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FINANCIAL LITERACY: EVIDENCE AND IMPLICATIONS FOR FINANCIAL EDUCATION

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EXECUTIVE SUMMARY

This paper discusses financial literacy in the United States in the context of retirement planning. Due to the long-term shift away from defined benefit to defined contribution pensions, it is important to examine whether workers are adequately equipped to manage the resultant increased responsibility for planning their retirement. New evidence finds that financial illiteracy in the population is widespread, particularly among vulnerable demographic groups such as the least educated, women, and minorities. This is serious cause for concern given that financial literacy is an important predictor of retirement planning and other important financial decisions. Implications for policymakers as they consider financial education programs include the importance of targeting specific groups, simplifying financial decision-making, and providing specific steps and guidance to the least financially knowledgeable.

INTRODUCTION

Individuals increasingly must manage their own retirement security. The long-term shift from defined benefit to defined contribution retirement plans means that today's workers must determine both how much they need to save for retirement and how to invest their pension assets. And during the retirement period, older people must make difficult decisions on how to allocate their portfolios and how quickly to draw down their life savings. Yet, as the financial



market meltdown has so clearly demonstrated, financial products have become very complex, confronting consumers with new and ever-more-sophisticated financial decisions. The question that now arises is whether individuals are well equipped to make financial decisions. In other words, do they possess enough financial literacy to function effectively in today's complex marketplace?

This report shows that financial literacy cannot be taken for granted in the United States, nor in many other developed nations around the globe. In fact, financial illiteracy is widespread and is particularly acute among vulnerable groups such as the least educated, women, and minorities. This finding has serious implications for saving, retirement planning, retirement well-being, mortgage holdings, and more, and it identifies a role for policymakers working to boost financial literacy and education.

EVIDENCE ON FINANCIAL LITERACY

Research on financial literacy came to the attention of economists with work by Bernheim (1995, 1998), who was one of the first to show that most Americans lack basic financial knowledge and numeracy. Subsequently, surveys of the U.S. population as well as particular sub-groups have revealed very low levels of economic and financial literacy. For instance, the National Council of Economic Education (NCEE) periodically surveys high school students and working-age adults to measure financial and economic knowledge. Its survey consists of a 24-item questionnaire on topics including economics and the consumer, money, interest rates and inflation, and personal finance. When results were tallied using standard grading criteria in 2005, adults earned an average score of C, while the high school population fared even worse, with most receiving failing marks.

Americans' lack of financial knowledge has been confirmed in the larger population by Hilgert and Hogarth (2002), who analyzed data from the University of Michigan's Survey of Consumers. Some 1,000 respondents between the ages of 18 and 97 were given a 28-question true/false financial literacy quiz, with questions examining knowledge about credit, saving patterns, mortgages, and general financial management. That study found that respondents could answer only two-thirds of the questions correctly. They were best informed regarding mortgages (81% correct responses), followed by saving patterns (67% correct), credit cards (65% correct), and general financial management (60% correct). Respondents were less knowledgeable about mutual funds and the stock market; only one-half knew that mutual funds do not pay a guaranteed rate of return, and 56% knew that "over the long-term, stocks have the highest rate of return on money invested."

Similar findings are reported in smaller samples or among specific groups of the population. Low levels of financial literacy are confirmed by related research by the Jump\$tart Coalition for Personal Financial Literacy, which focuses on U.S. high school students (Mandell, 2008.) Students fare poorly on credit management and personal finance questions and know little about stocks, bonds, and other investment vehicles. A survey of Washington State residents by Moore (2003) indicated that people often do not understand the terms and conditions of consumer loans and mortgages. Mitchell (1988) examined worker knowledge of pension provisions and showed that a substantial percentage of employees were unable to identify key features of their company retirement schemes, including early/normal retirement ages and how much their benefits would rise if they delayed retirement.

Lusardi and Mitchell (2006) devised a special module on financial literacy for the 2004 Health and Retirement Study (HRS), a nationally representative survey of Americans over the age of 50. Adding financial literacy questions to a national U.S. survey is important not only because it allows researchers to evaluate levels of financial knowledge, but also, and most important, because it permits researchers to link financial literacy to a very rich set of information about household saving behavior. The module measures basic financial knowledge of the workings of interest rates, the effects of inflation, and the concept of risk diversification.

The questions measuring financial literacy are as follows:

1. Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: more than \$102, exactly \$102, less than \$102?
2. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?
3. Do you think that the following statement is true or false? "Buying a single company stock usually provides a safer return than a stock mutual fund."¹

Findings from this module reveal an alarmingly low level of financial literacy among older individuals (50 and older) in the United States. Only 50% of respondents in the sample were able to correctly answer two simple questions about interest rates and inflation, and only one-third of respondents were able to correctly answer these two questions and a question about risk diversification (Lusardi and Mitchell, 2006).

In related work, the same authors employed data from the 2004 HRS to evaluate whether Baby Boomers are relatively well informed about financial matters (Lusardi and Mitchell, 2007a). Specifically, they focused on Early Boomers (age 51–56) in 2004. The following financial literacy 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?

