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Household saving behavior: The role of literacy, information and financial education programs

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The Role of Literacy, Information and
Financial Education Programs**

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**Household Saving Behavior:
The Role of Literacy, Information and
Financial Education Programs***

Annamaria Lusardi¹

September 2007

Abstract:

Individuals are increasingly in charge of their own financial security after retirement. But how well-equipped are individuals to make saving decisions; do they possess adequate financial literacy, are they informed about the most important components of saving plans, do they even plan for retirement? This paper shows that financial illiteracy is widespread among the US population and particularly acute among specific demographic groups, such as those with low education, women, African-Americans and Hispanics. Moreover, close to half of older workers do not know which type of pensions they have and the large majority of workers know little about the rules governing Social Security benefits. Lack of literacy and lack of information can affect the ability to save and to secure a comfortable retirement; few individuals rely on the help of financial advisors and ignorance about basic financial concepts can be linked to lack of retirement planning and lack of wealth. Financial education programs can help improve saving and financial decision-making, but much more can be done to improve the effectiveness of these programs.

JEL Classification: D91

Keywords: Financial Literacy, Financial Education Programs, Saving Behavior, Pensions

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1. Introduction

Individuals are increasingly in charge of their own financial security after retirement. With the shift from Defined Benefit (DB) to Defined Contribution (DC) pensions, workers have to decide not only how much to save for retirement but also how to allocate their pension wealth. Moreover, the complexity of financial instruments has increased and individuals have to deal with new and more sophisticated financial products. How well-equipped are individuals to make saving decisions? Do they possess adequate financial literacy? Are they informed about the most important components of saving plans? Do they even plan for retirement?

This paper shows that a large percentage of workers have not thought about retirement, even when retirement is only five to ten years away. Consistent with the evidence on lack of planning, half of older workers know little about their pensions and the rules governing Social Security benefits. Moreover, most individuals lack knowledge of basic financial concepts, such as the working of interest compounding, the difference between nominal and real values, and the basics of risk diversification. Illiteracy is widespread among the general population, and particularly acute among specific demographic groups, such as women, African-Americans, Hispanics and those with low education.

Low literacy and lack of information affect the ability to save and to secure a comfortable retirement; few individuals rely on the help of financial advisors, and ignorance about basic financial concepts can be linked to lack of retirement planning and lack of wealth. Several initiatives have been undertaken to foster saving and financial security, such as educating workers to improve their financial literacy and knowledge

about pensions, automatically enrolling workers in pension plans, and simplifying their pension enrollment decisions. While these programs had some impact on saving behavior, much more can be done to improve their effectiveness.

The paper is organized as follow: Section 2 provides an overview of the difficulties inherent in saving decisions. Section 3 examines the evidence on retirement planning, workers' knowledge of pension and Social Security, financial literacy and reliance on the advice of experts. Section 4 reviews the current initiatives to foster saving and financial security, covering financial education programs, automatic enrollment of workers in pension plans and other programs. Section 5 provides a discussion of the major findings and suggestions for public policy.

2. Theoretical framework

The theoretical framework used to model consumption/saving decisions posits that rational and foresighted consumers derive utility from consumption over their lifetimes. In the simplest format, the consumer has a lifetime expected utility, which is the expected value of the sum of per-period utility $U(c_j)$ discounted to the present (using the discount factor β), from the worker's current age j to the oldest possible lifetime D :

$$E \left[\sum_{j=s}^D \beta^{j-s} U(c_j) \right]$$

Assets and consumption each period (a_j and c_j) are determined endogenously by maximizing this function subject to an intertemporal budget constraint. Thus c_j represents per period consumption, e_j is labor earnings, ra_j represents the households' returns on assets a_j , and SS and PP represent the household's Social Security benefits and pensions, which depend on the worker's retirement (R) age:

$$y_j = e_j + ra_j, j \in \{S, \dots, R-1\}$$

and

$$y_j = SS_j(R) + PP_j(R) + ra_j, j \in [R, \dots, D].$$

Furthermore, consumption from income, assets, and benefits is set so that:

$$c_j + a_{j+1} = y_j + a_j, j \in [S, \dots, R-1] \text{ before retirement (R), and}$$

$$c_j + a_{j+1} = y_j + a_j, j \in [R, \dots, D] \text{ from retirement to death (D).}^2$$

In other words, the economic model posits that the consumer holds expectations regarding discount rates, investment returns, earnings, pensions and Social Security benefits, and inflation. Further, it posits that he/she uses that information to formulate and execute optimal consumption/saving plans.

Lifetime resources, the distribution of these resources, and age play a critical role in saving decisions. Thus, those facing an upward sloping age-income profile will borrow when young to smooth their consumption over the life cycle. Similarly, those who have rich pensions may not need to accumulate a lot of extra private savings to provide for the years when they stop working. Preferences, such as the rate of time preferences, also play an important role. Those who place high value on the present will consume more today than individuals who discount the future less heavily.

However, even in this most basic formulation of the saving decision, the requirements for making saving decisions are demanding: Individuals have to collect and make forecasts about many variables, from Social Security and pensions to interest rates and expected inflation, just to name a few. Moreover, they have to perform calculations

² There is also the condition that assets in the last period of life are equal to zero and that the consumer does not die leaving any debt.

that require, at the minimum, an understanding of compound interest and the time value of money.

While the majority of previous studies have focused on modeling life-time resources and preferences in the way that best captures the characteristics of the individuals and the economic environment, including the fact that predictions about the future are uncertain,³ few studies have recognized that making saving decisions is a very difficult task. Individuals may have to spend considerable amounts of time and effort searching for all the information required to make saving decisions. Moreover, individuals may not possess the skills and ability to perform the calculations inherent in devising a saving plan.

This paper will focus on how much individuals plan for retirement, what they know about the variables that should enter a saving plan, and the level of financial knowledge and numeracy that individuals possess. While many of these characteristics have been overlooked in previous works on saving, they can be important predictors of household saving behavior. Moreover and most important, they have important implications for public policy.

3. Planning, information, financial literacy and financial advice

3.1. Do individuals plan for retirement?

One simple and direct way to examine whether, consistent with the predictions of the theoretical model described in the previous section, individuals look ahead and make plans for the future is to study the extent of retirement planning. Lusardi (1999) looked at that evidence using data from the 1992 Health and Retirement Study (HRS), which

³ See, among others, Scholz, Seshadri and Khitatrakun (2006).

surveys respondents 51 years or older. She finds that as many as one third of respondents have not thought about retirement at all. This is surprising, given that most of the respondents in her sample are only five to ten years away from retirement. Interestingly, lack of planning is concentrated among specific groups of the population, such as those with low education, African-Americans, Hispanics, and women. These are potentially vulnerable groups, who are not only less likely to save for retirement, but who also do not have a minimum level of savings to buffer themselves against shocks (Hubbard, Skinner and Zeldes, 2005).

These findings are not specific to a particular time period. Notwithstanding the many changes in the economic environment, including the increased supply of financial products aimed to facilitate planning, lack of planning is still widespread even among the current population of older respondents. Using data from the 2004 HRS and concentrating on respondents who are 51 to 56 years old, Lusardi and Mitchell (2007a) find that close to 30% of respondents also have not given any thought to retirement.

