

Financial Literacy and Economic Outcomes: *Evidence and Policy Implications*

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The modern economy increasingly requires consumers to make many complex and sometimes bewildering financial choices.

Almost daily, our students, colleagues, relatives, and even strangers on airplanes ask us difficult questions including: “How many credit cards should I have, and how do I select them? Should I borrow for college, and how much is too much to pay? How much should I save in my 401(k) plan, and where do I invest it? Should I lease or buy a car? Should I rent or buy a home, and how much do I need to put down and what can I afford to pay? When can I afford to retire?” Obviously, not everyone needs an economics degree, but people do require some financial knowledge or the help of an advisor to make such decisions. Nevertheless, our research shows that many people make poor economic decisions because they are financially illiterate. As we show here, financial ignorance can be expensive and even ruinous, for many.

Our goal in this article is to provide an overview of existing work in this important field. We also provide new evidence from the data collected by the Programme for International Student Assessment (PISA) of the Organisation for Economic Co-operation and Development (OECD). We conclude

with a discussion of the implications of our findings for policy.

LITERACY OVERVIEW

Illiteracy Is Widespread in the United States

Our first examination of financial literacy was fielded in 2004 in the Health and Retirement Study (HRS), a nationally representative survey of Americans over the age of 50. From that work, we were astonished to learn that only half of older Americans knew the right answer to two basic questions about interest rates and inflation and only one-third knew the right answer to those two questions plus a third question on risk diversification (the specific questions are listed in Exhibit 1).¹

Our three basic questions (since dubbed the “Big Three”) have now been fielded in numerous other surveys including several representative of the entire U.S. population, such as the American Life Panel and the National Financial Capability Study, and our findings are widely confirmed.² The Big Three questions we designed, and which are reported below, have the virtue of being simple, relevant, brief, and good differentiators. Each of these aspects is an important attribute in the context of face-to-face, telephone, and online surveys.

EXHIBIT 1

The “Big Three” Financial Literacy Questions

- 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
 Do not know
 Refuse to answer
- 2) Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?
 More than today
 Exactly the same
 Less than today*
 Do not know
 Refuse to answer
- 3) Please tell me whether this statement is true or false. “Buying a single company’s stock usually provides a safer return than a stock mutual fund.”
 True
 False*
 Do not know
 Refuse to answer

Note: Correct answers are indicated with asterisks.

Source: Lusardi and Mitchell [2011a].

Outside the United States, Relative Illiteracy Persists

Wondering whether Americans might be unusual in their (lack of) financial knowledge, we launched several comparable international surveys (see Lusardi and Mitchell [2011b], [2014]; and Boiscclair et al. [2014]). Though some respondents responded more accurately than did Americans, we still found widespread financial illiteracy even in relatively rich countries with well-developed financial markets. These included Canada, Germany, the Netherlands, Switzerland, Sweden, Japan, Italy, France, Australia, and New Zealand. Performance was markedly worse in Russia and Romania.

Across the countries we examined, being better educated was always associated with having more financial knowledge (Exhibit 2),³ yet we also found that education is not enough. That is, even well-educated people are not necessarily savvy about money.

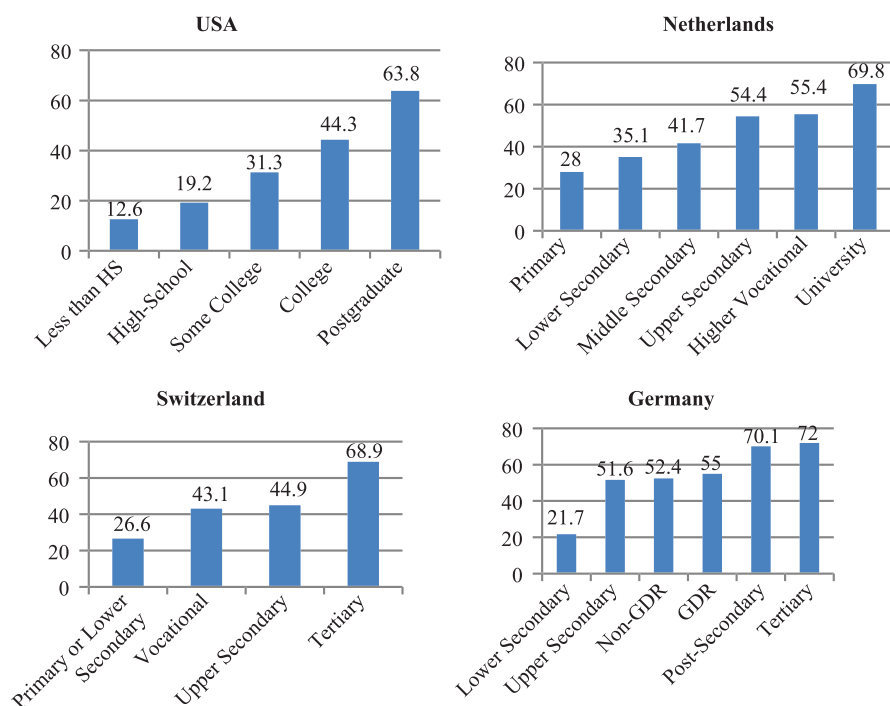
Another striking finding common to all of the countries we studied is that men were much more likely

