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FINANCIAL LITERACY AND HIGH-COST BORROWING IN THE UNITED STATES

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Abstract

In this paper, we examine high-cost methods of borrowing in the United States, such as payday loans, pawn shops, auto title loans, refund anticipation loans, and rent-to-own shops, and offer a portrait of borrowers who use these methods. Considering a representative sample of more than 26,000 respondents, we find that about one in four Americans has used one of these methods in the past five years. Moreover, many young adults engage in high-cost borrowing: 34 percent of young respondents (aged 18–34) and 43 percent of young respondents with a high school degree have used one of these methods. Using well-tested questions to measure financial literacy, we document that most high-cost borrowers display very low levels of financial literacy, i.e., they lack numeracy and do not possess knowledge of basic financial concepts. Most importantly, we find that those who are more financially literate are much less likely to have engaged in high-cost borrowing. Our empirical work shows that it is not only the shocks inflicted by the financial crisis or the structure of the financial system but that the level of financial literacy also plays a role in explaining why so many individuals have made use of high-cost borrowing methods.

I. Introduction

The alternative financial services (AFS) industry has experienced tremendous growth in the United States, particularly in the past twenty years. In 2009, the Federal Deposit Insurance Corporation (FDIC) estimated this industry to be worth at least 320 billion in transactional services (FDIC, 2009). Other studies documented that some segments of this industry, such as Internet-based payday lending, have experienced yearly growth rates above 30 percent (Center for Financial Services Innovation, 2011). While finding aggregate statistics has proven difficult, Stegman (2007) documents the fast growth in both payday outlets and the quantity of loans made in many of the states that allow them. As described in Bertrand and Morse (2011), in 2007 alone, Americans paid an estimated $8 billion in financial charges to borrow $50 billion from payday lenders at annual percentage rates (APR) often well over 400%.[2] Similar findings are reported for other AFS providers. For example, in 2008, rent-to-own businesses and pawnbrokers—which also tend to charge high interest rates—earned $7 billion and $4 billion in revenue, respectively (Rivlin, 2010).

In this paper, we provide further evidence of the breadth of the AFS industry. Using data from the 2009 National Financial Capability Study, we document that borrowing through products such as payday loans, auto title loans, and refund anticipation loans and using pawn shops or rent-to-own stores has become common in the United States: about one in four Americans has used one of these methods in the past five years. While a high proportion of those with low income borrow using these methods, there is also a sizeable fraction of higher-income individuals who make use of AFS. The young are also heavy AFS users; 34 percent of individuals aged 18–34 and 43 percent of young respondent with a high school degree have used one of these methods. We also find that these borrowers display very low levels of financial literacy: the majority lack numeracy and basic knowledge of financial concepts at the basis of financial decision-making. Most important, we show that financial literacy is strongly associated with AFS use, even after controlling for a very rich set of demographic and economic characteristics.

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[2] Given that AFS products normally charge high interest rates, in this paper, we will refer to this industry as AFS or high-cost methods of borrowing interchangeably.

Three major findings emerge from our work. First, as mentioned above, high-cost borrowing cannot be considered a "fringe" behavior that is limited to a specific and small segment of the population; rather, it is firmly rooted in the American financial system and is common even for households who are generally referred to as "middle-class" families. For example, AFS products were used by more than 10 percent of survey respondents with annual household incomes higher than $75,000 (in 2009 dollars), which is about four times the poverty line for a standard household of three.[3] Second, this paper finds that there is an educational divide, in particular among the young, in the use of high-cost methods of borrowing: while only a relatively small percentage (17 percent) of young individuals with a college degree have used high-cost methods of borrowing, a large percentage (45 percent) of young individuals with a high school education or less have relied on high-cost borrowing. Thus, among the young, borrowing using these methods has become very common, particularly among those with lower educational attainment. Third, consistent with other studies that document the effects of financial literacy on debt behavior (Lusardi and Tufano, 2009a,b; Allgood and Walstad, 2012; Mottola, 2012; and Disney and Gathergood, 2012), we find that numeracy and knowledge of basic financial concepts is strongly negatively correlated with high-cost borrowing, even after accounting for age, income, education, and many other variables that can proxy for financial vulnerability and being hit by shocks.

This paper adds to a burgeoning literature on the importance of financial literacy in explaining financial behavior. While many papers have focused on the asset side of household balance sheets, examining, for example, the effects of financial literacy on retirement savings or investment in stocks, this paper shows we also need to look at the liability side of the balance sheet, examining borrowing behavior and debt management. Consistent with findings provided in the papers listed above, skills and knowledge in dealing with debt can play an important role in explaining how individuals manage their balance sheets.

The paper is organized as follows. In section II, we provide a review of previous research. In section III, we present the data from the 2009 National Financial Capability Study. In section IV, we discuss the descriptive statistics and the sample demographics,

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[3] http://aspe.hhs.gov/poverty/12poverty.shtml

and in section V, we present the empirical findings. In section VI, we discuss the robustness of the estimates and in section VII, we summarize our main findings and provide concluding remarks.