To make a tighter connection with the theoretical model described above, Lusardi and Mitchell (2006) devised a special module on planning that was added to the 2004 HRS. In that module, they specifically asked respondents whether:

‘they have ever tried to figure out how much their household would need to save for retirement.’

To those who answer affirmatively to this question, they further asked whether:

‘they were able to develop a plan’

and to those who did so, they asked whether:

‘they were able to stick to plan.’

This module has the advantage of measuring different types of planners, from those who merely tried to calculate their saving needs (*simple planners*) to those who were able to develop and carry through their plans (*successful planners*). Findings are not much different when using this alternative and perhaps more appropriate measure of planning: As many as 31% of respondents do not plan for retirement. However, the percentage of planners decreases significantly when moving from simple to successful planners: Only 18% of respondents were able to develop a saving plan and stick to that plan. This suggests that not only have many families never attempted to devise a saving plan, but even among those who do plan, intentions do not necessarily translate into actions.

These findings regarding a lack of planning have been confirmed in other surveys. For example, using data from a representative sample of the US workers from the Retirement Confidence Survey (RCS), Yakoboski and Klemperer (1997) report that only 36% of workers have tried to determine how much they need to save to fund a comfortable retirement. However, many of the workers who have done the calculation could not give a figure when asked. Thus, according to this survey, as many as 3/4 of workers have little idea regarding how much money they need to accumulate for retirement. Moreover, consistent with the finding of Lusardi and Mitchell (2007a), the data from the RCS also show that the fraction of non-planners has not changed much over time (RCS, 2001). While planning is strongly correlated with education, a sizable fraction of non-planners is present even among respondents with high educational attainment (Ameriks, Caplin and Leahy, 2003).

Planning is an important determinant of household wealth. Table 1 reports the distribution of household wealth holdings across different degrees of planning for two groups of households of the same age but in different periods of time: the Early Baby Boomers (age 51-56 in 2004) and the Older Cohort (age 51-56 in 1992).⁴ Planners have substantially more wealth than non-planners: Looking at the medians, planners accumulate more than double the amount of wealth of non-planners. Differences are even larger at the first quartile of the wealth distribution. For many, lack of planning is tantamount to lack of savings. However, there is not much differences in the means. This is due to the fact that there are several wealthy households who have not given any thoughts to retirement. Note that even a little amount of planning goes a long way toward high wealth holdings; those who have thought “little” about retirement hold substantially more wealth than those who have thought “not at all” about retirement. These findings hold true not only for the Older Cohort in 1992, but also for the Early Baby Boomers in 2004. Thus, the relationship between planning and wealth did not seem to be influenced by changes in financial markets (including the bust in the housing market in 1991, the boom in the housing market before 2004, and the boom and bust in stock prices) and changes in the supply of products to foster financial planning, including the many financial education programs undertaken by employers throughout the 1990s.

Clearly, these simple findings do not demonstrate that planning leads to higher wealth. Because lack of planning is disproportionately concentrated among specific demographic groups, it may simply be a proxy for low education and low income.

Moreover, it may simply be that those who have high wealth have an incentive to spend

⁴ Household wealth is the sum of checking and savings account balances, certificates of deposits and T-bills, bonds, stocks, IRAs and Keoghs, home equity, second homes and other real estate, business equity, vehicles, and other assets, minus all debt. All values are expressed in 2004 dollars.

time and effort in planning, since they may benefit more from planning than households with little or no wealth. On the other hand, wealthy households may not need to give much thought to retirement.

Lusardi (1999) accounts for many determinants of wealth, using a long set of demographic characteristics including education, gender, race and marital status, and also a host of variables that proxy for preferences (risk aversion and rate of time preferences), subjective expectations about the future, past negative and positive shocks to wealth and other motives for low wealth holdings (a weak precautionary and bequest motive). She finds that planning continues to be a determinant of wealth even after accounting for many other reasons why wealth may be low. According to her estimates, at the mean, those who do not plan hold from 10 to 15 percent less wealth than those who plan.

However, as mentioned before, differences are particularly large at the first and second quartile of the wealth distribution rather than at the means. Table 2 reports quantile regressions of the effects of planning on the wealth holdings of the Older Cohort and the Early Baby Boomers. Lack of planning is a dummy equal to one for those who have not thought at all about retirement. For simplicity, the regressions only include the most important demographic characteristics—age, marital status, education, race and ethnicity, gender, number of children, retirement status—and income. The coefficient on lack of planning is always negative and statistically significant for each of the three wealth quartiles, indicating that those who do not plan hold lower amounts of wealth. Estimates are not only sizeable but also very similar between cohorts. Looking at medians, non-planners accumulate from \$17,000 to \$20,000 less wealth than those who do some (a little/a lot) planning, which corresponds to about 20 percent less wealth.

The important question, however, is whether there is a causal relationship between planning and wealth. In other words, if someone were to begin planning tomorrow, would he end up with a larger amount of wealth because of it? Lusardi (2003) performs a regression similar to the one reported in Table 2, but instrumenting lack of planning with variables measuring planning costs. Specifically, she uses the age difference between the respondent and his older siblings as an instrument for planning. Those who have older siblings face lower search and information costs, because they can simply learn by watching the behavior of others. Thus, in this alternative estimation strategy, Lusardi (2003) tries to assess whether those who face lower planning costs, and therefore can plan more, accumulate higher amounts of wealth. Not only is the effect of planning confirmed, but planning becomes an even stronger determinant of wealth.⁵

Lusardi and Mitchell (2007a) use an alternative strategy to pin down the direction of causality between planning and wealth. They look at changes in wealth outside of households' control and examine whether these changes influence the extent of retirement planning. In other words, if households were to become richer, would they plan more as a result of their greater wealth? Specifically, they exploited the increase in wealth generated by the appreciation in housing equity during 2002 and 2003 and examined whether that increase in wealth led Early Baby Boomers to change their retirement planning behavior. Similarly, they examine whether the housing bust before 1992 and the resultant decrease in wealth that the older cohort experienced at the beginning of the 1990s changed the planning behavior of the Older Cohort.⁶ In both

⁵ For alternative instrumental variables estimates, which provide very similar results, see Ameriks, Caplin and Leahy (2003).

⁶ They exploit regional variation in home prices in their estimates. There is wide variation in home prices across regions in the US. For example, while the Pacific region experienced an increase of 10.3% in 2003,

cases, they do not find any evidence that this change in wealth influenced planning, confirming that the direction of causality goes from planning to wealth rather than from wealth to planning. Given the benefits of planning, it is worth asking why planning has such an influence on wealth and moreover, why many households do not plan for retirement. Hurst (2006) argues that those who are planners are less likely to follow crude rules of thumb, such as setting consumption equal to income. The next sections examine in more detail barriers to planning and saving.

3.2. Lack of information

Another way to examine whether and how much individuals prepare for retirement and make plans for the future is to look at how much they know about crucial components of a saving plan. For example, two very important parts of total wealth holdings are pension and Social Security wealth. For households around the median of the wealth distribution, those two components account for about half of total wealth, and even for households at the top of the wealth distribution, the percentage of wealth accounted for by Social Security and pensions is sizable (Gustman and Steinmeier, 1999).