than women to answer our questions correctly (Exhibit 3). Understanding why this is true and its potential consequences is an intriguing area for future research (Lusardi and Mitchell [2008]; Bucher-Koenen et al. [2014]). It may result from traditional family structures in some countries: that is, to the extent that husbands traditionally work for pay and wives are less exposed to the marketplace, men likely make more financial decisions than their wives. If so, one would anticipate the performance differences to narrow over time. Yet there is little evidence of a closing gap among the young (Lusardi et al. [2010]; Bucher-Koenen et al. [2014] and the references therein).

In yet another striking finding, which is also consistent across countries, we see that men are more confident about their financial knowledge than they should be. That is, even when they were wrong, they reported being “very confident” about their answers. By contrast, women on average answered fewer of the finan-

EXHIBIT 2

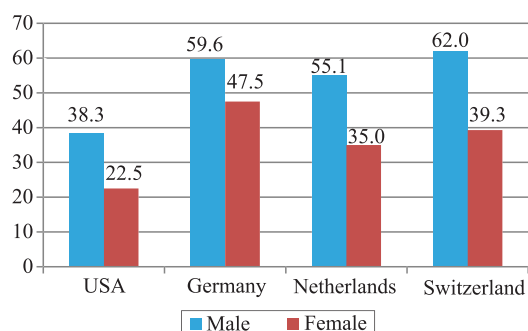
Financial Literacy by Education Level (% providing correct answers to all three financial literacy questions)



Source: Lusardi and Mitchell [2014].

EXHIBIT 3

Financial Literacy by Gender (% providing correct answers to all three financial literacy questions)



Source: Lusardi and Mitchell [2014].

cial knowledge questions correctly, but they were more likely to admit when they did not know how to answer our questions. This suggests that financial education may be more welcome to women, should the opportunity arise.

We also found low levels of financial literacy among younger respondents. For instance, respondents at the beginning of their work careers (age 23 to 28) display little knowledge of compound interest, inflation, and risk diversification (Lusardi et al. [2010]). Similar findings are reported among the so-called Millennials, including those who have a college degree (de Bassa Scheresberg and Lusardi [2014]; de Bassa Scheresberg et al. [2014]).⁴

New International Evidence on High School Students

Results discussed thus far cover mainly the adult population, but data recently collected by the OECD in the PISA study includes international assessment of financial literacy among high school students.⁵ The goal was to assess young students' (age 15) financial knowledge as well as their ability to apply that knowledge to financial decision making and planning for their future. This is important, since young people today are confronting ever more sophisticated financial products and services than did

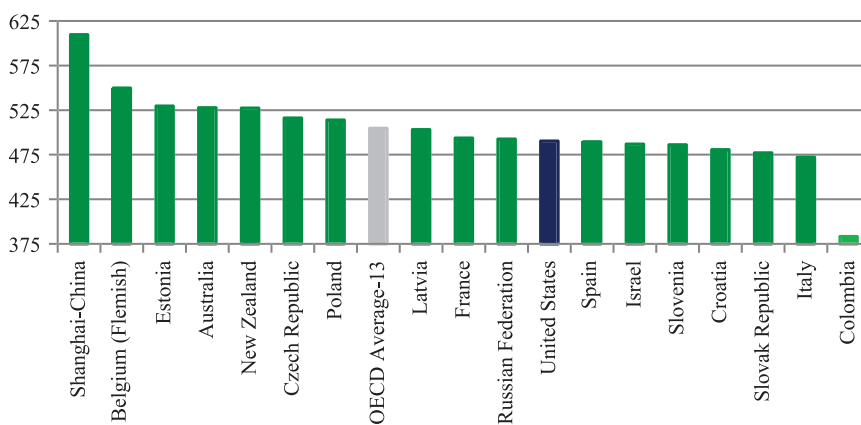
their parents. They also have more opportunity to take on financial risks, particularly in an environment where individuals must make choices regarding debt, spending, saving, health-care coverage, and retirement planning. And finally, in many nations, high school students are charged with making some of the most important financial decisions of their lifetimes, namely whether to go to college, and if so, what to study.

