
Household Savings Behavior in the United States: The Role of Literacy, Information, and Financial Education Programs

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Americans are increasingly in charge of their own financial security after retirement. With the shift from defined benefit (DB) to defined contribution (DC) pension plans, workers have to decide not only how much to save for retirement but also how to allocate their pension wealth. Moreover, in recent decades the complexity of financial instruments has increased and individuals have to deal with new and more sophisticated financial products. How well-equipped are Americans to make their own 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 U.S. workers has not thought about saving for their retirement—even when this retirement is only five to ten years away. Consistent with the evidence on a lack of planning, half of older workers know little about their pension plans and the rules governing Social Security benefits. Moreover, most individuals lack an adequate knowledge of basic financial concepts, such as how interest compounding works, the difference between nominal and real values, and the basics of risk diversification. Financial illiteracy is widespread among the general population, and is particularly acute among specific demographic groups such as women, African-Americans, Hispanics, and those with low levels of education. Notwithstanding the low levels of financial literacy that many individuals display, very few rely on the help of experts or financial advisers to make saving and investment decisions.

Low financial literacy and a lack of information affect one's ability to save and to secure a comfortable retirement; ignorance about basic

financial concepts can be linked to a lack of retirement planning and a lack of wealth accumulation. In the United States several initiatives have been undertaken to foster saving and financial security, such as educating workers in order 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 savings behavior among U.S. households, much more can be done to improve their effectiveness.

This paper focuses on how much individual Americans plan for retirement, what they know about the variables that should enter into a savings plan, and the level of financial knowledge and numeracy that they possess. While many of these characteristics have been overlooked in previous studies on saving, they are important predictors of household savings behavior. The discussion is organized as follows. Section 2 provides an overview of the difficulties inherent in making saving decisions. Section 3 examines the evidence on retirement planning, U.S. workers' knowledge of pension and Social Security plans, financial literacy, and reliance on the advice of experts to make their saving decisions. Section 4 reviews the current initiatives to encourage saving and improve financial security through financial education programs and automatic enrollment of workers in pension plans and other programs. Section 5 discusses the major findings and offers suggestions for improving U.S. public policy designed to foster financial literacy and financial security, especially in retirement.

1. Theoretical Framework

The theoretical framework used to model household consumption and saving decisions posits that rational and foresighted consumers derive utility from smoothing consumption over their lifetimes. In the simplest format, the consumer maximizes a lifetime expected utility subject to an intertemporal budget constraint. According to this model, lifetime resources, the distribution of these resources, and the individual's age play a critical role in his or her saving decisions. Thus, those people facing an upward sloping age-income profile will borrow when they are

young in order to smooth their consumption over the life cycle. Similarly, those who have generous pensions may not need to accumulate a lot of extra private savings to provide for the years when they stop working. Individual choices, such as time preferences, also play an important role in decisionmaking. Those persons who place high value on the present will save less and consume more today than individuals who discount the future less heavily.

However, even in this most basic formulation of the household savings decision, the requirements for making these decisions are demanding. Individuals have to collect and make forecasts about many variables in the future, ranging from what income they can expect to receive from Social Security and other pension plans to interest rates and expected inflation, just to name a few. Moreover, they have to perform calculations that require, at the minimum, an understanding of compound interest and the time value of money.

While the majority of previous studies on saving decisions have focused on modeling lifetime 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 inherently uncertain,¹ few studies have recognized that for most people 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 good saving decisions. Moreover, individuals may not possess the skills and ability to perform the calculations inherent in devising a savings plan.

2. Planning, Information, Financial Literacy, and Financial Advice

Do U.S. Households Plan for Retirement?

One simple and direct way to examine whether, consistent with the predictions made by theoretical models of savings behavior, individuals do look ahead and make plans for the future is to study the extent of retirement planning that actually takes place among U.S. households. Lusardi (1999) examined this evidence using data from the 1992 Health and Retirement Study (HRS), which surveys U.S. respondents aged 51 years

or older. She finds that as many as one-third of the respondents have not thought about retirement planning at all. While some of this behavior may be perfectly rational,² it is nevertheless surprising that the majority of older respondents have not given any thought to saving for retirement even when they are only five to ten years away from leaving the labor force. This lack of planning is concentrated among specific subgroups of the U.S. population, such as those with low education levels, African-Americans, Hispanics, and women. As a whole, these potentially vulnerable groups are not only less likely to save for retirement, but often do not have a minimum level of precautionary savings to buffer themselves against sudden adverse shocks, such as job loss and out-of-pocket medical expenses (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 retirement planning, a lack of planning is still prominent 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 percent of respondents also have not given any thought to financing their retirement.

To make a tighter connection with the theoretical framework for saving described earlier, Lusardi and Mitchell (2006) devised a special module on retirement 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 this 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 with their

plans (committed planners). The findings are not much different when using this alternative (and perhaps more appropriate) measure of planning: as many as 31 percent of older respondents in the HRS module do not plan for retirement. However, the percentage of planners decreases significantly when moving from simple to committed planners: only 18 percent of respondents were able to develop a savings plan and stick to that plan. This finding underscores the fact that not only have many U.S. families never attempted to devise a savings plan, but even among those who do plan, not everybody was able to follow through with their plan. In other words, few people make saving calculations and saving plans for retirement, and even fewer succeed in implementing those plans.

These findings regarding a lack of financial planning for retirement have been confirmed in other surveys. For example, using data from a representative sample of U.S. workers from the Retirement Confidence Survey (RCS) in 1997, Yakoboski and Dickemper (1997) report that only 36 percent 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 75 percent 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 nonplanners has not changed much over time (Salisbury, Turyn, and Helman 2001). While planning is strongly correlated with educational attainment, a sizable fraction of nonplanners is present even among respondents with high educational attainment (Ameriks, Caplin, and Leahy 2003).

Financial planning is an important determinant of household wealth. Table 1 reports the distribution of household wealth holdings across different degrees of planning for two household groups of the same age but from different time periods: the early baby boomers (those aged 51 to 56 years in 2004) and the older cohort (aged 51 to 56 years in 1992).³ Planners have substantially more wealth than nonplanners: looking at the median levels of household net worth, planners accumulate more than double the amount of wealth achieved by nonplanners. The differences are even larger in the first quartile of the wealth distribution. For many households, a lack of financial planning is tantamount to a lack of

Table 1
Financial Planning and the Distribution of U.S. Household Net Worth
(in 2004 U.S. dollars)

A. Early Baby Boomers: Aged 51–56 Years in 2004					
Group	% 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. Older Cohort: Aged 51–56 Years in 1992					
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

Source: Adapted from Lusardi and Mitchell (2007a).

Note: All data weighted using HRS household weights. Total net worth is defined as the sum of checking and savings accounts, certificates of deposit 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.

savings. However, there is not much difference in the means. This is due to the fact that in the sample there are several wealthy households who have not given any thought to retirement planning. Note that even a small amount of planning goes a long way toward accumulating high wealth holdings; those households who have thought “a little” about retirement hold substantially more wealth than those who have thought “hardly 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 retirement planning and household wealth accumulation did not seem to be

influenced by changes in financial markets (including the bust in the U.S. housing market in 1991, the boom in the U.S. housing market before 2004, and the late 1980s 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 U.S. employers throughout the 1990s.

Yet these statistics do not demonstrate that financial planning leads to higher household wealth, particularly in retirement. Because a lack of planning is disproportionately concentrated among specific demographic groups, it may simply be a proxy for low educational attainment and low income. Moreover, those who have high levels of wealth may also have an incentive to spend time and effort in planning, since they may benefit more from financial planning than households with little or no wealth. On the other hand, wealthy households may not need to give much thought to saving for retirement.

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

However, as mentioned previously, differences are particularly large in the first and second quartile of the wealth distribution rather than at the means. Table 2 reports quantile regressions of the effect a lack of financial planning has on the wealth holdings of the older cohort and the early baby boomers. Figure 1 illustrates how a lack of planning varies across the wealth distribution. Lack of planning is a dummy variable equal to 1 for those individuals 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,

Table 2
Quantile Regressions of the Effect a Lack of Financial Planning has on Net Worth for Older Cohort (Older) and Early Baby Boomer (EBB) Respondents

	25th % Older	25th %EBB	Median Older	Median EBB	75th % Older	75th % EBB
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

Source: Adapted from Lusardi and Beeler (2007).