Earlier studies indicated that workers were woefully uninformed about their pensions and the characteristics of their pension plans (Mitchell, 1988 and Gustman and Steinmeier, 1989). Given that most pensions in the past were DB pensions and workers had to make few or no decisions about their pension contributions, lack of knowledge is perhaps not surprising. However, recent data from the HRS show that workers continue to be uninformed about the rules and the benefits associated with their pensions, despite the shift from DB to DC pensions, which has given more retirement-savings

the southeast region experienced an increase of 3.6%. The Older Cohort had the opposite experience; during 1990 and 1991 the housing market experienced a bust that was particularly pronounced in the Eastern regions. See Lusardi and Mitchell (2007a) and Lusardi and Beeler (2007) for detail.

responsibility to workers (Gustman and Steinmeier, 2004). Clearly, the calculations underlying pensions and Social Security wealth are very complex and—as for private savings—individuals do not seem to engage in these calculations. However, Gustman and Steinmeier (2004) simply compare the type of pensions that workers report they have (whether DB, DC or a combination of both) with the report of employers. Results are striking: Only half of older workers are able to correctly identify the plan they have. Clearly, errors can abound not only from the reports of workers but also from the reports of firms. To address this issue, Gustman, Steinmeier and Tabatabai (2007) use different sources of data, including data from Watson Wyatt, where it is possible to correctly identify the pension type from firms' data. They also study different time periods, from the 1980s (when DB plans were prevalent) to the recent period (when DC plans gained popularity). They show that it is workers who are most often erroneous and confused about the type of pensions they have.

Information about Social Security is also scanty. Only 43 percent of respondents in the sample of older workers used by Gustman and Steinmeier (2004) even ventured a guess about their expected Social Security benefits, and many respondents knew little about the rules governing Social Security. Moreover, only a little more than a quarter of older respondents in the HRS have ever asked Social Security to calculate their retirement benefits (Lusardi, 2004). As noted in the Employee Benefit Research Institute report after conducting the 2007 RCS, even though it has been 24 years since legislation was passed that increased in increments the normal retirement age for Social Security, and despite 8 years of annual mailings of individual benefit statements from the Social

Security Administration, only 18% of workers knew the correct age at which they would be entitled to full Social Security benefits.

Lack of information about Social Security and pensions is concentrated among low-income households, African-Americans and Hispanics, women and those with low education (Gustman and Steinmeier, 2005). As mentioned before, these people are also less likely to plan for retirement. Most importantly, Gustman and Steinmeier (2004) document that those who do not know their pension plan type have very low wealth relative to their lifetime earnings. Lack of knowledge may explain why households who have pensions do not save much less than households without pensions; Gustman and Steinmeier (1999) found that pension wealth does not crowd out private wealth. Moreover, there is mounting evidence that knowledge about pensions and Social Security affects retirement decisions (Chan and Huff Stevens, 2003, and Mastrobuoni, 2005).

Lack of knowledge and confusion are also found in other, equally important financial decisions. Bucks and Spence (2007) document that households with adjustable rate mortgages, which are potentially more complex contracts to understand than fixed-rate mortgage, are either incorrect or simply do not know about the terms of their contract. These are disconcerting results, since mortgages are important and often onerous contracts. Again, those displaying low knowledge about mortgages are disproportionately those with low education and low income and minorities, who are also those who may benefit the most by knowing the terms of their contract. These findings are also consistent with the evidence on “mistakes” provided by Campbell (2006). He shows that many households failed to refinance their mortgages during a period of declining interest rates. Lack of knowledge may have contributed to that behavior since

lack of refinancing was particularly pronounced among those with low education and low income. Moore (2003) also documents that households that engage in onerous mortgages are less likely to be knowledgeable and financially skilled.

3.3. Lack of financial literacy

One reason why individuals do not engage in planning or are not knowledgeable about pensions or the term of their financial contracts is because they lack financial literacy. Bernheim (1995, 1998) was one of the first to emphasize that most individuals lack basic financial knowledge and numeracy and, as a result, saving behavior is dominated by crude rules of thumb. Several surveys covering the US population or specific sub-groups have continued to document very low levels of economic and financial literacy. The National Council of Economic Education (NCEE) periodically surveys high school students and working-age adults to measure financial and economic knowledge. The survey consists of a 24-item questionnaire on topics including “Economics and the Consumer,” “Money, Interest Rates and Inflation,” and “Personal Finance.” When results were tallied using standard grading criterion in 2005, adults had an average score of C, while the high school population fared even worse, with most earning an F. These findings are confirmed by the Jump\$tart Coalition for Personal Financial Literacy survey, which also documents very low level of basic literacy among U.S. high school students (Mandell, 2004). Hilgert, Hogarth and Beverly (2003) examine data from the 2001 Survey of Consumers, where some 1,000 respondents (ages 18-98) were given a 28-question True/False Financial Literacy quiz, covering knowledge about credit, saving patterns, mortgages, and general financial management. Again, most respondents earn a failing score on these questions, documenting wide illiteracy among

the whole population. Similar findings are reported in smaller samples or specific groups of the population (Agnew and Szykman, 2005 and Moore, 2003).

Lusardi and Mitchell (2006) devised a special module on financial literacy for the 2004 HRS. Adding these types of questions to a large US survey is important not only because it allows researchers to evaluate levels of financial knowledge but also and, most importantly, because it makes it possible to link financial literacy to a very rich set of information about household saving behavior. The module measures basic financial knowledge related to the working of interest rates, the effects of inflation and the concept of risk diversification.⁷ Findings from this module reveal an alarming low level of financial literacy among older individuals in the US (50 and older). Only 50% of respondents in the sample were able to correctly answer two simple questions about interest rates and inflation, and only one third of respondents were able to answer correctly these two questions and a question about risk diversification. Financial illiteracy is particularly acute among the elderly, African-American and Hispanics, women, and those with low education (a common finding in the surveys of financial literacy).⁸

Lusardi and Mitchell (2007a) have also examined numeracy and financial literacy among the Early Baby Boomers, who should be close to the peak of their wealth accumulation and should have dealt with many financial decisions already (mortgages, car loans, credit cards, pension contributions, etc.). The following questions were posed to these respondents:

1) *“If the chance of getting a disease is 10 percent, how many people out of 1,000 would be expected to get the disease?”*

⁷ For a discussion of the measurement of financial literacy and the extent of measurement error in financial literacy data, see van Rooij, Lusardi and Alessie (2007).

⁸ See Lusardi and Mitchell (2007b) for a review.

2) *“If 5 people all have the winning number in the lottery and the prize is 2 million dollars, how much will each of them get?”*

For respondents who answered either the first or the second question correctly, the following question was asked:

3) *“Let’s say you have 200 dollars in a savings account. The account earns 10 percent interest per year. How much would you have in the account at the end of two years?”*

Respondents were also asked to name of the President and the Vice President of the United States.