To assess young people's level of financial sophistication, the PISA test covered money and transactions, planning and managing finances, risk and reward, and the financial landscape. As of 2012, some 18 countries participated in the assessment.⁶ Interestingly, results mimic those from the adult populations cited above.⁷ Exhibit 4 shows that, as before, U.S. respondents ranked in the middle, despite the fact that the U.S. plays such a key role in the global economy and has quite developed financial markets. Near neighbors (from a performance standard) are Spain and Slovenia, with better performance from Australians and New Zealanders. Top-scoring students were found in Shanghai, China.

Several other important findings also emerge from these data. First, many more boys perform at both the top and bottom of the financial literacy scale, compared to girls. Second, a sizeable part of the variation in financial literacy is explained by student socio-economic backgrounds. In other words, inequality in financial literacy is already apparent in high school, and these differences appear to increase later in life.

EXHIBIT 4

High School Student Performance on the 2012 PISA Financial Literacy Scale, Mean by Country



Source: Derived from OECD [2014] data.

WHY FINANCIAL LITERACY MATTERS

Particularly in the wake of the financial crisis, it is important to ask whether financial illiteracy translates into costly economic behavior and outright financial mistakes. We argue that there is substantial evidence that more financially savvy people are more likely to plan, save, invest in stocks, and accumulate more wealth (Lusardi and Mitchell [2014]). Such financially savvy people also have been shown to be less likely to have credit card debt, and when they do borrow, they manage loans better, paying off the full amount each month rather than just the minimum due (Lusardi and Tufano [2009], [2015]). They also refinance their mortgages when it makes sense to do so, tend not to borrow against their 401(k) plans, and are less likely to use high-cost borrowing methods (e.g., payday loans, pawn shops, auto title loans, and refund anticipation loans).⁸ Debt behavior, in particular, has severe consequences. For example, Gerardi et al. [2013] show that shortcomings in numerical ability (assessed with questions measuring financial literacy and math knowledge) contributed substantially to widespread defaults on subprime mortgages in the recent financial crisis. Agarwal et al. [2009] focused on financial “mistakes” related to decisions about debt, showing not only that these were consequential in terms of costs but also that they were prevalent among the young and the old, groups with the lowest levels of financial literacy.

It is worth highlighting our conclusion that financial literacy can be particularly important for the young. In the United States, for instance, Millennials are now entering the labor market burdened by much credit card and student loan debt (de Bassa Scheresberg and Lusardi [2014]; de Bassa Scheresberg et al. [2014]). Young people also rely on high-cost methods of borrowing (e.g., payday loans; see de Bassa Scheresberg [2013]). Their lack of clear understanding regarding basic financial concepts is therefore likely to undermine efforts to establish themselves as well functioning adults (Lusardi et al. [2010]).

Financial knowledge can also pay off in terms of saving and investment efficiency. In a recent study we explored a unique dataset from a large financial institution that reported on employees’ financial knowledge as well as administrative information drawn from that firm’s retirement plan (Clark et al. [2014]). Our analysis of financial knowledge and investor performance showed that more-knowledgeable individuals invest in

more-sophisticated assets, generating higher expected returns on retirement saving along with lower nonsystematic risk; similar findings are starting to emerge in more recent studies.⁹

Additionally we have shown that answering just one additional financial question correctly is associated with a 3 to 4 percentage point greater probability of planning for retirement in the United States, Japan, Canada, and Germany. Financial literacy has the strongest impact in the Netherlands, where knowing the right answer to one more financial literacy question is associated with a 10 percentage point higher probability of planning.

Financial literacy is also invaluable during the retirement phase: for instance, in an experimental setup, we have shown that many people do not understand lifetime income streams. In other words they indicate that they would pay very little if given a chance to *buy* \$100 more in lifetime retirement income, but they would also demand far more if asked to *sell* the same \$100 flow for a lump sum. Interestingly, the more financially literate provide more internally consistent answers, indicating that they better understand the financial product and hence can better protect themselves against longevity risk in retirement (Brown et al. [2013]).