For simplicity, these variables are called, respectively, the "percentage calculation," the "lottery division," and the "compound interest" questions.

Table 1 summarizes how this group of Boomers answered these questions. The good news is that over 80% got the percentage calculation question correct, but only about one-half could divide \$2 million by 5 to get the lottery division right, and only 18% correctly computed the answer to the compound interest question. Of those who got the interest question wrong, a substantial group (43%) undertook a simple interest calculation, thereby ignoring the interest accruing on both principal and interest. These are disconcerting results, especially considering that these respondents were only a few years from retirement and would likely have handled numerous financial decisions during their lives. These findings confirm several studies in psychology and marketing that also document that many people are not numerate and have difficulty grasping percentages and working with fractions (Peters et al., 2007; Chen and Rao, 2007.)

1 In addition to the list of answers provided above, respondents can also choose that they do not know the answer to the question, or they can refuse to answer.

TABLE 1
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

Notes: *Conditional on being asked the question. Percentages may not sum to 100 due to a few respondents who refused to answer questions. Observations weighted using HRS household weights.

Source: Author calculations of the 2004 Health and Retirement Survey (HRS); adapted from Lusardi and Mitchell (2007a).

Lack of financial literacy is not a problem limited to the United States. For instance a 2005 report on financial literacy by the Organization for Economic Co-operation and Development (OECD) documents low levels of financial literacy in several countries. Similarly, the Survey of Health, Aging and Retirement in Europe (SHARE) shows that respondents score poorly on financial numeracy and literacy scales (Christelis et al. 2008). With respect to debt and similar to the findings of Moore (2003) in the United States, Miles (2004) reports that U.K. borrowers have a poor understanding of mortgages and interest rates. Research in Chile (Mitchell et al. forthcoming; Arenas et al. 2008) and in Mexico (Hastings and Ashton-Tejada 2008) confirms extensive financial illiteracy in developing countries as well.

WHO IS LESS FINANCIALLY LITERATE?

Financial illiteracy is not only widespread, but it is also concentrated among particular demographic groups. For example, as measured by the three HRS 2004 module questions provided above, financial literacy declines rapidly with age. This is an important finding, since consumers must make financial decisions until late in the lifecycle. Moreover, Lusardi and Mitchell (2008) demonstrated that financial literacy is particularly low among older women. As shown in Table 2, only 61.9 percent of women correctly answered the interest rate calculation question, versus 74.8 percent of men, and 70.6 percent correctly answered the inflation question, versus 82.2 percent of men. Moreover, only 47.8 percent of female respondents knew that holding a single company stock implies a riskier investment than holding a stock mutual fund, versus 59.2 percent of men. Women are also much more likely to respond DK (don't know) to each of the three questions, with a substantially higher fraction responding DK to the risk diversification question (40 percent, versus 25 percent for men). Low literacy among women is confirmed in other surveys covering younger or representative groups of the U.S. population (Lusardi and Mitchell, 2007a; Lusardi and Tufano, 2008).

TABLE 2
FINANCIAL LITERACY AMONG EARLY BABY BOOMERS, BY GENDER

QUESTION TYPE	CORRECT (%)		INCORRECT (%)		DO NOT KNOW (%)	
	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN
Interest Rate	61.9	74.8	24.7	18.5	11.6	6.1
Inflation	70.6	82.2	14.5	11.4	12.8	5.7
Risk Diversification	47.6	59.2	12.0	14.8	39.6	25.0

Notes: This table reports the percentage of correct, incorrect, and "do not know" for women and men respondents.

Source: 2004 HRS, authors' calculations.

Financial literacy also varies widely across education groups: specifically, those who are more educated are much more likely to answer the questions correctly. There are also large differences across race and ethnic groups: African-Americans and Hispanics are less likely to answer correctly than whites (Lusardi and Mitchell 2007a; 2006). These results are not just specific to the age groups included in the HRS since we also find them in many other financial literacy surveys.² Moreover, the findings outlined above also show up among younger respondents. For example, Mandell (2008) focused on a small group of students he defined as financially literate (all had received a score of 75 percent or more on a 2006 Jump\$tart Coalition financial literacy survey. He found a positive correlation between literacy and gender, race, and education even among the young. It must be noted that this group represents only a tiny fraction of the whole sample—seven percent—and the group was overwhelmingly white, male, and the offspring of college graduates.

Lusardi and Mitchell (2007c) showed that financial literacy is highly correlated with school exposure to economics. Those who studied economics in high school, college, or at higher levels were much more likely to display higher levels of financial literacy later in life, a finding also seen in other countries (van Rooij et al. 2007). Moreover, financial literacy is higher among people exposed to financial education programs in the workplace (Lusardi and Mitchell, 2007c). However, as Lusardi (2004) documents, only a small fraction of workers ever attend financial education programs at work.

Thus there are at least three channels through which individuals can gain some financial knowledge: parents, school, and work. But given the low percentages of students who display financial literacy and of workers who attend financial education programs, there is room for strengthening the provision of financial education.

WHY DOES FINANCIAL ILLITERACY MATTER?