II.   Previous research

A burgeoning literature has started to explore whether individuals are well-equipped to make financial decisions. Bernheim (1995, 1998) was among the first to document that many U.S. consumers display low levels of financial literacy. Hilgert, Hogarth, and Beverly (2003) showed that most Americans fail to understand basic financial concepts, particularly those relating to bonds, stocks, and mutual funds. Looking at younger generations, the National Council on Economic Education's 2005 report (Markow and Bagnaschi, 2005) showed a widespread lack of knowledge regarding fundamental economic concepts among high school students, confirming similar findings from the Jump$tart Coalition for Personal Financial Literacy (Mandell, 2008).

Lusardi and Mitchell (2008, 2011a,c) designed a pioneering set of questions to measure basic financial literacy; these questions have now been used not only in many surveys in the United States but also in a variety of countries around the world (Lusardi and Mitchell, 2011b). They show that the capacity to do a simple interest rate calculation and knowledge of inflation and risk diversification are strikingly low among large segments of the population, not only among those with low income and education (Lusardi and Mitchell, 2011a,c) but also among women, the young, and the elderly (Lusardi and Mitchell, 2008; Lusardi, Mitchell, and Curto, 2010, 2012).

Lusardi and Tufano (2009a,b) have looked at "debt literacy," i.e., the knowledge of concepts directly related to debt, such as the power of interest compounding, the workings of credit cards, and the understanding of different methods of payment (paying with a lump sum or in installments). They show that most individuals are ill-informed about the basic concepts related to debt and debt management. As with financial illiteracy, debt illiteracy is particularly severe among certain demographic groups, such as the elderly, the young, women, minorities, and the divorced or separated (Lusardi and Tufano, 2009a,b).

Financial literacy has been linked to several indicators of financial behavior. For example, the less financially literate are found to be less likely to plan for retirement (Lusardi and Mitchell, 2007, 2008, 2009, 2011a,c), to accumulate wealth (Stango and Zinman, 2009; Van Rooij, Lusardi, and Alessie, 2012), and to participate in the stock market (Van Rooij, Lusardi, and Alessie, 2011; Yoong, 2011). Moreover, less literate individuals are found to be less likely to choose mutual funds with lower fees (Hastings and Tejeda-Ashton, 2008).

Financial literacy can be linked not only on individual and household assets but also on borrowing and debt. For example, Moore (2003) reports that respondents with lower levels of financial literacy are more likely to have costly mortgages. Similarly, Campbell (2006) shows that individuals with lower incomes and lower education levels—characteristics that are strongly related to financial literacy—are less likely to refinance their mortgages during a period of falling interest rates. Gerardi, Goette, and Meier (2010) report that those with low literacy are more likely to take up sub-prime mortgages and to default on them. Lusardi and Tufano (2009a,b) find that individuals with lower levels of financial literacy tend to transact in high-cost manners, incurring higher fees and using high-cost methods of borrowing. The less knowledgeable also report that their debt loads are excessive or that they are unable to judge their debt position. Mottola (2012) shows that women with low financial literacy are more likely to engage in costly credit card behavior than men. Allgood and Walstad (2012) also linked financial knowledge to a set of financial behaviors, including debt. The cost of ignorance is found to be high. For example, Lusardi and Tufano (2009a) link data on financial literacy with credit card behaviors that generate fees and interest charges. Specifically, they focus on charges related to late payment of bills, going over a credit limit, using cash advances, and paying only the minimum amount due. They found that while less knowledgeable individuals account for only 28.7 percent of the cardholder population, they account for 42 percent of these charges. Thus, those with low financial literacy bear a disproportionate share of the costs associated with fee-inducing behaviors.

Data about AFS customers also point to financial illiteracy.[4] Elliehausen and Laurence (2001) and Elliehausen (2005) report that most payday borrowers cannot accurately recall annual percentage rates despite being able to report finance charges, suggesting that most borrowers consider charges rather than APRs in making borrowing decisions. Using UK household survey data that include information on high-cost methods of borrowing, Disney and Gathergood (2012) show that consumer credit customers systematically underestimate the cost of borrowing. Moreover, those with lower levels of financial literacy are found to have higher average debt-to-income ratios. McKernan, Lacko, and Hastak (2003) assess the effects of disclosures on AFS borrowing and find that customers living in states with total cost label disclosure laws are less likely to enter into rent-to-own agreements, suggesting that many customers may not fully understand the costs of their borrowing.

While the amount borrowed using, for example, payday loans, is often low (an average of $300), many payday loans are made to individuals with five or more payday loan transactions per year (Center for Responsible Lending, 2004). Agarwal, Skiba, and Tobacman (2009) argue that payday borrowers may not take advantage of other, cheaper opportunities to borrow. They looked at a sample of payday borrowers who also have access to credit cards. As many as two-thirds of individuals in their sample have at least $1,000 in credit card liquidity on the day they take out their first payday loan. This points to a pecuniary mistake: given average charges for payday loans and credit cards and considering a two-week payday loan of $300, the use of credit cards would save these borrowers as much as $52. Since many payday borrowers repeatedly take out loans, the savings that could be achieved borrowing via a credit card would be much higher. According to the estimates reported by Agarwal, Skiba, and Tobacman (2009), over a one-year period, typical credit card account holders would have saved almost $200 by borrowing up to their credit card limits before turning to payday borrowing. Clearly, these are only crude estimates, and there are reasons why individuals may want to keep some liquidity on their credit cards. Nonetheless, the cost of borrowing can quickly become high when people turn to payday loans. While the rationales for this sort of

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[4] A review of the literature on alternative financial services providers is available in Theodos and Compton (2010). See references therein.

borrowing behaviors are many, including the experience of unexpected shocks, Bertrand and Morse (2011) document that at least part of the choice to use payday borrowing is attributable to cognitive biases rather than to well-informed decision-making.