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-percent level; ** significant at 10-percent level; *** significant at 1-percent level.

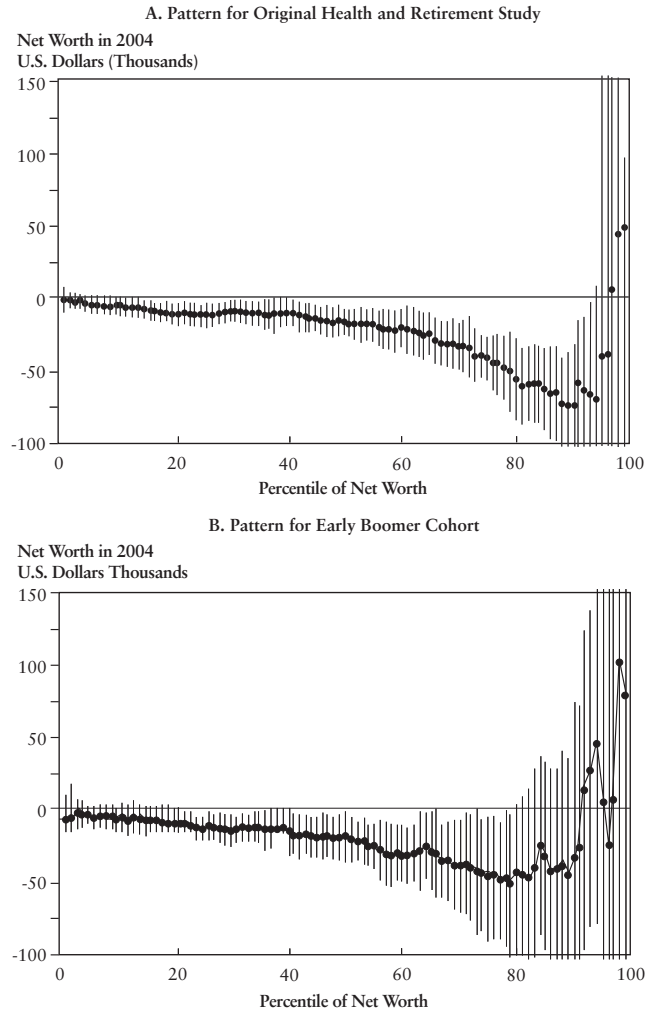


Figure 1

Estimates of the Effect of “Not Planning” on Net Worth by Percentile of the Wealth Distribution

Source: Adapted from Lusardi and Beeler (2007)

Note: The dark line in each panel represents the effect of “not planning” and these estimates are reported at 95-percent confidence intervals.

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 for retirement hold lower amounts of wealth. These estimates are not only sizable but also very similar between cohorts. Looking at the medians, nonplanners accumulate from \$17,000 to \$20,000 less wealth than those who do some planning (whether a little or a lot), which corresponds to holding about 20 percent less wealth close to retirement.

Figure 1 shows the negative effect that a lack of financial planning has throughout most of the wealth distribution. However, the estimates’ sign reverses as we move close to the top of the wealth distribution. Among early baby boomers, as we move past the third quartile of wealth, the effect a lack of planning has first becomes insignificant and then becomes positive rather than negative. Thus, many wealthy households do not plan for retirement. The same is true for the older cohort, even though the sign reversal happens at higher percentiles of the wealth distribution. In other words, there is a lot of heterogeneity in the effect of planning on wealth accumulation, and mean estimates may severely underestimate the effect a lack of planning has across all groups.⁴

The important question, however, is whether there is a causal relationship between financial planning and wealth accumulation. In other words, if someone were to begin planning tomorrow, would he or she 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 by instrumenting a lack of financial planning with variables measuring planning costs. Specifically, she uses the age difference between the respondent and his or her older siblings as an instrument for planning. Those individuals who have older siblings face lower search and information costs because they can simply learn by watching the behavior of others. Do those who face lower planning costs, and therefore can plan more, accumulate higher amounts of wealth? The answer is affirmative; not only is the effect of planning confirmed, but financial 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 financial planning and amassing wealth. They look at changes in wealth outside of households’ control

and examine whether these changes influence the extent of retirement planning: 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 resulting decrease in wealth that the older cohort experienced at the beginning of the 1990s changed this group's planning behavior.⁶ In both cases, Lusardi and Mitchell (2007a) do not find any evidence that this change in wealth influenced planning, a result confirming that the direction of causality goes from financial planning to wealth accumulation rather than from amassing wealth to financial planning.

Why does planning have such a powerful effect on amassing wealth? Anticipating an argument that will be detailed later, nonplanners lack basic financial literacy. The financially illiterate are less likely to invest in high-return assets, such as stocks (Van Rooij, Lusardi, and Alessie 2007). This would lead to low savings accumulation when combined with an intertemporal substitution elasticity that is less than one. Other researchers, such as Hurst (2006), argue that those individuals who are planners are less likely to behave like "hand-to-mouth" consumers, who simply set current consumption equal to their current income. A different explanation about how financial planning might affect wealth accumulation is provided by the psychological literature. Gollwitzer (1996, 1999) shows that people are more likely to translate their intentions into actions when they develop concrete plans to achieve their goals. His research shows that a simple planning activity, such as getting people to write down the specific steps they will take to implement a task, can greatly increase successful follow-through. These findings may help explain why merely thinking about retirement beforehand can produce wide differences in retirement wealth. Moreover, it may explain the bimodal distribution of wealth observed in table 1, and why even a little amount of planning generates large wealth differences, as compared to those individuals who do not think about the financial aspects of retirement at all. If this is the case, helping individuals plan for retirement or providing some planning aid may help foster their wealth accumulation.

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 the crucial components of a savings plan. For example, in the United States two very important parts of total household 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 in the past most pensions were DB pensions and workers had to make few or no decisions about their pension contributions, this lack of knowledge is perhaps not surprising. However, recent data from the HRS show that American workers continue to be uninformed about the rules and the benefits associated with their pensions, despite the large shift in the last two decades from DB to DC pension plans, which has resulted in giving workers more responsibility for saving for retirement (Gustman and Steinmeier 2004). The calculations underlying pension plans and Social Security wealth are certainly 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 reports from employers. The results are striking: only half of older workers are able to correctly identify the workplace plan they have. Because errors can abound not only from workers' self-reporting but also from the reports of firms, Gustman, Steinmeier, and Tabatabai (2008) use different sources of data, including data from Watson Wyatt, where it is possible to correctly identify the pension type from the firms' data. They also study different time periods, ranging from the 1980s (when DB plans were prevalent) to the more recent period (when DC plans gained popularity). They show that it is workers who are most often confused or wrong about the type of pensions they have.

For many in the United States, information about Social Security is also scant. Only 43 percent of respondents in the sample of older work-

ers 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. As noted in the Employee Benefit Research Institute report made after conducting the 2007 RCS, even though it has been 24 years since legislation was passed that incrementally increased the normal retirement age for Social Security, and despite eight years of the Social Security Administration mailing out annual benefit statements to individuals, only 18 percent of American workers knew the correct age at which they will be entitled to collect full Social Security benefits (see Helman, VanDerhei, and Copeland 2007).

A lack of information about Social Security benefits and pension plans is concentrated among low-income U.S. households, African-Americans and Hispanics, women, and those with low educational attainment (Gustman and Steinmeier 2005). As mentioned before, these groups of people are also those less likely to engage in financial planning. Most importantly, Gustman and Steinmeier (2004) document that those who do not know their type of pension plan have very low wealth holdings relative to their lifetime earnings. This lack of knowledge may explain why households who have pensions do not have less private savings than households without pensions; Gustman and Steinmeier (1999) found that pension wealth does not crowd out private savings.

A lack of knowledge and confusion are also found to affect other equally important financial decisions. Bucks and Pence (2008) document that households with adjustable-rate mortgages, which are potentially more complex contracts to understand than fixed-rate mortgages, are either incorrect in their understanding of the terms 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 individuals displaying low knowledge about mortgages are disproportionately those with low education levels, low incomes, and minorities—groups 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), who shows that many households failed to refinance their mortgages during a period of declining interest rates. A lack of financial knowledge may have contributed to that behavior since the absence of refinancing was particularly pronounced among those

with low levels of education and income. Moore (2003) also documents that households that have onerous mortgage contracts are less likely to be financially knowledgeable and skilled.