While the demonstrated low levels of financial literacy are troubling in and of themselves, of paramount importance for economists are the implications of financial illiteracy for economic behavior. One example is offered by Hogarth et al. (2005), who demonstrated that consumers with low levels of education are disproportionately represented among the “unbanked,” i.e., those lacking any kind of transaction account.

As mentioned earlier, one of the major advantages of including financial literacy questions in major U.S. surveys is that this permits researchers to assess whether literacy influences financial decision-making. Lusardi and Mitchell (2007a) examined the relationship between financial literacy and retirement planning as measured in the 2004 HRS core data covering Baby Boomers; compared to those who answer incorrectly or do not know the answer to the question about interest compounding, those who know about interest compounding are 15 percentage points more likely to be retirement planners. The ability to do simple calculations is also important; those who cannot divide 2 million by 5 (respond DK to this question) are 15 percentage points less likely to be planners. The fact that knowledge of interest compounding and the ability to perform simple calculations (such as a lottery division) are strong predictors of retirement planning is to be expected, given that a saving plan requires some numeracy, the ability to calculate present values, and an understanding of the advantages of starting to save early in life.

Financial literacy is not simply a proxy for low educational attainment, race, or sex; instead, as has been noted above, women, minorities, and those with low educational attainment are disproportionately less likely to be financially literate. Even after accounting for many demographic characteristics, empirical research shows that financial literacy continues to be an important determinant of planning.³ We have also found that retirement planning is a powerful predictor of wealth accumulation; those who plan have more than double the wealth of those who have done no retirement planning (Lusardi and Beeler 2007; Lusardi and Mitchell 2007a).

² See Lusardi and Mitchell (2007b) for a review.

³ See Lusardi and Mitchell (2006.)

Some might contend that reverse causality is an issue: that is, financial literacy and retirement planning are both decision variables, so that the act of planning may enhance financial knowledge, thus rendering financial literacy endogenous. And it is certainly possible that those who seek to plan for retirement will invest in acquiring financial knowledge. To disentangle the causal relationships in this nexus, it is essential to rely on information beyond individuals' current levels of financial literacy. To implement this approach, Lusardi and Mitchell (2007c) used data on consumers' *past* financial literacy prior to their entering the job market. This study showed that those who were financially literate when young, are also more likely to plan for retirement. Thus it is literacy that affects planning and not the other way around.

Subsequent studies have again confirmed the positive association between financial knowledge and household financial decision-making. For instance, Stango and Zinman (2008) showed that those unable to correctly calculate interest rates given a stream of payments ended up borrowing more and accumulating less wealth. Others show that the less financially literate were unlikely to invest in stocks (van Rooij, Lusardi, and Alessie, 2007; Christelis, Jappelli, and Padula, 2008) and tended to select mutual funds with higher fees (Hastings and Tejada-Ashton, 2008). Lusardi and Tufano (2008) found that those who severely underestimate the power of interest compounding were more likely to experience difficulty with debt. Agarwal et al. (2007) showed that financial mistakes are prevalent among the young and the elderly: population subgroups that also displayed the lowest levels of financial knowledge and cognitive ability. Hilgert et al. (2003) documented a positive link between financial knowledge and financial behavior, and Campbell (2006) further demonstrated that many investors failed to refinance their mortgages during a period of falling interest rates. This finding is consistent with lack of literacy, since those who failed to refinance were disproportionately investors with low educational attainment. Such investors also seem less likely to know the terms of their mortgages, including the interest rates they pay (Bucks and Pence, 2008). Moore (2003) also found that borrowers who took out high-cost mortgages displayed little financial literacy

IMPLICATIONS FOR FINANCIAL EDUCATION PROGRAMS

While more research on the effectiveness of financial education programs is clearly warranted, there are several implications for these programs that follow from the analyses outlined above:

FINANCIAL EDUCATION SHOULD START YOUNG.

Financial education should be provided *before* people engage in financial contracts. For example, financial education in school can provide a base level of financial literacy to help navigate an increasingly complex financial environment.

ONE SIZE DOES NOT FIT ALL.

The differences in financial literacy among the population that are highlighted in this report suggest that it is important to target specific groups in the population to best serve those most in need.

A ONE-TIME RETIREMENT SEMINAR IS LIKELY TO BE INEFFECTIVE.

When financial illiteracy is so widespread in the population, small interventions such as offering one retirement seminar to all workers are likely to be ineffective. The cure must fit the disease.

SIMPLIFICATION IS ESSENTIAL FOR THE LESS FINANCIALLY LITERATE.

Those concerned with widespread illiteracy must find ways to simplify financial decision-making as much as possible. Further, methods of communication must be found that do not rely on percentage information, mathematical calculations, or numerical data.

FINANCIAL ADVICE CAN BE OF SUBSTANTIAL HELP TO THE LEAST FINANCIALLY LITERATE.

It is important to provide guidance in making financial decisions and provide specific steps that people can act upon, particularly for the least financially literate.

FINANCIAL LITERACY IS AN ESSENTIAL TOOL FOR DECISION-MAKING

Because individuals make many financial decisions and these decisions are interrelated, it is important to equip people with some basic tools. Given widespread illiteracy, people are prone to make mistakes and these mistakes can be costly.

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