An important issue when dealing with AFS use relates to customers' access to banking services. It is well documented (for example, FDIC, 2009; Stegman, 2007; Barr, 2012) that AFS use is particularly common among the unbanked and the under-banked. Research has tried to establish whether such consumers are actually better off without AFS products. For example, Morgan (2007) finds that in states that allow unlimited payday loans, individuals with uncertain income or low education are less likely to report being turned down for credit, but are not more likely to report higher debt levels or to have missed a debt payment in the previous year. On the other hand, Melzer (2011) finds no evidence that payday loans alleviate economic hardship; rather, he finds that loan access leads to increased difficulty in paying mortgage, rent, and utility bills. Skiba and Tobacman (2010) find that payday-loan approvals for first-time applicants increase bankruptcy filing rates by about 2 percentage points. McKernan, Ratcliffe, and Kuehn (2010) show that price caps and prohibitions are effective in diminishing the use of high-cost borrowing methods and that restrictions on one product do not seem to lead to an increased use of another AFS product. Lastly, Lusardi, Schneider, and Tufano (2011) document a high degree of financial fragility among American families. In 2009, nearly half of Americans were found to be financially fragile, with financial fragility being defined as anticipated difficulty coming up with $2,000 to cover an unexpected expense. Many respondents report they would cope with an unexpected expense by pawning their possessions, selling their home, or taking out a payday loan.

III.   Data

The 2009 U.S. National Financial Capability Study (NFCS) consists of three linked surveys:[5] (1) the National Survey, a nationally projectable telephone survey of 1,488 American adults; (2) the State-by-State Survey, a state-by-state online survey of approximately 28,000 American adults (roughly 500 per state, plus the District of

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[5] The data collection and design of the survey instruments was supported by FINRA Investor Education Foundation.

Columbia); and (3) the Military Survey, an online survey of 800 military service members and spouses[6]. To ensure a sufficient number of respondents for the analysis, African-Americans, Hispanics, Asian-Americans, and adults with less than a high school education were oversampled.[7] A detailed analysis of the National Survey data is provided in Lusardi (2011). In this paper, we use data from the large sample provided by the State-by-State Survey but, at times, we also provide statistics from the National Survey.

The overarching research objectives of the NFCS were to benchmark key indicators of financial capability and evaluate how these indicators vary with underlying demographic, behavioral, attitudinal, and financial literacy characteristics. Consistent with surveys on financial capability that have been done in other countries (Atkinson, McKay, Kempson, and Collard, 2007), the NFCS looks at multiple indicators of both financial knowledge and capability, including how people manage their resources, how they make financial decisions, the skill sets they use in making decisions, and the search and information elaboration that goes into making these decisions.

One of the innovative features of the NFCS is the provision of information on financial behaviors related not just to assets and asset building but also to debt. The survey includes a set of questions related to borrowing behavior and debt management, including a question that asks about use of high-cost borrowing methods. The question is asked as follows:

Please tell me if you've done any of the following in the past five years:

Have you taken out an auto title loan?
Have you taken out a short term "payday" loan?
Have you gotten an advance on your tax refund (This is sometimes called a "refund anticipation loan" or "rapid refund")?
Have you used a pawn shop?
Have you used a rent-to-own store?

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[6] More information about the NFCS can be found at a; http://www.usfinancialcapability.org/. Note also that the military survey is not necessarily representative of the armed forces and does not have weights to make the sample representative of that population.

[7] The sample used in this study was weighted to match the adult US population (age 18 and up) by age by gender, ethnicity, education and census division. For more information, see the report by FINRA Investor Education Foundation (2009).

This mirrors a question asked of respondents in the 2008 TNS survey, although a longer time horizon is considered here (Lusardi and Tufano, 2009a,b). A detailed description of each of these products is provided in Theodos and Compton (2010).

The NFCS also reports information on financial literacy. Respondents were exposed to a battery of questions covering fundamental economics and finance concepts, expressed as they would be in everyday transactions. The survey included three questions measuring financial knowledge that have become the standard in many countries, as described earlier, and which are transcribed below to show how basic the concepts are. A detailed discussion of the empirical evidence on financial literacy in the total sample and across states is provided in Lusardi (2011) and Bumcrot, Lin, and Lusardi (2011).[8]

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?

    A. More than $102
    B. Exactly $102
    C. Less than $102
    D. Do not know
    E. 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?

    A. More than today
    B. Exactly the same
    C. Less than today
    D. Do not know
    E. 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."