Lack of Financial Literacy

One reason why individuals do not engage in financial planning or are not knowledgeable about retirement pensions or the terms of their financial contracts is because they lack financial literacy. Bernheim (1995, 1998) was one of the first researchers to emphasize that most individuals lack basic financial knowledge and numeracy. Several surveys covering the U.S. population or specific subgroups have consistently documented very low levels of economic and financial literacy. The Council for Economic Education periodically surveys high school students and working-age adults to measure their 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 the results were tallied using a 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 levels of basic financial knowledge 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 (aged 18–98 years) were given a 28-question true/false financial literacy quiz, covering knowledge about credit, saving patterns, mortgages, and general financial management. Again, most respondents earned a failing score on these questions, documenting wide illiteracy among the entire U.S. population. Similar findings are reported in smaller samples or specific groups of the population (Agnew and Szykman 2005; Moore 2003).

Lusardi and Mitchell (2006) devised a special module on financial literacy for the 2004 HRS.⁷ Adding these types of questions to a large U.S. 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 savings behavior. The module measures basic financial

knowledge related to how interest rates work, the effects of inflation, and the concept of risk diversification.⁸ The findings from this module reveal an alarmingly low level of financial literacy among older individuals in the United States (aged 50 years and older). Only 50 percent of respondents in the sample were able to correctly answer two simple questions about interest rates and inflation, and only one-third of the respondents were able to correctly answer these two questions and a question about risk diversification. Financial illiteracy is particularly acute among the elderly, African-Americans, Hispanics, women, and those with low education levels (a common finding in the surveys of financial literacy).⁹

Lusardi and Mitchell (2007a) have also examined numeracy and financial literacy among the early baby boomers, who should be close to attaining the peak of their wealth accumulation and should have dealt with making many financial decisions already (mortgages, car loans, credit cards, pension contributions, and so on). 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?”*
- 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 the president and the vice president of the United States.

Table 3 summarizes how the early boomers answered these questions. While more than 80 percent of respondents were able to do a simple percentage calculation, only about half could divide \$2 million by 5. Moreover, only 18 percent correctly computed the compound interest question. Of those who got the interest question wrong, 43 percent undertook a simple interest calculation, thereby ignoring the interest accruing on both principal and interest. These are uncomfortable findings, espe-

Table 3
Financial Literacy Among Early Baby Boomers

Question Type	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

Source: Adapted from Lusardi and Mitchell (2007a).

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 observations is 1,984.

cially considering that these respondents had already made many financial decisions during their lifetimes. Consistent with the general lack of financial 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.

Does financial literacy really matter? Table 4 explores the link between financial literacy and planning. Two sets of dummy variables are defined to characterize those who correctly answered the literacy questions and those who did not know the answers to these questions. The table shows that those who are more financially knowledgeable are also much more likely to have thought about retirement planning. In terms of economic importance, both a knowledge of compound interest and the ability to perform simple mathematical calculations (such as a lottery division) matter the most for planning. This result is expected, given that any savings plan requires some numeracy, the ability to calculate present values, and an understanding of the advantages of starting to save early in one’s working life. Financial literacy is not simply a proxy for low education, race, or gender—as previously noted these groups are disproportionately less likely to be financially literate. Even after accounting for many demographic characteristics—including education, marital status, number

Table 4
Empirical Effects of Financial Literacy on Retirement Planning

	Probability of Being a Retirement Planner		
	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

Source: Adapted from Lusardi and Mitchell (2007a).

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 5-percent level; ** significant at 10-percent level; *** significant at 1-percent level.

of children, retirement status, race, and sex—table 4 (column III) shows that financial literacy continues to be an important determinant of retirement 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 (2007b) 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 dataset on financial literacy than the HRS. Specifically, they use information on a person's past financial literacy—before an individual entered the job market—and show that those who were financially literate when they were young are more likely to plan for retirement later in life.

Other studies have confirmed the positive association between financial knowledge and household financial decisionmaking. Hilgert, 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 (2007) 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, those groups also displaying the lowest amounts of financial knowledge and cognitive ability.

Lack of Financial Advice

The findings that some individuals are uninformed about the most important components of their total retirement savings plan and lack basic financial knowledge would not be so troubling if these 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; the majority of U.S. households rely on informal sources of advice. According to the Survey of Consumer Finances, most individuals rely

on the help of family and friends for making their financial decisions, and this is particularly true for those with low educational attainment (Lusardi 2003). Insofar as there is a positive correlation between the educational level of individuals and the educational level of their family or peers, low-educated individuals may simply rely on crude sources of advice. For example, given the rapid changes in financial markets and the pension landscape in recent years, it may be difficult to benefit from the advice or experience of their parents. Similarly, those with low financial literacy may be particularly disadvantaged in overcoming their lack of knowledge. Van Rooij, Lusardi, and Alessie (2007) show that individuals with 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 as their sources for financial information.

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 or retirement calculators, while the majority of planners indicate that they talk to family and friends. Many seem to use no tools at all! This may explain why many people are unable either to develop a savings plan or carry such a plan through. Decisions about pension contributions also seem to be influenced by interactions with colleagues (Duflo and Saez 2004; Madrian and Shea 2001). Investments in complex assets, such as stocks, are also found to be affected by word of mouth, such as the advice of neighbors and even fellow churchgoers (Hong, Kubik, and Stein, 2004; Brown, Ivković, Smith, and Weisbenner 2008).

It is hard to know whether U.S. households' use of professional financial advice is limited because of the many problems affecting the functioning of this market, including demand versus supply, but findings from the 2007 RCS suggest some reluctance to rely on financial experts (see Helman, VanDerhei, and Copeland 2007). 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 firms offering professional financial advice to their employees may be elusive, as workers may not act upon the recommendations of these advisers.

We still know little about the effects of receiving financial advice and whether it can improve a household's financial decisionmaking, but there is some evidence that financial counseling can be effective in reducing debt levels and delinquency rates (Hirad and Zorn 2001; Elliehausen, Lundquist, and Staten 2007). Mottola and Utkus (2008) also provide evidence in favor of relying on professionals to manage financial investments. They compare the portfolio performances of individuals before and after shifting to a professionally managed account. Those who shifted their investments are not a randomly chosen group of the population but, nevertheless, the effects are remarkable. Those who shifted to professionally 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 not holding well-diversified portfolios (Campbell 2006).

A similar analysis performed earlier by Warshawsky and Ameriks (2000) focused on evaluating household wealth. 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 planning software programs, Quicken Financial Planner. According to this program's predictions, about half of middle-class American households will not have a fully funded retirement. Some will actually run out of financial resources very shortly after retirement. One of the features of U.S. household wealth holdings highlighted by this exercise is that many households, particularly those with low education, accumulate little wealth until late in their life cycle or start saving very late, at a point where it is not possible to achieve much wealth 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 engaging in any financial planning and periodic evaluations, U.S. household savings and portfolio choice behavior may stray away from what is optimal.

3. Three Different Approaches to Promote Saving and Financial Security

The evidence reported thus far points to the existence of several obstacles to achieving adequate household savings in the United States. Many initiatives have been undertaken to promote financial decisionmaking and retirement security. Three major initiatives are discussed below: financial education, automatic enrollment, and new ways to get people to save.

Financial Education

As evidence mounts that financial illiteracy is a severe impediment to household saving rates, both the U.S. government and U.S. employers have promoted financial education programs. Most large firms, particularly those with DC pensions, offer some type of education program (Bernheim and Garrett 2003). So far the evidence on the effectiveness of these programs is very mixed.¹⁰ Only a few studies find that those individuals who attend a retirement seminar are much more likely to save more and contribute to pension plans (Bernheim and Garrett 2003; Lusardi 2002, 2004). Clearly, those who attend such seminars are not necessarily a randomly selected group of U.S. 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 the seminars per se or simply the characteristics of seminar attendees that explain the attendees' higher saving rates shown in the empirical estimates. However, Bernheim and Garrett (2003) argue that these seminars are often remedial, meaning these are offered at firms where workers do little or no saving. Thus, the effect of these employer-sponsored educational seminars on fostering better savings behavior may be underestimated.