Recent work also shows that advisors sometimes influence workers to shift their retirement funds into high-fee investment vehicles, casting doubt on whether the less financially literate should rely on financial advice (Turner et al. [2015]). Other studies show that financial literacy and financial advice are complements rather than substitutes (Collins [2012]).

THE QUESTION OF CAUSALITY

One question often raised has to do with the direction of causality between financial literacy and economic behaviors. That is, we have established that financially literate individuals do plan better, save more, earn more on their investments, and manage their money better in retirement. Yet there remains the possibility of reverse causality: perhaps some people are savvier because they have the money in the first place.

To unravel this causality question, we recently reviewed an extensive body of evidence on financial literacy and economic outcomes around the world. This comprehensive study (Lusardi and Mitchell [2014]) arrived at an unambiguous conclusion: even after correcting for a variety of econometric estimation issues,

financial literacy proves to be even more powerful than can be concluded from simple correlations.

This is important, since more knowledgeable people are also more resilient in the face of economic shocks (including the 2008–2009 financial crisis). Although some authors challenge the importance of financial literacy for financial decision making, arguing that financial literacy has little effect on economic outcomes, our reading of the existing literature leads us to different conclusions. Fernandes et al. [2014] summarized several studies linking financial and educational measures with behavior, and they concluded that financial literacy could explain little of the variance in financial behavior, especially for the low-income population. Hastings et al. [2013] also argue that the effect of financial literacy on economic outcomes is mixed at best.

These were useful exercises, but they suffered from some important drawbacks. For instance, many of the prior studies examined differ enormously in terms of their approach and empirical rigor, type of intervention, and tests conducted, so grouping them together does not provide a coherent picture of financial literacy's impact. By contrast, studies using our financial literacy questions tend to provide consistent and significantly positive results. Additionally, another recent meta-analysis by Miller et al. [2014]) also comes to more positive conclusions than Fernandes et al. [2014]. Another factor to consider is that some of the interventions studied involved interventions far in respondents' distant past (in the 1960s and 1970s), including retirement seminars, sending employees to benefit fairs, or mandating financial literacy in high school. It is not surprising that these had little lasting impact on lifetime financial outcomes, not because financial literacy is ineffective, but because limited and far-ago interventions may not remedy widespread financial illiteracy.¹⁰ In other words, what could be called for are longer and continued treatments, rather than small and infrequent doses.¹¹

A related consideration is that many empirical studies on the topic have not relied on a theoretical model, though this is essential for evaluating how financial literacy should be expected to affect financial behavior (Lusardi et al. [2014]). For example, if consumers have insufficient income to save, boosting financial literacy is unlikely to translate into more savings. In other words, financial literacy may not be ineffective *per se*; rather it might not be able to translate into changes in financial behavior. Likewise, since financial knowledge

is costly to acquire and does not provide the same benefit to all, some individuals will not invest in knowledge and will also let it depreciate. Again, this is not because financial knowledge does not work, but because different behavior is optimal for different people (Lusardi et al. [2013]). This explains, for example, why financial literacy tends to be lower in low-income populations and why one should logically anticipate a weaker effect of financial literacy for this group. This is not evidence of the ineffectiveness of financial literacy.

WHAT WORKS?

Many employers, teachers, and policymakers have jumped on the financial literacy bandwagon in recent years, offering courses, programs, and new degrees. This provides some independent evidence of the importance of financial literacy, suggesting that many individuals and institutions are recognizing its relevance. Such programs offer another way to assess the effects of financial literacy, as reviewed in our prior work (Lusardi and Mitchell [2007], [2014]).

In view of the findings, two initiatives seem particularly well suited for improving financial literacy. These are financial education in school and in the workplace. As discussed earlier, financial literacy is low among high school students, even though these young people will soon need to make important decisions such as whether to go to college and how to finance their education. Similarly, workers are increasingly being asked to make decisions about their retirement savings, such as how much to contribute to their accounts, how to invest their retirement savings, and how to draw down their wealth during retirement. Our work has shown that financial illiteracy can influence all of these decisions.

Evaluating the impact of financial education in school and in the workplace is certainly difficult, but the shift to quasi-experimental or experimental approaches has improved the rigor with which these initiatives are evaluated. The evidence is supportive of the importance of financial education. As a recent example, Walstad et al. [2010] found that financial education in high school is invaluable, a conclusion now confirmed in several European nations.¹² Recent work of Brown et al. [2014]) examines the effectiveness of state-mandated financial education for high school students. The study shows that if a rigorous financial education program is carefully

implemented, it can improve credit scores and lower the probability of credit delinquency for young adults.