    A. True
    B. False

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[8] There are two other financial literacy questions in the survey. However, they are less likely to be related to decisions about high-cost methods of borrowing. Moreover, we cannot compare findings with other studies using these other questions. We did not include them in our empirical work, but we use these additional questions in the section on robustness checks to show that our findings are not dependent on the measure of financial literacy used in the empirical work.

C. Do not know

D. Refuse to answer

As the wording makes clear, these questions measure basic concepts at the basis of financial decision-making.

IV.   Descriptive analysis

The traditional intertemporal model of consumption and saving predicts that individuals will borrow to smooth consumption; if hit by an unexpected shock, individuals may resort to borrowing if they do not have savings or have exhausted their savings (given that the cost of borrowing is usually higher than the interest paid on savings). There are also circumstances—for example when facing binding liquidity constraints—that may rationalize why individuals are willing to borrow at very high interest rates. Not just shocks to resources but also preferences, for example high degrees of impatience, may explain why individuals prefer to shift consumption from the future to the present. These simple models assume that individuals are well-informed about the terms of borrowing and understand and can calculate the costs associated with borrowing. We now turn to the data to assess whether these considerations are borne out empirically.

We start our empirical analysis by providing a set of descriptive statistics on AFS users. To construct our sample, we excluded respondents who did not provide information about each of the five methods of borrowing listed in the questionnaire. Moreover, we excluded those who did not report information on the other characteristics we used in the descriptive tables.[9] Our final sample is composed of 26,364 observations. One of the striking results of the survey is the sizable share of Americans who have engaged in high-cost methods of borrowing in the past five years. As many as 24 percent of respondents used at least one AFS product in the past five years (Table 1). While one

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[9] Roughly 2.5 percent of respondents in the original sample has not responded to one or more of the questions related to AFS use. Therefore our sample is reduced to 27,456 observations. We further exclude from the sample 1,092 observations for which data is missing in one or more of these variables: banked status, home ownership, income drop in the past twelve months, availability of precautionary savings, health insurance coverage, and preference toward financial risk. We compared the two samples and we find evidence that the observations we drop are more likely to represent vulnerable groups (such as low income, female, low education, minorities, lower financial literacy individuals). Thus, our findings are likely to underestimate the impact of financial literacy.

may worry that online surveys may not accurately measure those who rely on these methods, in fact statistics are very similar between the National Survey (conducted via telephone) and the State-by-State Survey (conducted online); both reported that the share of AFS users is around 24% (see Lusardi, 2011, and FINRA Investor Education Foundation, 2009).

Table 1 provides a description of individuals using AFS. The young are heavy users. Among those at the early stage of their working career (aged 25–34), as many as 35 percent have used high-cost methods of borrowing, and the share of AFS users is also high (32 percent) among the very young (aged 18–24). The share of AFS users decreases with age and reduces to 8 percent for those 65 or older.[10] It is worrisome that such a large share of young people are AFS users and that their early experience with credit seems to rely so much on these methods. We look exclusively at the young in the second column of Table 1.

AFS use varies markedly with education. Among those with less than a high school education, a stunning 44 percent have used high-cost methods of borrowing in the past five years. The percentage of users remains high not only among those who have a high school education (30 percent) but even among those who have some college education (25 percent). It is only when looking at college graduates or individuals with advanced degrees that we find a lower proportion of high-cost borrowers. The "education divide" among AFS users becomes particularly noticeable when looking at the young. More than half of young respondents without a high school education (53 percent) have used high-cost methods of borrowing and close to half of those with a high school diploma (43 percent) have used these methods. One-third of the young with some college education also engaged in high-cost borrowing. The proportion of young AFS users drops substantially only when looking at individuals with a college education. In other words, most of the young with low educational attainment make use of alternative financial services.

Another finding worthy of note relates to the fact that it is not just the poor who resort to AFS; while about one-third of those with low income (lower than $25,000) use

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[10] In a single cross-section, we cannot distinguish between age and generation effects, so we speak of these two effects interchangeably.

AFS, one in five respondents with income between $50,000 and $75,000 have relied on these products and one in ten respondents with higher income (higher than $75,000) have used AFS. These patterns are similar among the young. A sizable proportion of young higher-income respondents have relied on high-cost borrowing (potentially because they were not high-income all of the past five years).

High-cost borrowing is more prevalent among respondents who are separated or single and much more frequent among non-Caucasian individuals, even though ethnicity differences are not present among the young; among the young all ethnic groups rely heavily on high-cost borrowing. These findings are consistent with other papers (Bourke, Horowitz and Roche, 2012).

As many authors had argued (FDIC, 2009), the use of high-cost methods of borrowing is common among those who are unbanked (defined here as having neither a checking nor a savings account); half of the unbanked use alternative financial services. In fact, these services may well be what some groups use in place of banks. While a high proportion of the unbanked use high-cost borrowing, even the banked make use of high-cost methods of borrowing; more than 20 percent of the banked have relied on AFS and as many as 32 percent of young respondents who have bank accounts have relied on these services.. Moreover, 55 percent of high cost borrowers have at least one credit card, and 53 percent of the young high cost borrowers have a credit card.