Table 3 summarizes how Early Boomers answered these questions. While more than 80% of respondents were able to do a simple percentage calculation, only about half could divide \$2 million by 5. Remarkably, only 18% correctly computed the compound interest question. Of those who got the interest question wrong, 43% undertook a simple interest calculation, thereby ignoring the interest accruing on both principal and interest. These are uncomfortable findings, especially considering that these respondents had already dealt with many financial decisions during their lifetimes. Consistent with the general lack of information documented earlier in the paper, a sizable fraction of respondents do not know who is the President or the Vice President of the United States, indicating they do not pay attention to the news or read newspapers.

These questions are important because, as mentioned above, they can be linked to economic behavior. Table 4 explores the link between financial literacy and planning. It shows that those who are more financially knowledgeable are also much more likely to have thought about retirement. In terms of economic importance, both the knowledge of interest compounding and the inability to perform simple calculations (such as a lottery division) matter the most for planning. This is expected given that any saving plans

require some numeracy, the ability to calculate present values, and an understanding of the advantages to start to save early. Financial literacy is not simply a proxy for low education, race or gender; as noted before these groups are disproportionately less likely to be financially literate. Even after accounting for many demographic characteristic, including education, marital status, number of children, retirement status, race, and sex, Table 4 (column III) shows that financial literacy continues to be an important determinant of planning.

One may argue that financial literacy and retirement planning are both decision variables and that planning may also affect financial knowledge. For example, those who want to plan for retirement may invest in acquiring financial knowledge. Lusardi and Mitchell (2007c) address this question using the module on financial literacy and planning they have designed for the Rand American Life Panel, which contains a more extensive set of data on financial literacy than the HRS. Specifically, they use information on financial literacy in the past—before individuals entered the job market—and show that those who were financially literate when young are more likely to plan for retirement later in life.

Other studies have confirmed the positive association between financial knowledge and household financial decision making. Hilgerth, Hogarth, and Beverly (2003) document a positive link between financial knowledge and financial behavior. Stango and Zinman (2007) show that those who are not able to correctly calculate interest rates out of a stream of payments end up borrowing more and accumulating lower amounts of wealth. Van Rooij, Lusardi and Alessie (2007) and Kimball and Shumway (2006) find that financially sophisticated households are more likely to participate in the

stock market. Agarwal, Driscoll, Gabaix and Laibson (2007) show that financial mistakes are most prevalent among the young and elderly, who are also those displaying the lowest amount of financial knowledge and cognitive ability.

3.4. Lack of financial advice

The findings that individuals are uninformed about the most important components of their total savings and lack basic financial knowledge would not be so troubling if individuals relied on professional advice and financial experts to make their saving decisions. In fact, only a small fraction of households consult financial advisers, bankers, Certified Public Accountants and other professionals, while the majority of households rely on informal sources of advice. According to the Survey of Consumer Finances, most individuals rely simply on the help of family and friends for their financial decisions, and this is particularly true for those with low education (Lusardi, 2003). Insofar as there is a positive correlation between the education level of individuals and the education level of their family or peers, low education individuals may simply rely on crude sources of advice. For example, given the rapid changes in financial markets and in the pension landscape in recent history, it may be difficult to benefit from the advice or experience of parents. Similarly, those with low financial literacy may be particularly disadvantaged in overcoming lack of knowledge. Van Rooij, Lusardi and Alessie (2007) show that respondents who have low levels of financial literacy are disproportionately more likely to rely on family and friends for financial advice, while more financially sophisticated individuals are more likely to rely on newspapers, books, and the Internet.

When asked about the tools individuals use to calculate how much their household would need to save for retirement, few planners have indicated they use worksheets, retirement calculators, while the majority indicate they talk to family and friends and many seem to use no tools at all (Lusardi and Mitchell, 2006). Thus, planners too may simply use crude rules of thumb to devise their saving plans. Decisions about pension contributions also seem influenced by interaction with colleagues (Duflo and Saez, 2004, and Madrian and Shea 2001). Investment in complex assets, such as stocks, is also found to be affected by word of mouth, the advice of neighbors and even fellow church-goers (Hong, Kubik and Stein, 2004, and Brown, Ivkovich, Smith, and Weisbenner, 2007).

It is hard to know whether the limited use of financial advice is due to the demand versus the availability of professional advice, but findings from the 2007 RCS suggest some reluctance to rely on financial experts. For example, when asked whether respondents would take advantage of professional investment advice offered by companies that manage employer-sponsored retirement plans, about half of respondents reported they would do so. However, two thirds of those respondents who were willing to take advantage of professional investment advice also state they would probably only implement those recommendations that were in line with their own ideas, and one in ten respondents think they would implement none of the recommendations. Thus, the effect of financial advice may be elusive as workers may not act upon the recommendations of advisors.

We still know little about the effects of financial advice and whether it can improve financial decision-making, but there is some evidence that financial counseling

can be effective in reducing debt levels and delinquency rates (Hirad and Zorn, 2001 and Elliehausen, Londquist and Staten, 2003). Mottola and Utkus (2007) also provide evidence in favor of relying on professionals to manage financial investments. They compare the portfolios of individuals before and after shifting to a professionally managed account. Those who shifted are not a randomly chosen group of the population but, nevertheless, the effects are remarkable. Those who shifted to managed accounts changed their asset allocation dramatically. Most importantly, their new portfolios did not suffer from several of the “mistakes” identified in the finance literature, such as investing too little or too much in the stock market and holding not well diversified portfolios (Campbell, 2006).

A similar analysis was performed earlier by Warshawsky and Ameriks (2000), which focused on the evaluation of wealth holdings. They input the wealth holdings of a representative sample of U.S. households, as reported in the Survey of Consumer Finances, into one of the most popular financial planners: Quicken Financial Planner. According to the predictions of this planner, about half of working middle class American households will not have a fully funded retirement. Some will actually run out of resources very shortly after retirement. One of the features of household wealth holdings that this exercise highlighted is that many households, particularly those with low education, have little wealth until late in their life-cycle or start saving very late, up to the point where it is not possible to do much accumulation. Clearly, the predictions of financial planners are based on a very specific set of assumptions, which tend to vary across planners. But the main message remains: Without any planning and periodic

evaluations, household saving and portfolio choice behavior may stray away from optimality.

4. Three different approaches to promote saving and financial security.

The evidence reported before points to the existence of several obstacles to savings. Many initiatives have been undertaken to promote financial decision-making and retirement security. Three major initiatives are discussed below.

4.1 Financial education

As additional evidence that financial illiteracy is considered a severe impediment to savings, both the government and employers have promoted financial education programs. Most large firms, particularly those with DC pensions, offer some form of education programs (Bernheim and Garrett, 2003). The evidence on the effectiveness of these programs is so far very mixed.⁹ Only a few studies find that those who attend a retirement seminar are much more likely to save and contribute to pensions (Bernheim and Garrett, 2003 and Lusardi, 2002, 2004). Clearly, those who attend seminars are not necessarily a random group of workers. Because attendance is voluntary, it is likely that those who attend already have a proclivity to save and it is hard to disentangle whether it is seminars per se or simply the characteristics of seminar attendees that explain the higher savings of attendees shown in the empirical estimates. However, Bernheim and Garrett (2003) argue that seminars are often remedial, i.e., offered in firms where workers do little or no saving. Thus, the effects of seminars may have been under-estimated.