Lusardi (2004) uses data from the HRS and confirms the findings of Bernheim and Garrett (2003). Consistent with the hypothesis that employer-sponsored seminars are remedial, she finds that the effect of these seminars is particularly strong for those workers at the bottom of

the wealth distribution and those with low levels of 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. The estimated effects are sizable, particularly for the least wealthy, for whom attending employer-sponsored seminars appears to increase financial wealth (a measure of retirement savings that excludes housing and business equity) by approximately 18 percent.¹¹ Note also that such seminars affect not only private wealth but also measures of wealth that include pensions and Social Security wealth, perhaps because these seminars provide information about pension plans and encourage

Table 5
The Effect of Retirement Seminars on U.S. Household Retirement Accumulation

	Total Sample	First Quartile	Median	Third Quartile
a. Financial Net Worth				
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
b. Total Net Worth				
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
c. Total Net Worth plus Pensions and Social Security				
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*

Source: Adapted from Lusardi (2004).

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, certificates of deposit 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 5-percent level.

workers to participate and contribute. This can be important because, as mentioned before, workers are often uninformed about their pension options.

In a series of papers, Clark and D'Ambrosio (2008) have examined the effects of seminars offered by TIAA-CREF (Teachers Insurance and Annuity Association-College Retirement Equities Fund) to a variety of institutions. The objective of the seminars is to provide financial information to assist individuals in the retirement planning process. Their empirical analysis is based on information obtained in three surveys: participants completed the first survey prior to attending a seminar, the second survey was completed at the end of the seminar, and the third survey was sent to participants several months later. Respondents were asked whether they had changed their retirement age goals or revised their desired level of retirement income after the seminar.

After attending the seminar, several participants stated they intended to change their retirement goals, and many revised their expected level of retirement income. Thus, the information provided in the seminars does have some effect on behavior. However, it was only a minority of participants who were affected by the seminars. Just 12 percent of seminar attendees reported changes in retirement-age goals and close to 30 percent reported changes in retirement-income goals. Moreover, their intentions did not always 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 et al. (2004), also argue that seminar participants who say they will start contributing to pension plans 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 2008). Evidence from the financial education sessions offered in programs aimed to promote individual development accounts, which are subsidized savings accounts targeted at the poor, show that a set of consecutive education sessions is effective in stimulating saving (Schreiner, Clancy, and Sherraden 2002).

Other researchers find that education programs have more modest effects. Duflo and Saez (2003) investigate the effects of having employees of a large nonprofit institution attend a benefit fair. This study is notable for its rigorous methodology: a group of randomly chosen participants was incentivized to participate in a benefit fair and its subsequent behavior was compared with that of a similar group which was not offered any incentives to attend the benefit fair. This methodology overcomes the aforementioned problem that those who attend employer-sponsored financial education programs may already be inclined to save. This refinement is clearly important, and the findings from this study show that the benefit fair induced participants to increase their participation in pension plans, but the effect on increasing savings was almost negligible. Perhaps this study's most notable result is how pervasive peer effects are—not only the participants themselves but also their colleagues who did not attend the benefit fair were affected by it, providing further evidence that individuals rely on the behavior of others around them to help make their own financial decisions (Duflo and Saez 2004).

Automatic Enrollment

One way to stimulate worker participation in and contributions to employer-sponsored pension plans is to automatically enroll workers into these pension plans. Thus, rather than letting workers choose whether or not to *opt in*, employers could enroll workers and let them choose whether or not to *opt out* of contributing to a pension plan. This simple but ingenious method has proven to be very effective in increasing pension plan participation. For example, according to Madrian and Shea (2001), after a company implemented a change in its 401(k) pension plan and automatically enrolled its new hires in the 401(k) plan, pension participation went from 37 percent to 86 percent. Sharp increases in employee participation with the implementation of an automatic enrollment policy have been documented in several other papers (Choi et al. 2004, 2006; Thaler and Benartzi 2004). Not only has the increase been very large but these participation rates have remained high for several years (Choi et al. 2004, 2006). Even the U.S. Congress took notice of this remarkable success and the 2006 Pension Protection Act made it much

easier for firms to automatically enroll their workers into employer-sponsored pension plans.

In principle, employers could automatically enroll workers in a pension plan but ask workers to go to the company's human resources office and choose the contribution rate and the allocation of pension assets. In fact, automatic enrollment programs also specify the default rate at which workers are enrolled and how the pension assets are allocated. Choosing a contribution rate and the asset allocation are very difficult decisions for individuals to make. According to most theoretical models of saving, the optimal savings 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 contribution rates and allocations are rarely individual-specific. For example, in the firm analyzed by Madrian and Shea (2001), the automatic enrollment rate was set at 3 percent for every worker. This choice has drawbacks since, in that particular firm, the first 6 percent of a worker's contribution received a 50 percent employer match. Thus, a 3 percent contribution rate fails to take advantage of part of the employer match.¹² Irrespective of this problem, not only did new hires stay at the 3 percent contribution rate, but other workers as well changed their contribution rates to 3 percent. Moreover, the default pension contributions were invested in money market mutual funds. This is another problem since this conservative default asset allocation prevents workers from earning 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).¹³

The design of automatic enrollment programs is very important.¹⁴ If an employer's objective is to promote its workers' financial security during retirement, contribution rates and asset allocations have to be chosen very carefully because workers tend to stay with what is chosen as the default. This tendency includes not participating in pension plans if the default choice is to not automatically 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-matching contributions, and exploiting the tax advantages 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 a worker's income increases. The success of this program is remarkable. Workers enrolled in the SMarT program have achieved saving rates of more than 13 percent versus an average of 5–6 percent for workers who did not enroll.

Similarly, VanDerhei (2007) shows that low contribution rates and investments in conservative assets result in very low median income replacement rates during retirement. For example, an automatic enrollment program with a 3 percent contribution rate and pension assets invested in money market mutual funds results in a median income replacement rate of only 37 percent for the lowest income quartile of workers. However, the replacement rate for this income group increases to 52 percent when the contribution rate is increased to 6 percent and the default investment is changed to a life-cycle fund. Moreover and most importantly, workers seem to favor higher default rates than 3 percent—as many as 44 percent of the respondents in the 2007 RCS stated they would continue to contribute to pensions up to a rate of between 6 to 10 percent of their income, and 27 percent of respondents were willing to go for even higher contribution rates (see Helman, VanDerhei, and Copeland 2007). While these are self-reported figures, they suggest that increases in default contribution rates are possible. Moreover, the 2006 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 as default options or from offering advice on how to invest pension assets.

What explains the success of defaults such as automatic pension enrollments and asset allocations? If individuals are poorly informed about their pension plans, lack basic literacy, and do not have good sources of financial advice to turn to, default options are very useful because they tell workers exactly what to do. In fact, defaults do even more; they not only provide potent advice but also overcome the problem that workers may fall prey to inertia and simply not follow through on their intentions. Moreover, if there is any learning in savings behavior, another advantage of defaults is they may make workers appreciate the value and perhaps ease of saving for retirement.

However, there are potential problems with default options that need to be addressed. First, the success of defaults should not be measured according to the participation rate in employer-sponsored pension plans, but according to their ability to improve household financial security. Because adhering to default saving choices means an active decision has not been made and individuals did not have to calculate how much they need to save, eventually these rates and asset allocations may not provide adequately for their retirement income. In fact, workers may not learn much or develop financial savvy. This is a problem because there are no default enrollments (yet) in mortgage loans, credit cards, or children's education funds. Second, in addition to saving for retirement, individuals have other motives for saving (or not saving). We do not know yet how these other motives interact with default choices. For example, individuals may be carrying credit card debt or high-interest mortgages while enrolled in pension plans, and the need to service these loans may detract from their ability to increase their retirement savings. Finally, about half of private-sector workers in the United States have jobs that do not offer any employer-sponsored pension plan. Thus, automatic enrollment is currently leaving out a substantial fraction of workers—about 75 million people—who could also benefit from such a program. 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.

New Ways to Make People Save

If saving decisions are very complex, one way to help people save is to find ways to simplify those decisions. A drawback to providing financial education, as discussed above, is that it does not necessarily translate into permanent behavioral changes. Thus, what may be important and perhaps more effective is to find ways to make people ease into taking 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 preset default contribution rate and asset allocation. Contrary to other default plans, workers have the choice to enroll or not, but their decision is 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 in pension plans.