To study high-cost borrowing in more detail, in Table 2, we examine the proportion of use of each form of high-cost borrowing. Pawn shops are used most prevalently, followed by payday loans. These user rates are higher than rates recorded in the National Survey (for which data is collected via telephone). National Survey data show that pawn shop users and payday borrowers accounted for 8 percent and 5 percent of total respondents, respectively (FINRA Foundation, 2009). The telephone survey, however, consists of fewer observations, and we prefer to use the larger State-by-State Survey in our analysis. Because the unbanked and the young are heavy users of AFS, we examine the forms of AFS use among these groups. The unbanked report high pawn shop use as well as use of rent-to-own shops, payday loans, and refund anticipation loans. The young make heavy use of pawn shops and payday loans, in particular if they are unbanked. This result implies that younger generations are becoming accustomed to

borrowing from alternative financial services providers, a worrisome finding if we consider that the young are increasingly burdened by student loans and credit card debt (Sallie Mae, 2012).

Table 3 reports AFS use across methods. As emphasized by Lusardi and Tufano (2009a), most people use more than one AFS product. For example, many of those who have used a pawn shop have also used payday loans and those who have used a rent-to-own shop have also used a pawn shop. Those who use payday loans also use refund anticipations loans, pawn shops, and rent-to-own stores. In other words, people who engage in high-cost borrowing have used more than one AFS product. This again speaks of the pervasiveness of debt among American families and the high costs often associated with it.

Most of the literature points broadly to three main determinants of high-cost borrowing. First, several authors cite the difficulty or impossibility for AFS users to borrow from traditional financing sources, such as banks (for example, Barr, 2009). Second, preferences, such as impatience and desire for immediate gratification can play a role (Laibson, 1997). Third, resources and economic circumstances can be a factor, particularly in the midst of the recent financial crisis, during which many families experienced shocks not just to income but also to wealth (Lusardi, Schneider, and Tufano, 2011). While all of these explanations are potentially important and have merit, we propose an additional explanation: lack of financial literacy. As emphasized in Lusardi (2009, 2011), Lusardi and Mitchell (2007, 2008, 2011a,b,c), and Lusardi and Tufano (2009a,b), many individuals do not seem familiar with even the most basic financial concepts. Thus, a crucial question is whether individuals have full comprehension of the costs associated with the use of alternative financial services and the skills necessary to make savvy choices about debt and debt management. As documented in Lusardi, Mitchell, and Curto (2010) and Lusardi and Mitchell (2011b), financial literacy is particularly low among the young and those with low education and low income, and these are the individuals most likely to rely on high-cost methods of borrowing.

In Table 4, we provide a simple classification of AFS users and a set of proxies measuring preferences—the NFCS survey data provides information on respondent

willingness to take financial risks (using a simple scale from 1 to 10)—and financial fragility—whether the respondent is currently unemployed, whether his/her household has experienced a large and unexpected drop in income, and whether he/she has health insurance. We also consider some proxies for wealth, such as whether the respondent owns a home and whether he/she has set aside emergency, or rainy day, funds that could cover expenses for three months in case of sickness, job loss, economic downturn, or other emergencies.[11] This latter measure can provide a proxy not only for financial resources but also for preferences such as impatience and thriftiness.

We find that most AFS users do not have precautionary savings; only about 18 percent have rainy day funds. AFS users are also less likely to have health insurance and to own a house. Moreover, income shocks are a potential driver of high-cost borrowing: more than half of AFS users have experienced unexpected and large shocks to income. Finally, AFS users are more likely to be unemployed.

As discussed earlier, financial literacy may also be an important factor in explaining high-cost borrowing. In Table 5, we report that a sizable proportion of the population does not know basic financial concepts.[12] Risk is the concept that seems most difficult to grasp, and it is also the concept via which we are best able to distinguish among degrees of financial knowledge (Lusardi and Mitchell, 2011b,c). Note that in the total sample, only 40 percent of respondents are able to correctly answer all of the three financial literacy questions. Most important, financial literacy is very low among AFS users; the proportion of those who answer all three questions correctly is only about a quarter. Figures become alarming among young respondents, who display very low levels of financial literacy in general and particularly among AFS users; only 19 percent of young AFS users were able to correctly answer the financial literacy questions. While there is a very strong correlation between financial literacy and AFS use, it is important to examine whether this relationship continues to hold once we account for other explanations for why individuals rely on AFS, to which we now turn.

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[11] This is the wording used in the survey to measure these types of savings.
[12] A detailed discussion of financial literacy in the population is reported in Lusardi (2011).

V.   Empirical Results

In Table 6A, we examine the relationship between AFS use and financial literacy in a multivariable setting. Specifically, using the rich set of information that is present in the State-by-State Survey, we examine whether the importance of financial literacy continues to hold once we account for other determinants of high-cost borrowing. While our previous tables uncover some important characteristics of AFS users, the key question is what matters most when we consider all of these variables together. Given the high level of AFS use among the young, we analyze high-cost borrowing in the population and among this subgroup (Tables 6A and 6B).