⁹ See Lusardi (2004) and Lusardi and Mitchell (2007a) for a review of the effectiveness of financial education programs, and Hogarth (2006) for a description of many education programs currently offered in the US.

Lusardi (2004) uses data from the HRS and confirms the findings of Bernheim and Garrett (2003). Consistent with the fact that seminars are remedial, she finds that the effect of seminars is particularly strong for those at the bottom of the wealth distribution and those with low education. As shown in Table 5, retirement seminars are found to have a positive effect mainly in the lower half of the wealth distribution and particularly for those with low education. Estimated effects are sizable, particularly for the least wealthy, for whom attending seminars appears to increase financial wealth (a measure of retirement savings that excludes housing and business equity) by approximately 18 percent.¹⁰ Note also that seminars affect not only private wealth but also measures of wealth that include pensions and Social Security wealth, perhaps because seminars provide information about pensions and encourage workers to participate and contribute. This can be important because, as mentioned before, workers are often uninformed about their pensions.

In a series of papers, Clark and D'Ambrosio (2007) have examined the effects of seminars offered by TIAA-CREF to a variety of institutions. The objective of the seminars is to provide financial information that would assist individuals in the retirement planning process. Their empirical analysis is based on information obtained in three surveys: Participants completed a first survey prior to the start of the seminar, a second survey was completed at the end of the seminar, and a third survey was sent to participants several months later. Respondents were asked whether they had changed

¹⁰ Moreover, Lusardi (2005) uses the supply of retirement seminars to pin down the direction of causality between seminars and savings. Specifically, she uses the proportion of large firms across states as an instrument for retirement seminars. She finds that those who are more likely to be exposed to retirement seminars because they live in states with a high proportion of big firms accumulate more wealth.

their retirement age goals or revised the desired level of retirement income after the seminar.

After attending the seminar, several participants stated they intend to change their retirement goals, and many revised their level of retirement income. Thus, the information provided in the seminars does have some effects on behavior. However, it was only a minority of participants who were affected by the seminars. Just 12% of seminar attendees reported changes in retirement age goals, and close to 30% reported changes in retirement income goals. Moreover, intentions did not translate into actions. When interviewed several months later, many of those who had intended to make changes had not implemented them yet. Other authors, including Choi, Laibson, Madrian and Metrick (2004), also argue that seminar participants who say they will start contributing to pensions or boost their contributions often fail to follow through.

It is not surprising that one retirement seminar does little to change behavior. Few surveys provide information on the number of seminars that were offered or that the participants attended, but it seems that participants often attend only once or a handful of times (Clark and D'Ambrosio, 2007). Evidence from the financial education sessions offered in programs aimed to promote Individual Development Accounts (IDAs), which are subsidized savings accounts targeted at the poor, show that multiple education sessions are effective in stimulating saving. However, after 8–10 hours of financial education, the effect of financial education seems to taper off (Schreiner, Clancy, and Sherraden, 2002).

Other papers find more modest effects of education programs. Duflo and Saez (2003) investigate the effects of exposing employees of a large not-for-profit institution

to a benefit fair. This study is notable for its rigorous methodology; a randomly chosen group of participants were given incentives to participate to a benefit fair and their behavior was compared with that of another similar group, which was not offered any incentives to attend the benefits. This methodology overcomes the problem mentioned before that those who attend education programs may already be inclined to save. This is clearly important, and findings from this study show that the benefit fair induced participants to increase their participation in pensions, but the effect on saving was almost negligible. Perhaps the most notable result of this study is how pervasive peer effects are; not only participants but also their colleagues who did not attend the benefit fair were affected by it, providing further evidence that individuals rely on the behaviors of others around them to make financial decisions (Duflo and Saez, 2004).

4.2 Automatic enrollment

One way to stimulate participation and contribution to pensions is to automatically enroll workers into employer-provided pension plans. Thus, rather than let workers choose whether or not to *opt in*, employers could enroll workers and let them choose whether or not to *opt out* of pension plan. This simple but ingenious method has been proven to be very effective in increasing pension participation. For example, according to Madrian and Shea (2001), after a company implemented a change in its 401(k) plan and automatically enrolled its new hires in the 401(k) pension plan, pension participation went from 37% to 86%. Sharp increases in participation have been documented in several other papers (Thaler and Benartzi, 2004, Choi et al 2004, 2006). Not only has the increase been very large but also participation rates have remained high for several years (Choi et al 2004, 2006). Even legislators took notice of this remarkable

success and the 2006 Pension Protection Act made it much easier for firms to automatically enroll their workers into pension plans.

In principle, employers could automatically enroll workers in a pension plan but ask workers to go to the Human Resources (HR) office and choose the contribution rate and the allocation of pension assets. In fact, automatic enrollment programs also specify the rate at which workers are enrolled and how the pension assets are allocated. These are very difficult decisions. According to the model specified at the beginning of the paper, the optimal saving rate depends on a long list of variables, including individual preferences and expectations about the future, which are unknown to the employer. In reality, automatic enrollment is rarely individual-specific. For example, in the firm analyzed by Madrian and Shea (2001), the enrollment rate was set of 3% for every worker. This choice is problematic. In that particular firm, the first 6% of workers' contribution received a 50 percent employer match. Thus, a 3% contribution fails to take advantages of part of the employer match.¹¹ Irrespective of this drawback, not only did new hires stay at the 3% contribution rates, but other workers as well changed their contribution to 3%. Moreover, pension contributions were invested in money market mutual funds. This is also problematic since it prevents workers from taking advantage of higher returns in the bond or stock market. Nevertheless, most workers did not opt out of the allocation in money market mutual funds (Madrian and Shea, 2001).¹²

¹¹ Note, however, that when left to their own choice, many employees simply do not enroll in pensions, so they do not exploit the employer match *at all*, if it is available.

¹² As noted by Choi et al (2004), many companies have chosen low contribution rates and conservative asset allocations. For example, a survey by the Profit Sharing/401(k) Council of America in 2001 reports that 76% of automatic enrollment companies have either a 2% or 3% default contribution rate and 66% of automatic enrollment companies have a stable value or money market default fund. See Choi et al (2004) for a discussion of these findings.

Clearly, the design of automatic enrollment programs is very important.¹³ If the objective of employers is to foster workers' financial security after retirement, contribution rates and asset allocation have to be chosen very carefully because workers tend to stay with what is chosen as the default. This includes not participating to pensions if the default is to not enroll workers.

Several papers have recognized that default contribution rates that are too low may prevent workers from accumulating enough retirement wealth, taking advantage of employer matchers, as well as exploiting the tax-advantage of investing in pension assets. Thaler and Benartzi (2004) have devised a program—Save More Tomorrow (SMarT)—that incorporates not only automatic enrollment but also increases in the default rate as the income of workers increases. The success of this program is remarkable. Workers enrolled in the SMarT have achieved saving rates of more than 13% versus an average of 5-6% for workers who did not enroll.