When new hires were exposed to the Quick Enrollment program, participation rates in 401(k) plans tripled, going from 5 percent to 19 percent in the first month of enrollment. When the program was offered to previously hired nonparticipants, 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 percent and 50 percent of assets are allocated in money market mutual funds while the other 50 percent 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 shows, are less likely to be financially literate. Thus, changes in the design of a pension plan can have a large impact on participation. Most importantly, Quick Enrollment is a low-cost program.

Another approach that is based on simplifying the decision to save and, in addition, motivating employees to make an active choice in enrollment and asset allocation decisions is the one proposed by Lusardi, Keller, and Keller (2008). They devised a planning aid to be distributed to new hires during employee orientation that has several critical features. First, the planning guide breaks down the process of enrolling in supplementary pension plans into several small steps, describing to participants what they need to do to be able to enroll online. Moreover, it provides several pieces of information to help overcome the barriers to saving, such as describing the 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.

The planning guide was designed after a thorough data collection. For example, the researchers devised a survey asking the respondents explicitly about their barriers to saving, sources of financial advice, level of financial knowledge, and what they considered to be the attractive features of a pension plan. Moreover, Lusardi, Keller, and Keller (2008) con-

ducted focus groups and in-depth interviews (with both employees and human resources 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 characterizes decisionmaking about saving. Even though the sample is small and hardly representative of the entire U.S. population, it displays findings that are consistent with the broader evidence described earlier. For example, many employees state that they consult only family and friends for making saving decisions. Moreover, close to 40 percent state that they do not have enough knowledge about finance and investing, and close to 20 percent state that they do not know where to start. Given this evidence, it is not surprising that the program using the planning aid was so successful; contribution rates to supplementary pension plans doubled after the aid was introduced.

This program shares several common features with respect to other programs designed to enhance workers' participation in employer-sponsored pension plans. First, while economic incentives, such as employers' matching contributions or tax advantages may be useful inducements, they do not exhaust the list of options that can be used to make people save for retirement. In fact, given the massive lack of information and lack of financial knowledge, other more cost-effective programs may exist that can induce people to save. Second, employees are more prone to decisionmaking at specific times. For example, the start of a new job makes people think about saving (often because they have to make decisions about their pension plan participation). As discussed above, many people do not think about saving for retirement even at an advanced age in their working lives, and it may be very important to exploit these "teachable moments." The papers by Choi, Laibson, and Madrian (2006) and Lusardi, Keller, and Keller (2008) both find that newly hired workers are particularly malleable to making changes in their savings behavior. Third, to be effective, employer-sponsored pension 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 possessed, financial sophistication, and the ability to carry through plans. In other words, relying on "one-size-fits-all" principles can lead to rather ineffective programs.

4. Implications

An individual's saving decisions are derived from maximizing utility not only under a lifetime budget constraint but also under the limitations imposed by low financial literacy, a lack of information, and following crude sources of financial advice. Thus policies that aim to stimulate savings and financial security after retirement should consider a variety of incentives, including how to decrease informational barriers and simplify decisionmaking. Other fields have already recognized the difficulties that individuals face in collecting information and making decisions. For example, hospitals have set up "centers for shared decisionmaking" to help patients make informed choices about medical treatments.¹⁵

The choices confronting U.S. policymakers are not easy. Financial literacy cannot be taken for granted among the general population, and particularly among specific groups (including those with low educational attainment, women, and minorities). This challenge raises concerns about how to communicate information about financial decisionmaking 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 (Lusardi 2008). In the health literature for example, there is an increased reliance on testimonials and stories rather than on figures and hard data.¹⁶

Given the increased complexity in financial instruments, the evidence of illiteracy raises the question of whether U.S. consumers will appreciate and take advantage of the opportunities offered by financial markets or will more easily fall prey to scams or unscrupulous brokers. The effectiveness of financial education programs has been measured with respect to specific outcomes, such as increased saving or participation rates in pension plans, but there are other potential—though less easy to measure—outcomes, such as avoiding being taken advantage of and having confidence in making financial decisions.¹⁷ 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 investing in these education programs. Moreover, as shown by the studies discussed earlier, few employees ever attend education programs and many of those who do attend do not modify their behavior, at least in the short

run. While these are drawbacks, financial education programs cannot be dismissed. The benefits of receiving information and gaining knowledge can affect many household financial decisions, not simply saving for retirement. Moreover, the gains to such knowledge may take effect over a long period of time and should be evaluated in the long run rather than over a few months or years after a program is offered. For example, according to Bernheim, Garrett, and Maki (2001) persons 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 in the United States, it is not surprising that individuals who attend a benefits fair or workers who are offered one hour of financial education show little improvement in their savings behavior. To be effective, financial literacy programs have to be tailored to the size of the problem they are trying to solve. And while it is not possible to transform low literacy individuals into financial wizards, it is feasible to emphasize simple rules of thumb and good financial behavior, such as diversify your assets, exploit the power of interest compounding, and take advantage of tax incentives and employers' pension matches.

Another potential role of financial education is to help individuals assess their ability to make saving and investment decisions. Perhaps a related goal is to make them appreciate the value of obtaining professional financial advice and/or equipping them with tools to deal effectively with advisers and financial intermediaries.

If a lack of financial literacy, a lack of information, an inability to plan ahead for the future, and/or procrastination prevent people from contributing to pensions, default options are clearly an effective remedy. Defaults are the most powerful and innovative programs in the field of savings and pensions and should be exploited. However, the design of default options is crucial; if these are geared towards low contributions rates and investments in conservative assets, such suboptimal defaults may eventually offset the benefits of enrolling workers into saving programs. Moreover, since close to half of private-sector workers in the United States do not have an employer-sponsored pension plan, it is important to expand automatic enrollment to other saving instruments that these workers may invest in.

Contrary to what the previous literature seems to imply, default options and financial education programs are not necessarily substitutes. In fact,

they can complement each other well.¹⁸ Combining default options with financial education programs or financial advice may prevent workers from saving at suboptimal rates. Moreover, these programs may help workers evaluate their total savings, not only for retirement but also private savings; this may help them save for their children's education, to build a buffer to insure against financial and income shocks, or for other reasons. Several big firms, such as IBM, have adopted such initiatives and in the future it will be possible to evaluate the outcome of these combined programs.

Similarly, it is possible to exploit some of the features of automatic enrollment to make current saving programs more effective. If there is significant power in suggesting how much someone should 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 tailored according to age, number of children, and earnings. Similarly, if such information is 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 conducted at the national level to reach the wider U.S. population, including those individuals who are unlikely to be offered education programs in the workplace.

Another finding that emerges from both the literature on savings behavior and on financial literacy is that there are specific segments of the U.S. population—those with low educational attainment and low income—that save in very different ways than 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 many individuals possess limited financial literacy and do not always plan for retirement brings us inevitably to the issue of mistakes. Some of the referenced papers document that mistakes are not rare: when 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 available to them. Who ultimately will pay for these mistakes—the individual immediately affected or society at large? If taxpayers will

be asked to support those who have made mistakes, there is a role for regulation and for implementing mandatory saving programs. One such program could be to require that people acquire some basic financial knowledge (Alesina and Lusardi 2006). In the same way that people are required to have a driver's license before they venture onto the road, a "financial license" could be required before individuals contribute to their pensions, invest their pension assets, or borrow to buy a house. 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 sector spends millions of advertising dollars every year to convince consumers to spend more, relatively little is spent to encourage people to save and provide for their future. However, if consumption is excessive and saving is 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 designed to promote saving. Such messages would be up against tough competition: one recent commercial from American Express, advertising cash-back rebates to card holders on the amount spent using their credit card, argues that by spending more, people . . . save!

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Notes

1. See Scholz, Seshadri and Khitatrakun (2006) and the references therein.
2. For example, some individuals may not benefit from planning because they face a very uncertain income or have been hit by many shocks. Others may desire to never stop working. This is particularly the case for the self-employed and business owners (Lusardi 2003).
3. Household wealth is the sum of checking and savings account balances, certificates of deposit 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. For more detail, see Lusardi and Mitchell (2007a).
4. For a discussion of these estimates, see Lusardi and Beeler (2007).
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 United States. For example, while the Pacific region experienced an increase of 10.3 percent in 2003, the southeast region experienced an increase of 3.6 percent. 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.
7. For a detailed discussion of the importance of financial literacy, see Lusardi (2008).
8. 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).
9. See Lusardi and Mitchell (2007c) for a review.
10. 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 United States.
11. 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.
12. 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.
13. 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 percent of automatic enrollment companies have either a 2 percent or 3 percent default contribution rate and 66 percent of automatic enrollment companies have a stable value or money market default fund. See Choi et al. (2004) for a discussion of these findings.
14. 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.
15. Dartmouth Hitchcock Medical Center is one example of a hospital with such a center.