To construct our final sample for the empirical estimation, we exclude respondents older than 65 as they should be in the decumulation phase of the life-cycle and should dissave rather than borrow. The dependent variable in our empirical estimates is a dummy variable which equals one if the respondent engaged in at least one of the five high-cost borrowing behaviors in the past five years. Financial literacy is measured by a dummy variable which equals one if the respondent correctly answered all three financial literacy questions. As we explain later in the text, we use additional measures of financial literacy to assess the robustness of our estimates.[13]

The first column of Table 6A shows the importance of financial literacy, as was already documented in Table 5. Those who are more financially literate, i.e. those who answer all three questions correctly, are 15 percentage points less likely to have engaged in high-cost borrowing. In column 2, we add a set of demographic characteristics that would be considered in a parsimonious intertemporal model of savings (considering debt as negative savings). Because we examine specific methods of borrowing (i.e., high-cost methods), we have to account as much as possible for extenuating circumstances and/or high levels of impatience. Thus, we start by controlling for age, gender, race/ethnicity, marital status, number of children, employment status, and income (column 2). According to Lawrence (1991), these demographics can proxy for rate of time preferences. They can also proxy for economic circumstances (Lusardi, 1999). Moreover, we include a set of dummies for state of residence to control both for different economic

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[13] We perform regressions using a linear probability model, but with our large sample, logistic regressions give very similar results.

conditions across states and the fact that states differ in the regulation of use of alternative financial services (McKernan, Ratcliffe, and Kuehn, 2010).

The multivariable setting confirms some of the findings that we reported earlier. Specifically, high-cost borrowing varies strongly with age, and age continues to be statistically significant even after accounting for many demographic characteristics. Moreover, both income and measures of financial vulnerability, such as having children and being unemployed, separated, or widowed, matter in explaining high-cost borrowing. However, even after accounting for this set of characteristics, financial literacy continues to be important; those who are more financially literate are about 8 percentage points less likely to engage in high-cost borrowing.

In the third column, we add a set of dummies for educational attainment, which could itself proxy for skills and financial knowledge. As mentioned earlier, education is a strong determinant of AFS use. In the regressions as well we observe a strong and monotonic relationship with education; those with high educational attainment are much less likely to use high-cost methods of borrowing. Because we already account for income, education is likely to proxy for something other than economic circumstances, and it is noteworthy that it matters so much in explaining AFS use. Note, however, that financial literacy continues to have predictive power above and beyond the effect of education. Thus, not just general knowledge but specific knowledge of math and finance play a role in affecting high-cost borrowing, as is reported in many other papers studying the effect of financial literacy on saving behavior and portfolio choice (Van Rooij, Lusardi, and Alessie 2011, 2012; Lusardi and Mitchell, 2011a,b; and Behrman, Mitchell, Soo, and Bravo, 2010).

In the fourth column, we add variables controlling for a rich set of preferences, for example preferences toward risk, economic shocks, and measures of financial fragility, such as having rainy day savings, having health insurance, and owning a home. All of these variables are predictors of high-cost borrowing. For example, those who are willing to take risks and those who do not have health insurance are more likely to be AFS users. Moreover, those who have experienced a sharp drop in income, who do not have rainy-day savings, and who do not own a home are also more likely to use AFS. Note, however, that even after we control for this additional set of variables, financial literacy

continues to be statistically significant and important. Specifically, those who are financially literate are 5 percentage points less likely to engage in high-cost borrowing. The quantitative importance of financial literacy is high: given that, on average, 25.5 percent of the respondents have used high-cost borrowing, a 5-percentage point drop represents a relative decrease of 20 percent. In other words, it is not just shocks and economic resources that matter but also the ability to manage those shocks and resources.

In the last column, we add a dummy for being unbanked. Many authors have argued that this is the most important determinant of AFS and could be beyond the control of respondents (particularly those who live in rural areas or areas with sparse bank penetration). While we believe this variable to be endogenous, we add it to the regression simply to study its effect on the financial literacy estimates. While bank status is a very important determinant of high-cost borrowing, it does not take away the importance of financial literacy; even accounting for whether the respondent has a checking or savings account, those who are financially literate are still less likely to rely on high-cost methods of borrowing.

These estimates show that it is not just the financial structure and the choice architecture that influence the way in which people borrow; financial knowledge is also important. Moreover, while banking status is important, it is not the most important predictor of AFS use. Education is the variable that matters most for explaining use of high-cost methods of borrowing in a multivariable setting. For example, the coefficient estimates of education (having some college degree or higher education) on AFS use are higher than the coefficient estimates of being banked and the coefficient estimates of having a home or precautionary savings. Again, it is the ability to manage resources in addition to resources per se that is important in explaining the behavior of those who use AFS. These results are consistent with the estimates provided by Lusardi (2010) using the National Survey data. Thus, irrespective of the data collection methods, financial literacy is found to be an important predictor of AFS use.