Similarly, VanDerhei (2007) shows that low contribution rates and investment in conservative assets result in very low median replacement rates at retirement. For example, an automatic enrollment program with a 3% contribution rate and investment of pension assets in money market mutual funds results in a median replacement rate for the lowest income quartile of workers of only 37%. However, the replacement rate for this income group increases to 52% when the contribution rate is increased to 6% and the default investment is changed to a life-cycle fund. Moreover and most importantly, workers seem favorable to higher default rates than 3%; as many as 44% of the

¹³ Note that there are several limitations imposed by the law. For example, because of fiduciary issues, many employers were reluctant to enroll and invest workers' assets in the stock market for fear of being sued if the markets experience a downturn. The Pension Protection Act takes away some of the existing limitations.

respondents in the 2007 RCS state they would continue to contribute to pensions up a rate between 6 to 10%, and 27% of respondents were willing to go for higher contribution rates. While these are self-reported figures, they suggest that increases in default contribution are possible. Moreover, the Pension Protection Act has taken away some of the fiduciary problems that were limiting employers from using riskier investment assets than money market mutual funds or offering advice on how to invest pension assets.

What explains the success of defaults? Clearly, if individuals are poorly informed about their pensions, lack basic literacy and do not have good sources of financial advice to turn to, defaults are very useful because they tell workers exactly what to do. In fact, they do even more; they not only provide potent advice but also induce actions, overcoming the problem that workers may fall prey of inertia and simply not follow through on their intentions. Note that, even though it is still disputed, this system cannot be necessarily considered “mandatory” or a choice forced over individuals. Defaults can be reversed with the stroke of a pen and no-one is forced to stay with the default choice. Moreover, if there is any learning in saving, another advantage of defaults is they may make workers appreciate the value and perhaps easiness of saving.

However, there are potential problems with defaults that need to be addressed. First, perhaps similar to Social Security, defaults may only guarantee a minimum level of pensions: Workers may still have to do additional saving to be financially secure. Second, individuals have other motives to save, in addition to saving for retirement. We do not know yet how these other motives interact with defaults. For example, individuals may be carrying credit card debt or high-interest mortgages while enrolled in pensions. Most importantly, because an active decision has not been made and individuals did not have

to calculate how much they need to save, they may not provide adequately for their retirement. In fact, they may not learn much or become financially savvy. This is a problem because there are no default enrollments (yet) in mortgage loans, credit cards, or children's education funds. The next section investigates other methods to make people save that adopt some of the ideas implicit in defaults but overcome some of their limitations.

4.3 New ways to make people save

If, as mentioned before, saving decisions are very complex, one way to help people save is to find ways to simplify those decisions. Providing financial education, as discussed above, has the drawback that it does not necessarily translate into behavioral changes. Thus, what may be important and perhaps more effective is to find ways to make people ease into action. This is the strategy analyzed by Choi, Laibson and Madrian (2006). They study the effect of Quick Enrollment, a program that gives workers the option of enrolling in the employer-provided savings plan by opting into a pre-set default contribution rate and asset allocation. Contrary to defaults, workers have the choice to enroll or not, but their decision is much simplified as they do not have to decide at which rate to contribute and how to allocate their assets. In other words, it is possible to exploit the power of suggestion implicit in defaults to induce workers to enroll into pensions.

When new hires were exposed to the Quick Enrollment program, participation rates in 401(k) tripled, going from 5% to 19% in the first month of enrollment. When the program was offered to previously hired non-participants, participation increased by 10 to 20 percentage points. These are large increases, particularly if one considers that the default rate is not particularly advantageous; the contribution rate in the most successful

program is set at only 2% and 50% of assets are allocated in money market mutual funds while the other 50% is allocated in a balanced fund. Moreover, Quick Enrollment is particularly popular among African-Americans and lower income workers (those earning less than \$25,000) who, as the research mentioned before shows, are less likely to be financially literate. Thus, changes in the pension design can have a large impact on participation. Most importantly, this new program can be rather low cost.

Another way to simplify saving decision and reduce search and information costs may simply be to reduce the menu of options available to workers. Several papers in the psychology and finance literature have argued that a larger number of options may simply be paralyzing for many individuals (Iyengar and Jiang, 2003 and Iyengar, Jiang and Huberman, 2004). It is hard to imagine that workers, who often do not know the difference between a bond and a stock, will do well in choosing among an ever increasing number of funds in their pension plan. In fact, Iyengar, Jiang and Huberman (2004), who analyze the investment decisions of close to 600,000 workers who contributed to their plans, found that each increase in 10 funds is associated with a 1.5-2% drop in participation; while participation peaked at 75% when only 2 funds are offered, participation went to 60% when 59 funds are offered. Moreover, for every additional 10 funds in a plan, the allocation to equity funds decreases by more than 3 percentage points and there is a 2.9% increase in the probability that a participant will allocate nothing at all to equity funds. Clearly, in cross-sectional data it is hard to control adequately for a correlation between the menu of funds and unobserved characteristics that affect 401(k) participation. However, reducing the menu of options may at least reduce search and planning costs.

Another approach that is based on simplifying the decision to save, and, in addition, motivating employees to make an active choice is the one by Lusardi, Keller and Keller (2007). They devised a planning aid to be distributed to new hires during employee orientation. The planning aid displays several interesting features. First, it breaks down the process of enrolling in supplementary pensions into several small steps, describing to participants what they need to do to be able to enroll on-line. Moreover, it provides several pieces of information to help overcome the barriers to saving, such as describing the low minimum amount of income employees can contribute (in addition to the maximum) and indicating the default fund that the employer has chosen for them (a life-cycle fund). Finally, the planning aid also contains pictures and messages designed to motivate participants to save. One image portrayed an extended family exchanging gifts, reminding individuals that planning and saving make it possible to take care of the family and enjoy children and grand-children.

The planning aid was designed after a thorough data collection. For example, the researchers devised a survey asking explicitly about barriers to saving, sources of financial advice, level of financial knowledge, and attractive features of a pension plan. Moreover, they conducted focus groups and in-depth interviews (with both employees and HR administrators) to shed more light on the impediments to saving. These data collection methods, which are common in the field of marketing, are well suited to capturing the wide heterogeneity that exists in saving decisions. Even though the sample is small and hardly representative of the US population, it displays findings that are consistent with the evidence described before. For example, many employees state they consult only family and friends for making saving decisions. Moreover, close to 40%

state they do not have enough knowledge about finance/investing and close to 20% state they do not know where to start. Given this evidence, it is not surprising that the program was so successful; contribution rates to supplementary pensions tripled after the introduction of the planning aid.

This program shares several common features with respect to other programs. First, while economic incentives, such as employers' matches or tax-advantages may be useful, they do not exhaust the list of options to make people save. In fact, given the massive lack of information and lack of financial knowledge, there may exist other, more cost-effective, programs that can induce people to save. Second, employees are more prone to decision-making in specific time periods. For example, the start of a new job pushes people to think about saving (often because they have to make decisions about their pension). As discussed before, many people do not think about retirement even at an advanced age, and it may be very important to exploit those "teachable moments." Both the paper by Choi, Laibson and Madrian (2006) and Lusardi, Keller and Keller (2007) find that new hires are particularly malleable to changes. Third, to be effective, programs have to recognize the many differences that exist among individuals, not only in terms of preferences and economic circumstances, but also in the level of information, financial sophistication and ability to carry through plans. In other words, relying on "one-size-fits-all" principles can lead to rather ineffective programs.