16. See Volk (2007).
17. See also Hogarth (2006).
18. For a discussion, see Lusardi (2007).

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Comments on “Household Savings Behavior in the United States: The Role of Literacy, Information, and Financial Education Programs” by Annamaria Lusardi

Alan S. Blinder

Annamaria Lusardi’s paper, which summarizes a fascinating and important body of work by her and her co-authors (among others), follows a four-step argument. First, *homo sapiens* are not *homo economicus*. Second, and more specifically, *homo sapiens* are not financially literate. Third, because of this deficiency, they make a number of foolish decisions regarding their personal finances, which are not trivial and which *are* contrary to their own best interests. Fourth, there are a number of things we can do to help them make better decisions. I basically agree with all four of these propositions, and I heartily applaud and admire the research that is summarized here. Still, a discussant’s role is to probe for weak points and to provide some alternative thoughts, which is what I will do. But none of this should obscure my main reaction, which is loud applause for the work.

I will take up the four steps in her argument in turn.

1. The Elusive Homo Economicus

First, as Bill Nordaus once put it:

Somewhere, someone probably believes [in] continuous-time maximization of a consistent preference function maximizing the present value of the utility of consumption using Bayesian updating in light of the constant inflow of data from the Internet, several televisions tuned to the financial channels, and a live feed from the Brookings panel. (2004, p. 388)

Let me state clearly and unequivocally that the “someone” is not me. We must always remember that *homo economicus* is an allegory, a deliberate

exaggeration that enables economic theory to get somewhere. If kept in its proper place, the allegory is tremendously useful. But it can be dangerously misleading if allowed to run amok.

In particular, you don't have to be as smart and attentive as Nordhaus's homo economicus to make pretty decent—which is not to say *optimal*—personal financial decisions. We all remember that even highly skilled billiards players may not understand the laws of physics very well, if at all, much less be able to replicate the equations. In addition, rational inattention may be quite rational, as Mankiw and Reis (2006) have emphasized—especially if the decision involves something far in the future (like a retirement plan) and leaves lots of time to correct any mistakes—if you have limited mental bandwidth to process information and more pressing decisions to make at the moment.

On this point, let me use my own (meager) retirement planning as an example of why some of Lusardi's observations are less than entirely persuasive. Early in the paper she observes that “a large percentage of workers have not thought about retirement.” Well, let me confess that I'm part of that large percentage. I am quite confident that I have provided well for my retirement—but any time the thought of retirement crosses my mind, I banish it.

The fascinating Lusardi-Mitchell (2006) Health and Retirement Study module in 2004 asked people aged 51–56 years (and thus younger than I) whether:

- “They have tried to figure out how much they need to save for retirement?”
- “They were able to develop a plan?”
- “They were able to stick to that plan?”

Well, I have never tried to figure out how much money I'll need; I have never tried to develop a plan; and I certainly haven't attempted to stick to one. Lusardi goes on to report, disapprovingly, that “only 18 percent of workers knew the correct age at which they would be entitled to full Social Security benefits.” Again, I find myself in the 82 percent. Remember that, nowadays, the normal retirement age is a moving target. I know that the correct answer is above 65 and below 67 and, somehow, the exact month doesn't seem very important.

One last point about rationality needs to be made—indeed, emphasized. Optimal retirement planning, or optimal financial decisionmaking in general, requires sorting through hundreds if not thousands of options. One of the main fictions we teach our students is that well-being is non-decreasing in the number of options—after all, you can always discard inferior options costlessly. Well, in a world in which mental bandwidth and time are both scarce resources, you can't consider options costlessly—it takes both time and effort to explore each one.

In our personal, as opposed to our professional, lives we all know that having more options can make us *worse* off. Again, here's a personal example. When I need a new computer—a decision which I defer as long as possible—I am forced to enter a market in which the variety of choices is bewildering. All that choice reduces my utility. So I have adopted a simple decisionmaking algorithm that probably leads me to a very good decision while economizing greatly on my time: I walk across the hall and ask my colleague Chris Sims. Then I buy what he recommends.

Returning to financial decisions, there is a fascinating (if disconcerting) study by Sethi-Iyengar, Huberman, and Jiang (2004), which found that each increase of 10 mutual funds in a pension plan's menu of choices actually *reduced* plan participation by 1.5–2.0 percent. This finding is consistent with lots of other evidence; for example, the famous super-market experiments in which greater variety discourages customers from sampling the cheeses. Bewilderment leads to withdrawal.

While all of us probably experience diminished utility from too many choices now and then, few of us pause to think how destructive of standard neoclassical thought this experience is. If utility may actually be decreasing as the number of available options increases, one of the main foundations of the theory of choice evaporates, and with it most of welfare economics. A goodly portion of the argument for free markets also crumbles. So I think we'd better not follow that train of thought too long or too far. And I won't.

2. The Financial Literacy of Homo Sapiens

I couldn't agree with Lusardi more on this point: we humans are not very good at financial decisionmaking. Some of the evidence she offers is very

convincing. For example, I was charmed by the survey finding that only about 50 percent of respondents could divide \$2 million by five! How about 20? Lusardi also repeats the discouraging findings from Lusardi and Mitchell (2006) that many people do not understand that:

- 2 percent interest compounded for five years exceeds 2 percent.
- Purchasing power decreases if you invest your money at 1 percent when the inflation rate is 2 percent.
- Buying a mutual fund is safer than buying a single stock.

Darwinian financial markets are apt to deal harshly with people who don't understand such basic points. [And, according to Lusardi and Mitchell (2006), only 34 percent of respondents know all three!] Such people need, quite literally, to be protected from themselves.

That said, some of Lusardi's "tests" for financial literacy seem too stern. I have already mentioned that knowing the exact month one is eligible to collect full Social Security benefits is a hard question to answer correctly. And if the adjustments are actuarially fair, getting it wrong doesn't even matter. So why bother to know? Another example is the inability to compound interest properly. I'd be inclined to pass, not flunk, survey respondents who say that money invested at 5 percent per year for five years will grow by 25 percent. (But, in line with a previous question, I'd be inclined to *flunk* those who don't know that it will grow by more than 5 percent!) This conference has mostly macroeconomists as participants. Who among us has not told students that $i = r + \pi$, where i is the nominal interest rate, r is the real interest rate, and π is the rate of inflation? (I did it myself just yesterday.) That well-known "equality" omits the compounding, of course. Yet we let it go.

3. Is the Ignorance Consequential?

The next step in the argument is important. Some ignorance is inconsequential. For example, former Vice President Dan Quayle famously could not spell "potatoes." But he's done okay in life. Similarly, surveys tell us that most American college students cannot locate Mexico on a map. But they nonetheless find their way to Acapulco for spring break.

In the financial-planning context, however, Lusardi reports a variety of evidence that ignorance *is* consequential. For example, table 1 in her paper shows that "planners accumulate more than double the wealth of nonplanners" (if you use medians instead of means). She cites the finding from Bucks and Spence (2008) that "households with ARMs [adjustable-rate mortgages] . . . do not know the terms of their contract," a gap in knowledge that has certainly proven to be quite consequential in the recent mortgage debacle. She also cites Stango and Zimmerman's (2007) finding that "those who are not able to correctly calculate interest rates . . . end up borrowing more and accumulating less wealth."

Financial illiteracy is also of obvious importance in a number of significant policy issues. Let me mention just a few. The country is now migrating from a system in which private-sector pensions were mostly defined benefit (DB) to one in which they are mainly defined contribution (DC). Sensible use of DC plans obviously depends on a degree of financial literacy that is unnecessary for DB plans. In a related vein, there are those who think we should transform our nation's big public DB pension plan, Social Security, into a DC plan by privatizing it, either partially or totally. Opponents of privatization have used the lack of minimal financial literacy as one of their arguments. Third, as suggested in the previous paragraph, the complexity of ARMs and other novel mortgage instruments probably left many mortgagees signing contracts that they did not understand. And many of those contracts are now heading toward default. Finally, and related, the intellectual underpinnings of consumer protection laws like the Truth in Lending Act and the Truth in Saving Act rest on the assumption that borrowers and depositors need protection because they are not quite up to the standards of homo economicus.