Table 6B reports these regressions on the sample of the young only (aged 18–34). As mentioned earlier, the young are heavy AFS users. Moreover, they have very low levels of financial literacy. Our main findings are confirmed even when looking at this subgroup of the population. For the young as well, economic resources and indicators of

vulnerability, such as being separated, having children, being unemployed, having a low level of income, having experienced income shocks, and being a homeowner play an important role in explaining AFS use. Risk preference also matters, as does banking status. However, both education and financial literacy play a very important part in explaining AFS use among the young. For example, those who have a college degree are 17 percentage points less likely to engage in high-cost borrowing. Therefore, the multivariate analysis continues to confirm the educational divide among the young in explaining borrowing behavior. The economic importance of financial literacy is also high; considering the last column of Table 6B in which we include the richest set of controls, we find that young respondents who are financially literate are 7 percentage points less likely to rely on high-cost borrowing. Consider that, on average 33.7 percent of young respondents have used high-cost borrowing, a 7-percentage point drop represents a relative decrease of 20 percent. Again, it is not just preferences, financial resources, and financial inclusion but also skills and financial knowledge that play a role in explaining high-cost borrowing.

These findings are consistent with several other papers. For example, they are consistent the evidence provided in Agarwal, Driscoll, Gabaix, and Laibson (2009) that financial mistakes are prevalent among the young. They are also consistent with Elliehausen, Lundquist, and Staten (2007) that credit counseling may improve the behavior of borrowers. Finally, they are consistent with the paper by Mottola (2012) and Allgood and Walstad (2012), who use the same data but different measures of financial literacy and of borrowing behavior.

VI.   Extensions and Robustness Checks

In this section, we report a variety of extensions and robustness checks. For example, we examine which type of financial knowledge matters most for explaining high-cost borrowing. Moreover, we consider expanded measures of financial knowledge that include additional information available in the data set as well as simple measures of math knowledge. Finally, we further extend the set of controls used in our empirical work.

Given that the extended set of controls did not change our main findings, in our robustness checks we use the parsimonious specification that was reported in column 2 of Tables 6A and 6B. In the first column of Table 7A, we use a dummy for correctly answering each financial literacy question included in our financial literacy measure. The frequencies for each correct answer are reported in Table 5. We find that each type of knowledge matters: numeracy, knowledge of the effects of inflation, and understanding of risk diversification all have an effect on AFS use. As expected, knowledge of inflation and understanding of risk are more important quantitatively as they tend to capture sophisticated knowledge. These findings are consistent with other studies that make use of these variables (see the overview in Lusardi and Mitchell, 2011a,b).

There are two other questions measuring financial knowledge in the NFCS. One question measures knowledge of the inverse relationship between bond prices and interest rates. This question is particularly suitable to capturing very sophisticated financial knowledge, which may be less applicable to AFS users, who tend to be young and financially unsophisticated. The other question measures knowledge of the workings of mortgages.[14] We construct an additional indicator of financial literacy, this time using five rather than three questions measuring financial literacy and constructing a dummy variable for those who correctly answer all five questions. In the sample, only 16 percent are able to correctly answer all of the financial literacy questions. As reported in column 2 of Table 7A, financial literacy measured in this alternative way is still statistically significant and important; those who can answer all five questions are more than 7 percentage points less likely to use alternative financial services. In the final column of Table 7A, we use a simple measure of financial literacy, i.e., self-assessed knowledge of math. The survey asked respondents to report, on a scale from 1 to 7, whether they are "pretty good at math." Math knowledge can be important because the capacity to do calculations and to assess the high rates normally charged by AFS providers can play a role in explaining borrowing behavior. The average self-assessed score in the total

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[14] The precise wording of the questions is as follows:

If interest rates rise, what will typically happen to bond prices? They will rise; they will fall, they will stay the same; there is no relationship between bond prices and interest rates; do not know; refuse to answer.

Please tell me whether this statement is true or false. A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less. True; false; do not know; refuse to answer.

sample is 5.6. As reported in Table 7A, math knowledge does matter and this alternative measure of financial knowledge also matters in explaining AFS use.

In Table 7B, we redo the analysis using these different measures of financial literacy for the young. Results are very similar to the total sample. We note that simple numeracy (the capacity to do a 2 percent calculation) does not matter among the young, but math knowledge continues to matter. Only a very small share—9 percent—of young respondents were able to correctly answer five financial literacy questions, but those who could are much less likely to engage in high-cost borrowing.

An additional concern for the robustness of the estimates is that there could be other factors determining the level of financial literacy and the extent to which an individual uses high-cost borrowing. For example, one argument is that financial illiteracy is more common among individuals with worse credit risk profiles. If these individuals are not able to borrow via, for example, banks or credit cards, they may turn disproportionately to AFS. While we have several controls that can proxy for credit risk profiles, we do not have information about the full set of financial transactions that people have made and that could have affected their AFS use, for example reaching the limit on a credit card.[15] The NFCS provides information on credit scores, which is often the best summary of an individuals' financial standing. Given that the dependent variable refers to the past five years while most of the control variables refer to the survey year (2009), it is also important to add a variable that includes information about the past. Information about credit scores is organized and collected as follows: those having scores of 620 or lower, 630–710, and 720 or higher. Unfortunately, missing data for this item is very high (about 60 percent). In Table 8A, we control for credit score data using a dummy for the reported score and for those who reported missing values (column 2) and restricting the sample to those who report the credit score only (column 3). We find that credit scores matters for AFS; those who have a low score are more likely to engage in high-cost borrowing. This result holds true in the total sample (Table 8A) and among the young (Table 8B).

