014	0.017	0.009	0.007	0.010	0.028	-0.008	0.027
received inheritances	0.091**	0.022	0.032**	0.021	0.025	0.040	0.098**	0.029
money from relatives	0.054*	0.030	-0.013	0.005	-0.012	0.052	0.054	0.039
money from insurance	0.024	0.041	0.028	0.042	-0.047	0.049	-0.005**	0.055
high risk aversion	-0.041	0.027	-0.005	0.009	0.003	0.045	-0.08	0.042
medium risk aversion	-0.022	0.031	0.009	0.016	-0.023	0.049	-0.062	0.047
moderate risk aversion	-0.006	0.034	0.018	0.021	-0.023	0.051	-0.041	0.051
variance of income	0.001*	0.0009	0.001	0.001	0.006*	0.004	0.0008	0.001
expect. live to 75	-0.024	0.033	-0.008	0.012	-0.051	0.051	0.007	0.049
expect. SS more gener.	0.012	0.028	-0.009	0.011	-0.063	0.047	0.046	0.042
expect. house price up	-0.029	0.029	0.009	0.011	0.005	0.051	-0.038	0.044
exp. give help to fam.	0.062**	0.027	-0.009	0.011	0.008	0.047	0.059	0.040
bequests	0.072**	0.017	0.019**	0.012	-0.010	0.027	0.051**	0.023
can rely on help	0.034**	0.016	0.021**	0.010	0.002	0.028	0.027	0.024
parent alive	-0.003	0.019	0.001	0.006	-0.031	0.034	-0.003	0.029
heavy smoker	-0.030	0.022	-0.010	0.006	-0.007	0.034	0.023	0.037
heavy drinker	-0.001	0.038	0.007	0.019	0.065	0.116	-0.013	0.055
no regular exercise	-0.027	0.017	-0.006	0.007	0.021	0.028	-0.015	0.026
talk to doc about health	0.067**	0.019	0.004	0.007	0.055*	0.027	0.081**	0.029
pension	0.098**	0.018	0.022**	0.009	0.026	0.030	0.093**	0.03
Pseudo R ²	0.16		0.32		0.20		0.091	

Note: This table reports probit regressions of stock ownership on the variables listed in the first column. The estimates reported are the marginal effects. Even though not reported, regressions include several demographic variables. Refer to the text for a complete list of the variables used in the estimation.

* indicates significance at the 10% level

** indicates significance at the 5% level

Table 9a: Explaining stock ownership

Education and wealth groups								
	Low education				High education			
	Low wealth w < \$60,000		High wealth w >= \$60,000		Low wealth w < \$60,000		High wealth w >= \$60,000	
	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err	Coeff.	Std. err
seminar	0.028*	0.022	0.014	0.051	0.009	0.065	0.040	0.043
excellent health	0.020	0.023	0.162**	0.071	0.088	0.100	0.071	0.083
very good health	0.041**	0.025	0.182**	0.065	0.215**	0.093	0.028	0.082
good health	0.021	0.018	0.155**	0.067	-0.012	0.075	-0.031	0.082
permanent inc./1000	0.002**	0.0005	0.0038*	0.002	0.005**	0.001	0.002	0.002
past unemployment	-0.011	0.009	-0.033	0.034	0.006	0.039	-0.008	0.042
past shocks	0.003	0.008	-0.014	0.036	0.034	0.035	-0.005	0.037
received inheritances	0.032**	0.023	0.085**	0.042	-0.020	0.043	0.116**	0.038
money from relatives	0.041	0.046	0.093*	0.059	-0.086*	0.033	0.037	0.052
money from insurance	-0.005	0.019	0.041	0.082	0.035	0.114	-0.052	0.077
high risk aversion	0.025*	0.013	-0.119*	0.065	-0.066	0.050	-0.087*	0.054
medium risk aversion	0.098**	0.069	-0.152**	0.054	-0.071	0.040	0.019	0.065
moderate risk aversion	0.055*	0.048	-0.174**	0.052	0.004	0.068	0.062	0.068
variance of income	0.0001	0.001	0.004	0.004	0.006	0.005	0.0003	0.001
expect. live to 75	-0.0007	0.014	0.010	0.062	-0.183**	0.072	-0.029	0.073
expect. SS more gener.	-0.012	0.014	0.002	0.056	-0.069	0.064	0.081	0.060
expect. house price up	-0.003	0.013	0.063	0.057	0.059	0.067	-0.131**	0.065
exp. give help to fam.	-0.006	0.013	-0.009	0.053	0.069	0.061	0.130**	0.058
bequests	0.016	0.011	0.027	0.032	0.044	0.043	0.065**	0.033
can rely on help	0.002	0.008	0.020	0.032	0.030	0.037	0.031	0.034
parent alive	0.015*	0.008	0.002	0.037	-0.121**	0.050	0.022	0.043
heavy smoker	-0.003	0.009	-0.035	0.044	-0.063	0.037	0.077	0.057
heavy drinker	0.016*	0.008	0.062*	0.033	0.187*	0.138	-0.014	0.080
no regular exercise	0.006	0.008	-0.023	0.033	-0.032	0.035	0.008	0.04
talk to doc about health	0.020**	0.008	0.062**	0.036	0.011	0.042	0.100**	0.045
pension	0.015*	0.009	0.093**	0.035	0.059	0.037	0.075	0.047
Adjusted/Pseudo R ²	0.25		0.089		0.25		0.077	

Note: This table reports probit regressions of stock ownership on the variables listed in the first column across education and wealth groups. The estimates reported are the marginal effects. Even though not reported, regressions include several demographic variables. Refer to the text for a complete list of the variables used in the estimation

* indicates significance at the 10% level

** indicates significance at the 5% level

Table 10: Instrumental variables estimation

Total Net Worth						
	Total Sample		Low education		High education	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Seminar	2.012**	0.975	0.816	1.379	3.026**	1.417

Table 10a: Instrumental variables estimation

Financial Net Worth						
	Total Sample		Low education		High education	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Seminar	0.452	0.463	0.297	0.654	0.125	0.652

Table 10b: Instrumental variables estimation

Stock Ownership						
	Total Sample		Low education		High education	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Seminar	0.405**	0.169	0.300	0.208	0.171	0.259

Note: These tables report instrumental variables estimation of wealth and stock ownership on retirement seminar and many other variables. Refer to the text for a detailed description of the variables and the instruments used in the estimation.

** indicates significance at the 5% level.

Table 11: Total household accumulation

Total Net Worth + Pension Wealth						
	Total Sample		Low education		High education	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Seminar (OLS)	0.893**	0.172	0.788**	0.251	0.947**	0.256
Seminar (IV)	6.077**	1.380	4.792**	1.844	6.792**	2.206

Table 11a: Total household accumulation

Total Net Worth + Pension Wealth + Social Security Wealth						
	Total Sample		Low education		High education	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Seminar (OLS)	1.058**	0.195	0.836**	0.290	1.215**	0.276
Seminar (IV)	5.895**	1.381	5.876**	2.165	6.713**	2.018

Note: These tables report OLS and IV estimates of two measures of total accumulation on retirement seminar and many other variables. Refer to the text for a detailed description of the variables and the instruments used in the estimation.

** indicates significance at the 5% level.