5. Discussion and implications for public policy

Saving decisions are derived from maximizing utility not only under a life-time budget constraint but also under the limitations imposed by low financial literacy, lack of

information, and crude sources of financial advice. Thus, policies that aim to stimulate saving and financial security after retirement should consider a variety of incentives, including how to decrease informational barriers and simplifying decision-making.¹⁴

The choices confronting policy makers are not easy. Clearly, financial literacy cannot be taken for granted among the population, and particularly among specific groups (including those with low education, women and minorities). This raises concerns about how to communicate information effectively, particularly to those who need it most. Given low numeracy and low literacy, it may be useful to resort to more effective ways of communication. In the health literature for example, there is an increased reliance on testimonials and stories rather than figures and hard data.¹⁵

Given the increased complexity in financial instruments, the evidence of illiteracy raises the question of whether consumers will appreciate and take advantage of the opportunities offered by financial markets or will more easily fall prey of scams or unscrupulous brokers. The effectiveness of financial education programs has been measured with respect to specific outcomes, such as increased saving or participation to pensions, but there are other potential—though less easy to measure—outcomes, such as avoiding being taken advantage of and confidence in making financial decisions.¹⁶ Almost no study provides an evaluation of the costs of financial education programs and, without that information, it is not possible to establish a return on financial education programs. Moreover, as the previous studies show, few employees ever attend education programs and many of those who attend do not modify behavior, at least in the short run.

¹⁴ Other fields have already recognized the difficulties that individuals face in collecting information and making decisions. For example, many hospitals have set up “centers for shared decision-making” to help patients make decisions about medical treatments.

¹⁵ See Volk (2007).

¹⁶ See also Hogarth (2006).

While these are drawbacks, financial education programs cannot be dismissed. The benefits of information and financial knowledge can affect many financial decisions, not simply saving for retirement. Moreover, knowledge may work through long periods of time and should be evaluated in the long-run rather than a few months or years after a program is offered. For example, according to Bernheim, Garrett and Maki (2001) those who were exposed to financial education programs while in high school were more likely to save later in life. Finally, given the extent of financial illiteracy, it is not surprising that exposing individuals to a benefit fair or offering workers one hour of financial education does little to improve saving. To be effective, programs have to be tailored to the size of the problem they are trying to solve.

If lack of literacy, lack of information, inability to plan, or procrastination prevent people from saving and contributing to pensions, default options are clearly an effective remedy. Defaults are the most powerful and innovative programs in the field of saving and pensions and they should be exploited. However, the design of defaults is crucial; low contributions rates and investment in conservative assets may eventually offset the benefits of enrolling workers into saving programs.

Contrary to what the previous literature seems to imply, defaults and financial education programs are not necessarily substitutes. In fact, they can complement each other well. Combining default options with financial education programs may prevent workers from saving at sub-optimal rates. Moreover, it may help workers evaluate their total savings, not only pension but also private savings and, for example, help them save for their children's education, to build a buffer to insure against shocks, or for other

reasons. Several big firms, such as IBM, have adopted such initiatives and it will be possible to evaluate the outcome of these combined programs in the future.

Similarly, it is possible to exploit some of the features of automatic enrollment to make saving programs more effective. For example, if there is such power in providing a suggestion about how much to save and where to invest pension assets, why not provide such information to workers when they start a new job or when they have to renew their benefit selection every year. Such “suggestions” can be made more individual-specific, and, for example, differ according to age, number of children, and earnings. Similarly, if information is so scarce but, at the same time, so vital, there may be more cost-effective ways to provide it. For example, information and education campaigns can be done at the national level to reach a wider population, including those who are unlikely to be offered education programs in the work-place.

Another finding that emerges from both the literature on saving and studies on financial literacy is that there are specific segments of the population—those with low education and low income—that save in very different ways than other, more educated and affluent households. It may be important to target these groups and devise programs that are better tailored to their needs and barriers to saving. There is some evidence that existing targeted programs have had some success in increasing saving among the poor (Schreiner and Sherraden, 2007).

Recognizing that individuals possess limited literacy and do not plan for retirement brings us inevitably to the issue of mistakes. Some of the papers mentioned before document that mistakes are certainly not rare; left to their own responsibility, individuals may not save enough for retirement, may invest in assets that are either too

risky or too conservative, and may not exploit employer matches or tax advantages. Who will pay for these mistakes? The individual or society at large? If tax-payer will be asked to support those who have made mistakes, there is a role for regulation and for implementing “mandatory” programs. One such program could be to require people to acquire some basic financial knowledge (Alesina and Lusardi, 2006). In the same way people are required to have a driving license before they venture on the road, a “financial license” could be required before individuals contribute to their pensions, invest their pension assets, or borrow to buy a house. If there is willingness to limit the risk on the roads because of the danger to individuals and to society, the same measures could be taken to try to reduce the risk on household balance sheets. In this way, individuals may learn about some basic financial concepts and may reduce their reliance on random advice and tips from those around them.

It is also important to recognize that, while the private industry is spending millions of dollars every year in advertising products to convince consumers to spend more, relatively little is spent in encouraging people to save and provide for their future. However, if consumption is excessive and saving too scarce, taxpayers may be asked to support those who have not provided enough for their retirement. Thus, the government may have to think of ways to engage in marketing campaigns. It’s up against tough competition: One recent ad from American Express, advertising cash-backs to card holders on the amount spent using their card, argues that by spending more, people ...save!

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Table 1: Distribution of Net Worth by Planning (\$2004)

A. Early Baby Boomers: Age 51-56 in 2004

| <i>Group</i> | % of Sample | 25th Percentile | Median | Mean | 75th Percentile |
|-----------------|-------------|-----------------------------------|----------------|-------------|-----------------------------------|
| Planning | | | | | |
| Hardly at All | 27.9% | 9,000 | 79,000 | 315,579 | 271,000 |
| A Little | 17.0% | 62,800 | 173,400 | 356,552 | 390,500 |
| Some | 27.7% | 51,000 | 189,000 | 365,354 | 447,200 |
| A Lot | 27.4% | 54,000 | 199,000 | 517,252 | 470,000 |

B. 1992 Older Cohort: Age 51-56 in 1992

| <i>Group</i> | % of Sample | 25th Percentile | Median | Mean | 75th Percentile |
|-----------------|-------------|-----------------------------------|----------------|-------------|-----------------------------------|
| Planning | | | | | |
| Hardly at All | 32.0 | 10,100 | 76,910 | 224,3110 | 200,610 |
| A Little | 14.3 | 37,700 | 126,560 | 343,110 | 292,170 |
| Some | 24.8 | 71,360 | 172,340 | 340,340 | 367,300 |
| A Lot | 28.9 | 71,390 | 173,690 | 353,520 | 356,800 |

Note: All data weighted using HRS household weights. Total net worth is defined as the sum of checking and savings accounts, certificate of deposits and Treasury bills, bonds, stocks, IRAs and Keoghs, home equity, second homes and other real estate, business equity, vehicles and other assets minus all debt. Adapted from Lusardi and Mitchell (2007a).