In another case, Heinberg et al. [2014] designed and evaluated a program called Five Steps that taught financial planning concepts related to retirement; the program was targeted to young workers. Participants received information about five core concepts underlying financial planning, using a program format amenable to easy, low-cost replication and mass dissemination. Results showed that short (three-minute) videos and narratives had sizable short-run effects on objective measures of respondent knowledge. Follow-up tests of respondents' knowledge approximately eight months after the interventions suggested that between one-quarter and one-third of the knowledge gain persisted. In other words, such a program can have both short- and medium-run positive effects, and it could readily be targeted to, for example, new employees and those entering the labor market.

POLICY IMPLICATIONS

Financial knowledge is critically important for many of today's policy debates. For instance, using an intertemporal model of saving that incorporates many sources of risk, we have demonstrated what can happen when financial knowledge helps people do a better job of allocating their resources over their lifetimes (Lusardi et al. [2013]). That research concluded that more than one-third of U.S. wealth inequality could be accounted for by differences in financial knowledge. Additionally, we showed that consumers would be willing to give up 3% of their lifetime consumption in order to enhance their well-being via financial knowledge.

These findings are relevant to national educational and retirement policy. For instance, personal accounts under Social Security and increased reliance on individually managed retirement accounts would be anticipated to lead to higher financial knowledge. Providing financial education in high school could also enhance well-being, not only among the young, but also over the course of everyone's life.

Viewing financial knowledge as an investment in human capital has potentially far-reaching consequences for education and training policy (Kim et al. [2013]). When people make poor financial decisions, this can get them into deep financial trouble over their lifetimes. In turn, these difficulties can spill over to their families and the rest of the economy.

Curing and preventing financial illiteracy is not costless, but investing in financial literacy is likely to bring high payoffs (Hastings et al. [2011]; Behrman et al. [2012]; and Lusardi et al. [2013]). Moreover, our work demonstrates that financial literacy can benefit not only the economically vulnerable in society, but also the population at large.

Financial products and decisions about these products are likely to become increasingly complex in future years. Accordingly, they will expose people to additional financial risk and ever more sophisticated financial products. Naturally we caution that proper program evaluation requires carefully designed experiments and follow-ups to determine the value of a specific financial literacy intervention. Those who regulate and supervise financial markets would do well to devote close attention to how well young people, employees, and retirees understand the economic world around them. Much remains to be done in this young field of financial literacy.

ENDNOTES

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¹See Lusardi and Mitchell [2011a] and Lusardi et al. [2014].

²See Lusardi and Mitchell [2009, 2011c].

³For brevity, we report evidence for only four countries; results are similar in the other countries covered in our international comparison of financial literacy (Lusardi and Mitchell [2014]).

⁴The authors in that work restricted the sample to respondents age 23 to 35.

⁵See <http://www.oecd.org/pisa/keyfindings/pisa-2012-results-volume-vi.htm>.

⁶The 18 countries were Australia, Belgium (Flemish Community), China (Shanghai), Colombia, Croatia, Czech Republic, Estonia, France, Israel, Italy, Latvia, New Zealand, Poland, Russia, Slovak Republic, Slovenia, Spain, and the United States. In some cases, such as China and Belgium, data were collected only for a subsample of students.

⁷Lusardi chairs the Financial Literacy Expert Group that designed the PISA financial literacy assessment.

⁸See Lusardi and Mitchell [2014] and the references therein.

⁹See Clark et al. [2014] and Lusardi et al. [2013] and the references therein.

¹⁰For example, the mean number of hours of financial education/instruction reported in Fernandes et al. [2014] review was around 10 hours.

¹¹Fernandes et al. [2014] also argued that the effect of measured financial literacy (i.e., financial literacy measured using our Big Three questions) declined in importance after accounting for what they call omitted but correlated variables. Nevertheless, one of the variables they then included, people's propensity to plan, has been shown to be directly affected by financial literacy (Lusardi and Mitchell [2009], [2011c]). For this reason, it is not surprising that including such variables reduces the measured effects of conventional financial literacy variables. It has also been suggested that numeracy is an innate "trait," but research on datasets that control for IQ still shows that financial literacy is economically and qualitatively important (Lusardi et al. [2010]).

¹²See Hospido et al. [2014] and the references therein.

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