4. How Can Policy Help?

If we accept the fact that financial literacy is sorely lacking, and that this lack is consequential, what sorts of public policy interventions, if any, might improve things? Lusardi suggests these solutions, but I'm a big fan of only one.

1. *Training in financial literacy.* I would certainly favor this idea, if I thought it would be cost-effective. But both my priors and the evidence to date leave me a bit dubious. Lusardi herself seems at least somewhat ambivalent on this point: “the evidence on the effectiveness of these programs is so far very mixed.” Mixed at best.

2. *Rely more on financial advisers.* Here I am even more skeptical. It’s just not that easy for the ordinary Joe and Jane to find a paid financial adviser who is both honest and competent—or even disinterested, for that matter. Conflicted financial advice may be less than valueless.

3. *Provide people with more information.* I’m doubtful again. The problem is not that information is scarce. In fact, it’s abundant. The problem is that many people do not understand how to process the available information and to use it to their advantage.

4. *Rely more on good default options, such as automatic enrollment.* This is my favorite remedy, by far. One of the most outstanding and important findings in behavioral economics—indeed, I’d say in all of empirical economics—in the last decade or so has been the overwhelming importance of default options. People tend to stick with the default, no matter what it is, perhaps because they are inertial, (rationally or irrationally) inattentive, lazy, or simply too confused to act. Whatever the reason, it is critically important that they be offered sensible—which may not mean *optimal*—default options. And if accomplishing that goal requires public policy intervention, so be it. In a wide variety of issues, certainly including the ones on which Lusardi focuses, providing a good default option is probably the most cost-effective and least distortionary policy intervention we can think of.

I’d like to close with two other policy approaches that she either ignores or denigrates. The first is:

5. *Using commitment devices to overcome “temptation.”* This is another one of those problems that homo economicus doesn’t have. But homo sapiens are frail; they succumb to temptation even when they “know better.” In the saving context, the commitment problem typically means that people spend too much today and regret it later. For example, Lusardi notes that Choi et al. (2004) found that “[retirement planning] seminar participants who say they will start contributing to pensions or boost their contributions often fail to follow through.” This is a matter of willpower, not financial literacy. If employers, governments, and others can

provide *voluntary* commitment devices that help individuals make (and stick with) the sorts of decisions they would really like to make, then welfare can be improved—and, almost certainly, savings can be increased. I am thinking, of course, of devices like Christmas clubs, making “opt in” the default option on 401k plans, and Thaler and Benartzi’s (2004) SMarT™ plan. More good ideas like these are welcome.

Last but not least, I would like to defend—maybe even extol—something that Lusardi does not appear to favor:

6. *Use of simple rules of thumb.* Rules of thumb, which by necessity ignore most or all of the details of any particular household’s idiosyncratic circumstances, will not drive people toward *optimal* decisions. But they may at least drive them toward *moderately sensible* decisions. And that, in my view, would be a big step forward. Here are two examples.

- An old piece of financial “wisdom” holds that the equity share of your portfolio (in percent) should be 100 minus your age. (Confession: I hold more.) Now I’d hate to have to derive that rule as the solution to a life-cycle portfolio optimization problem. But it is probably a reasonable benchmark for many people, especially those who are not financially literate.
- When I was young, a simple rule of thumb held that your house should not cost more than three times your annual income. Now any quasi-optimal rule for housing expenditure would, of course, have to depend on (at minimum) interest rates, property tax rates, the marginal income tax rate, the typical growth rate of income, the relative price of housing, and its expected appreciation. The simple “three times” rule takes none of those factors into account. Yet if your implicit rent is 25 percent of your income, and your house is worth 12 times this implicit rent (two reasonable multiples) then your house will be worth three times your income. I can’t help thinking that the current housing crisis would have been far less severe if more people had followed this simple rule.

So, in summary, my answer to the question whether “U.S. households know what they are doing” is, in many cases, no. This answer agrees entirely with Lusardi’s analysis, and I have mostly praise for her paper. Where we differ is that I am less optimistic about the efficacy of financial education and advice, and I am more enamored of commitment devices and inculcating simple rules of thumb. I join Lusardi, and many other

participants in this conference, in my unbridled enthusiasm for the use of sensible default options.

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Comments on "Household Savings Behavior in the United States: The Role of Literacy, Information, and Financial Education Programs" by Annamaria Lusardi

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Annamaria Lusardi's paper is a wonderful summary of what is known about financial literacy and financial decisionmaking. I strongly recommend that anyone who is thinking about household savings behavior or savings policy read her paper. It emphasizes the recent findings that Lusardi and her coauthors have generated: financial illiteracy is an important contributor to suboptimal investment choices.

My comments cover four topics. First, I discuss the classical economic argument that economic choices might be sophisticated even if an economic agent lacks formal knowledge. I acknowledge the general plausibility of this argument, but argue that costly mistakes are nevertheless common in the financial domain.

Second, I argue that we should use field experiments to measure the net benefits of educational interventions. I emphasize the important role of cost-benefit analysis.

Third, I discuss some evidence that educational interventions are likely to have only a modest effect on savings and investment behavior in the United States. I show that many educational interventions have relatively poor effectiveness.

Fourth, I show that there are other kinds of inexpensive interventions that generate large increases in savings. I emphasize the role of defaults, active decisions, and simplified savings mechanisms. Finally, I conclude by emphasizing the parallels between physicians and financial advisers.

1. What about Financial Choices?

Economists often use Milton Friedman's billiards example to explain why untrained economic agents might still make optimal choices. In Friedman's example, expert billiards players, who have no formal physics training, nevertheless play pool as if they had a perfect understanding of kinetics.

Likewise, some economists argue that investors who have no formal knowledge of finance (or dynamic optimization theory) might use an intuitive understanding of their self-interest to make sophisticated saving and investment choices. An economist could therefore argue that Lusardi is wrong to worry about financial knowledge, claiming that "what really matters is behavior and investors will somehow get *that* right."

Lusardi is not wrong. Friedman's expert billiards players are the exception and not the rule. Most of us play pool poorly. Even if Friedman is right about the population of *professional* billiards players, his observation has little relevance for the rest of us.

The same issues arise in the domain of investing. There are some highly experienced (and highly selected) traders who make great investment choices. Many of them have no formal training in finance. The existence of these savants proves that formal education is not necessary for good investment choices. But just because one *can* make good financial choices without formal financial knowledge doesn't mean that most of us do. Indeed, economists frequently find that many if not most investors make large mistakes.

My own work has studied such financial choices. In essence, my collaborators and I have been studying how nonprofessional billiards players perform in high stakes settings where they have strong incentives to make the shot. With collaborators James Choi, Brigitte Madrian, and Andrew Metrick we have found that optimization theory is not a good "as if" model. Investors do not behave as if they optimize. Instead, they accept the defaults that their employers set, even when it is trivial to opt out of the default (Madrian and Shea 2001a; Choi et al. 2002, 2004, 2006; and Beshears et al. 2008). Other violations of "as if" rationality abound. Employer stock dominates retirement portfolios, even when diversification is allowed (Choi, Laibson, and Madrian 2005; Choi,

Laibson, and Madrian forthcoming). Employer-matching payments go unclaimed, even when there is a pure arbitrage opportunity for workers (Choi, Laibson, and Madrian 2008a).

To expand this last example, U.S. workers older than 59-and-a-half-years are allowed to withdraw balances from their 401(k) plan without a tax penalty. Moreover, they do not need to demonstrate financial hardship. Nevertheless, about half of the 401(k)-eligible workforce aged over 59-and-a-half-years does not contribute up to their employer's match threshold. On average they lose 1.6 percent of their pay because they do not make a 10-minute enrollment phone call to take advantage of a (liquid) savings account with a matching employer contribution.

2. Educational Interventions?

Lusardi's research has convinced me that financial illiteracy plays an important role in facilitating these bad financial choices. Public policy should try to redress this problem by raising financial literacy. I think that a key place that we are failing is in U.S. high schools. When I was a high school student, I read dozens of nineteenth-century English novels but nobody mentioned the concept of compound interest.