Table 2: Quantile Regressions of Net Worth on Planning for Older Cohort (Older) and Early Baby Boomer (EBB) Respondents

| | 25 th % <u>Older</u> | 25 th % <u>EBB</u> | Median <u>Older</u> | Median <u>EBB</u> | 75 th % <u>Older</u> | 75 th % <u>EBB</u> |
|----------------------|------------------------------------|----------------------------------|------------------------|------------------------|------------------------------------|----------------------------------|
| No Planning | -12.495 (3.563)*** | -14.390 (4.022)*** | -17.233 (4.391)*** | -20.025 (8.818)** | -42.059 (7.450)*** | -47.362 (21.751)** |
| High School Graduate | 13.241 (4.297)*** | -5.132 (6.220) | 21.493 (5.151)*** | 2.733 (13.753) | 31.133 (8.563)*** | 9.228 (31.611) |
| Some College | 19.963 (5.101)*** | -4.127 (6.403) | 38.655 (6.150)*** | 20.278 (14.134) | 73.552 (10.406)*** | 44.360 (32.831) |
| College Graduate | 46.990 (6.344)*** | 51.527 (7.382)*** | 83.054 (7.691)*** | 113.995 (16.195)*** | 188.936 (13.229)*** | 237.035 (38.294)*** |
| More than College | 70.954 (6.847)*** | 62.327 (7.966)*** | 121.807 (8.318)*** | 169.988 (17.136)*** | 252.906 (14.153)*** | 441.711 (40.818)*** |
| Hispanic | -10.389 (5.125)** | -13.237 (6.040)** | -13.289 (6.290)** | -18.879 (13.226) | -25.028 (10.651)** | -45.239 (30.783) |
| Black | -23.053 (4.058)*** | -22.463 (4.656)*** | -33.550 (4.875)*** | -33.360 (10.032)*** | -74.087 (8.062)*** | -71.828 (24.231)*** |
| Divorced | -31.876 (4.821)*** | -28.229 (4.727)*** | -41.669 (5.820)*** | -53.389 (10.372)*** | -47.224 (9.912)*** | -91.769 (25.910)*** |
| Separated | -19.096 (8.528)** | -28.862 (9.091)*** | -31.846 (9.942)*** | -43.898 (18.951)** | -7.757 (16.231) | -80.357 (44.329)* |
| Widowed | -13.250 (6.799)* | -18.524 (8.414)** | -25.976 (8.313)*** | -21.952 (18.043) | 10.445 (14.764) | 57.775 (48.528) |
| Never Married | -33.322 (8.055)*** | -26.127 (7.075)*** | -44.268 (9.714)*** | -52.984 (15.418)*** | -41.714 (16.204)** | -105.520 (39.251)*** |
| Female | 1.985 (3.384) | -9.671 (3.748)*** | 12.805 (4.171)*** | -10.073 (8.174) | 23.687 (7.184)*** | -13.595 (19.895) |
| Log of Income | 31.160 (1.891)*** | 30.540 (1.449)*** | 45.063 (2.577)*** | 46.719 (3.854)*** | 61.048 (5.283)*** | 61.415 (13.278)*** |
| Adjusted R-Squared | 0.12 | 0.11 | 0.15 | 0.15 | 0.17 | 0.17 |

Note: Even though not reported, these regressions include controls for age, number of children and retirement status. See Table 1 for the definition of total net worth. * significant at 5% level; ** significant at 10% level; *** significant at 1% level. Adapted from Lusardi and Beeler (2007).

Table 3: Financial Literacy Among Early Baby Boomers

| <i>Question Type</i> | Correct (%) | Incorrect (%) | Do Not Know (%) |
|------------------------|--------------------|----------------------|------------------------|
| Percentage Calculation | 83.5 | 13.2 | 2.8 |
| Lottery Division | 55.9 | 34.4 | 8.7 |
| Compound Interest* | 17.8 | 78.5 | 3.2 |
| Political Literacy | 81.1 | 11.0 | 7.7 |

Note: *Conditional on being asked the question. Percentages may not sum to 100 due to a few respondents who refused to answer the questions. Observations weighted using HRS household weights. The total number of observation is 1,984. Adapted from Lusardi and Mitchell (2007a).

Table 4: Empirical Effects of Financial Literacy on Retirement Planning

| | <i>Probability of Being a Retirement Planner</i> | | |
|--------------------------------|--|--------------------|--------------------|
| | I | II | III |
| Correct Percentage Calculation | -.016 (.061) | -.012 (.062) | -.034 (.060) |
| Correct Lottery Division | .059* (.030) | .034 (.031) | .001 (.032) |
| Correct Compound Interest | .153*** (.035) | .149*** (.035) | .114*** (.039) |
| Correct Political Literacy | .104*** (.032) | .084** (.040) | .016 (.042) |
| DK Percentage Calculation | | .021 (.068) | .054 (.067) |
| DK Lottery Division | | -.154*** (.050) | -.141*** (.051) |
| DK Compound Interest | | -.114 (.080) | -.073 (.081) |
| DK Political Literacy | | -.019 (.053) | -.016 (.054) |
| Demographic controls | No | No | Yes |
| Pseudo R ² | .031 | .038 | .074 |

Note: This table reports Probit estimates of the effects of literacy on planning; marginal effects reported. Analysis sample consists of HRS Early Baby Boomers who responded to financial literacy questions. Being a planner is defined as having thought a little, some, or a lot about retirement. Demographic controls include age, education, race, sex, marital status, retirement status, number of children, and a dummy variable for those not asked the question about interest compounding. DK indicates respondent who did not know the answer. Observations weighted using HRS household weights. The total number of observations is 1,716. * Significant at 10% level; ** significant at 5% level ; *** significant at 1% level. Adapted from Lusardi and Mitchell (2007a).

Table 5: The Effect of Retirement Seminars on Retirement Accumulation

| | Total sample | 1 st quartile | median | 3 rd quartile |
|--|--------------|--------------------------|---------|--------------------------|
| <i>a. Financial net worth</i> | | | | |
| Total sample | 17.6 %** | 78.7%** | 32.8%** | 10.0% |
| Low education | 19.5% | 95.2%** | 30.0%** | 8.8% |
| High education | 13.1% | 70.0%** | 19.4%** | 10.2% |
| <i>b. Total net worth</i> | | | | |
| Total sample | 5.7% | 29.2%** | 8.7% | 0.5% |
| Low education | 3.4% | 27.0%** | 7.1% | 4.0% |
| High education | 7.3% | 26.5%** | 6.5% | 3.6% |
| <i>c. Total net worth + Pensions and Social Security</i> | | | | |
| Total sample | 16.0%** | 18.6%** | 20.4%** | 17.2%** |
| Low education | 12.7%** | 14.7%** | 12.7%** | 9.5%** |
| High education | 17.7%** | 25.4%** | 25.8%** | 17.0%** |

Note: This table reports the percentage changes in different measures of retirement accumulation resulting from attending retirement seminars. Financial net worth is defined as the sum of checking and savings accounts, certificate of deposits and Treasury bills, bonds, stocks, IRAs and Keoghs and other financial assets minus short-term debt. See Table 1 for the definition of total net worth. * significant at the 10% level ** significant at the 5% level. Adapted from Lusardi (2004).

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