We should read lots of literature in high school. And we should also spend at least some time learning economics. Our high schools currently have the balance wrong. Indeed, we should reevaluate the high school curriculum. Applied mathematics should partially replace pure mathematics. Likewise, statistics, economics, and speech all deserve some time.

We should also think about creative opportunities for adult education. Wherever we intervene educationally we should be careful to measure the results. As Lusardi emphasizes, for an educational intervention to be desirable it has to change behavior at a reasonable social cost. As I'll argue below, many of the (inexpensive) interventions that have been tried to date have flopped. To find the educational interventions that work, we'll need lots of controlled experiments, executed on a small scale and evaluated with cost-benefit measures. Many experiments will spawn a few successes, and those cost-effective successes should then be adopted as policy. Until these cost-effective interventions are identified in the field, we are not yet ready to make policy.

3. Observations about the Design of Effective Education Interventions

There are five factors to take into account when designing educational policy interventions. Some of these factors are conceptual. First, the investment problem is highly complex. For example, we have a blizzard of savings vehicles: defined benefit, cash balance, money purchase, annuity, variable annuity, 529, UGMA accounts, 401(a), 401(k), 403(b), 457, Keogh, Individual Retirement Accounts (IRAs), Simplified Employee Pension-IRAs, Roth IRAs, Employee Stock Ownership Plans, and so on. To make optimal retirement choices, one needs to understand the ins and outs of the U.S. tax code, as well as basic principles of finance and dynamic optimization. We don't expect people to repair their cars or prescribe antibiotics for themselves. We don't worry about their lack of education in these areas. It is likely that financial decisionmaking should also be delegated to third parties. (If this is right, we should be teaching households how to monitor these third parties, not how to make these decisions themselves.)

Second, even if we did give people a perfect training in personal finance, we would need to continuously update their knowledge and skills, since the institutional environment is always changing. When I started in high school in 1984, most people saved through defined benefit pension plans. By the 1990s, defined benefit plans were on their way out and the 401(k) was the new kid on the block. Even if I had gone to high school in 1994, I could not have learned about saving institutions that are *now* commonplace. For instance, automatic enrollment, 529 plans, exchange-traded funds, exchange-traded notes, target-date funds, automatic escalators, 401(k) loans, hedge funds, mortgage-backed securities, and infrastructure funds were basically unheard of 15 years ago.

Third, "just in time" training has had disappointing effects. I have been repeatedly surprised at how little effect targeted information campaigns have. In one study, employees with low saving rates were randomly assigned to an intervention in which they were paid \$50 to read a short document about how their 401(k) plan works, including an individualized calculation of how much money they were losing by not taking full advantage of the match. This intervention had no effect on the employees' average 401(k) saving rates (Choi, Laibson, and Madrian 2008a). The

Enron debacle had no effect on the willingness of newly hired workers at other firms to choose to invest their 401(k) contributions in employer stock (Choi, Laibson, and Madrian 2005). Employer-sponsored financial education seminars have remarkably little effect on 401(k) enrollment (Madrian and Shea 2001b). A new easy-to-read prospectus proposed by the Securities and Exchange Commission—the "summary prospectus"—has no effect on investor choices (Beshears et al. 2009). Finally, making fees overwhelmingly salient does not lead investors to minimize them, even when investors are allocating real money among index funds. In one study, subjects are asked to allocate \$10,000 among four Standard & Poor's 500 index funds. To assist their decisionmaking, the subjects are told what an index fund is, given a one-page summary sheet that compares the fees of the four index funds, and given the four prospectuses. Only 10 percent of the subjects put all of their money in the low-cost index fund (Choi, Laibson, and Madrian 2008b).

Fourth, I worry that the life-cycle nature of investing is inherently biased against success. Our formative learning years occur when we have no investable assets, a situation which saps our motivation and diminishes our ability to learn by doing. Moreover, when we have the most assets we are entering a period of diminished cognitive function. For example, the median 25-year-old is around the 75th percentile in adult cognitive analytic function. By contrast, the median 75-year-old is below the 25th percentile in adult cognitive analytic function (Salthouse 2005). Most of this cross-sectional variation is due to age effects and not cohort effects (Salthouse, Schoeder, and Ferrer 2004). Dementia and pre-clinical dementia account for some of this decline, while "normal" aging processes account for most of the rest. Some research has begun to study the market consequences of these changes, arguing that older adults make worse financial choices than middle-aged adults (Agarwal et al. 2007). These life-cycle effects may blunt the efficiency of financial education. Early life education comes at the "wrong" time. Late life education targets a population with declining cognitive function.

Fifth, one of the potential payoffs of financial education might be to teach people that they need to save for retirement. However, this lesson seems to already have been learned. About two-thirds of U.S. households already self-report that they should be saving more for retirement (Choi

et al. 2002). Indeed, the problem with undersaving is not a lack of public awareness. Instead, the problem is a lack of action. Financial education might help on this front, but it might also have little effect to the extent that the principal problem is motivational (for instance, procrastination). More work needs to be done to unravel the multiple forces that contribute to low savings rates in households that self-report that they are not saving enough.

4. Cost-Effective Interventions that Improve Retirement Preparation

There are many kinds of inexpensive interventions that generate large increases in savings. I will discuss the role of automaticity, active decisions, and simplified savings mechanisms. These interventions are scalable, highly effective, and nearly cost-free.

The most effective savings interventions all incorporate some element of automaticity. When savings and diversification is automatic (and not compulsory), households have to go out of their way to undersave and underdiversify. Automatic features come in many forms: automatic enrollment, automatic savings rate escalation, automatic diversification, automatic rebalancing, automatic life cycle reallocation, and automatic annuitization. All of these features are now available in some 401(k) plans. The most successful 401(k) plans make good outcomes easy (meaning automatic) and bad outcomes hard (meaning that these plans require some effort on behalf of the plan participant). For example, automatic enrollment raises participation rates (at three months of tenure) from around 40 percent to around 90 percent (Madrian and Shea 2001a; Choi et al. 2002, 2004, 2006; Beshears et al. 2008). Automatic escalators have also been highly effective in raising the retirement savings rate (Thaler and Benartzi 2004).

Active decision mechanisms also increase the likelihood of good outcomes. Active decisions are generated by a deadline. Newly hired employees are required to indicate their preference regarding enrollment (for instance, within 30 days of their hire date). In an active decision regime, passivity is not an option (just like the choice of the employer-subsidized health plan). Requiring plan participants to actively decide whether they

should be saving or not raises participation rates (at one year of tenure) from around 40 percent to around 70 percent (Carroll et al. 2009).

Simplified enrollment has also been shown to dramatically raise enrollment rates. Reducing the transaction costs of enrollment (so that enrollment takes one minute instead of 15 minutes), raises participation by approximately 20 percentage points (Beshears et al. 2006; Choi, Laibson, and Madrian 2009).

Conclusion: Financial Physicians

I conclude by identifying parallels between the investment environment and the health care system. Employers offer a small set of carefully vetted health plans to their employees. Employees are required to make an active choice from this set (or opt out of employer-provided health care). Once an employee is in a health plan, physicians make many of their day-to-day health care decisions—for example, which tests should be ordered, what procedures should be done, and which medications should be prescribed. The employee can opt out of the prescribed therapy or get a second opinion. The most significant decisions—for instance, opting for surgery—are made by the patient with the advice and guidance of her physician. Health plans and physicians are regulated and licensed.

This health care system assigns most due diligence and monitoring roles to employers, health plans, and regulators. Day-to-day decision-making is delegated to physicians. We could organize the financial system in a similar way, with social institutions vetting and monitoring financial advisers, who in turn would play a role comparable to physicians. Annual financial check-ups would be routine. Portable databases would record each person's financial history and these histories could be shared with advisers at these check-ups.

Large employers and/or asset management firms would select and monitor groups of financial advisers. The integrity and rigor of the selection/monitoring process would be legally enforced. Safe harbor rules would reduce the cost of this oversight role. Small employers could choose advisers and asset managers approved by regulators (to take advantage of scale economies in selection and monitoring). Financial advisers who

work outside the boundaries of defined contribution plans would be registered, licensed fiduciaries who have a high level of training and no conflicts of interest (for example, commission-based compensation would be disallowed).

In such an environment, an investor would only need to know how to work with their financial physician. Investors would not prescribe their own financial medicine. In other words, people with low levels of financial literacy would be okay.

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