Other concerns relate to the fact that financial literacy could be measured with error (Alessie, Van Rooij, and Lusardi, 2012; Van Rooij, Alessie, and Lusardi, 2011,

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[15] See also Bhutta, Skiba and Tobacman (2012).

2012; Lusardi and Mitchell, 2009). In the presence of classical measurement error, estimates tend to be biased toward zero. It is not clear that the way in which financial literacy is measured reflects a classical measurement error case. However, when studies try to account for the measurement error problem in financial knowledge by using Instrumental Variable estimation, they always report IV estimates of the effects of financial literacy that are larger than the OLS estimates (Lusardi and Mitchell, 2009; Alessie, Van Rooij, and Lusardi, 2012; Van Rooij, Alessie, and Lusardi, 2011, 2012). We plan to address this issue in future work.

VII.   Discussion and Conclusion

In this paper, we examine high-cost methods of borrowing in the United States, and offer a portrait of borrowers who tend to use these methods. We find that, on average, individuals using alternative financial services have low income levels, are non-Caucasian, are divorced or separated, and have children. Financial vulnerability and banking status are also correlated with AFS use: those relying on high-cost borrowing methods are disproportionately more likely to have been hit by shocks, to be unemployed, to have exhausted (or to not have) precautionary savings, and to be unbanked. While some of these findings may be expected, we highlight three important and worrisome results. First, high-cost borrowing is pervasive among American households; about one in four Americans has used these methods. Moreover, some demographic groups make heavy use of AFS; as many as one-third of the young (aged 18–34) have used high-cost borrowing methods in the five years prior to the survey. Thus, the young start their working life not only carrying debt but often paying a high cost for it. Second, education plays a critical role in explaining AFS use. Both in the full survey population and specifically among the young, a very high proportion of individuals without a college degree have used high-cost borrowing. In the empirical regressions and even after controlling for a rich set of demographic characteristics and economic circumstances, education is the variable that matters the most in explaining high-cost borrowing; it is more important than having been hit by shocks or being unbanked. Third, having not just general knowledge, as proxied by education, but having

specific types of knowledge, such as financial literacy, explains high-cost borrowing behavior. One finding we highlight in the paper is that financial literacy is strikingly low among AFS users; the large majority lack knowledge of basic financial concepts at the basis of financial decision making. As documented in other papers (Lusardi, 2011; Lusardi, Mitchell, and Curto, 2010; Lusardi and Mitchell, 2011b), financial literacy is particularly low among the young and among those with low educational attainment, and both groups have been found to be heavy AFS users. In the empirical work, we find that low levels of financial literacy have strong links to AFS use. The quantitative importance of financial literacy is high; according to our estimates, financial literacy accounts for 20 percent of the reduction in the use of high-cost borrowing. While in our empirical work we use well-tested measures of financial literacy, our estimates are robust to different measures of financial literacy.

Our findings show that it is not only the shocks inflicted by the financial crisis, the structure of the financial system, and the availability and cost of using banks that matter but that the level of financial literacy also plays a role in explaining why so many individuals have made use of high-cost borrowing methods. Thus, not just shocks to resources but the capacity to manage those resources is important in explaining AFS use. If we consider the role of specific knowledge (financial knowledge) as well as of general knowledge (education), we find that these two variables can explain the lion's share of uses of high-cost methods of borrowing. This finding has implications for both research and policy. Beyond regulation, one way in which policy may affect AFS use is through promoting financial literacy and financial education. This could be particularly important among the young, who are shown to be making heavy use of alternative financial services. Our paper shows that such education-related policies may affect not just wages but also net worth and, in particular, the costs incurred in managing debt.

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Table 1. Percentage of AFS users in different demographic groups, total vs. ages 18 to 34

	% of AFS Users	
	Total sample	Aged 18 to 34
Population	23.9%	33.7%
Age		
18-24	32.3%	32.3%
25-34	34.7%	34.7%
35-44	29.9%	-
45-54	23.2%	-
55-64	15.4%	-
65+	8.2%	-
Education attainment		
Less than high-school	43.8%	53.4%
High-school	29.7%	43.1%
Some college	24.8%	34.1%
College	15.8%	19.3%
Post-graduate education	9.7%	11.8%
Household income		
< 25k	33.7%	38.6%
25k-35k	30.3%	41.7%
35-50k	27.1%	37.6%
50k-75k	19.9%	29.0%
>75k	11.3%	17.2%
Marital status		
Single	29.4%	31.9%
Married	20.2%	34.5%
Separated	43.2%	55.6%
Divorced	27.1%	45.7%
Widowed	17.8%	58.1%
Gender		
Female	24.4%	36.2%
Male	23.4%	31.2%
Ethnicity		
Caucasian	20.4%	32.9%
Non-Caucasian	31.9%	34.5%
Financial inclusion		
Banked	22.6%	31.9%
Unbanked	50.3%	52.5%
N	26,364	7,475

Note: All statistics are weighted.

Table 2. AFS use by banked status

	Full sample			*Aged 18-34*		
	Total	**Unbanked**	**Banked**	**Total**	**Unbanked**	**Banked**
Auto title loan	6.3%	6.8%	6.3%	8.0%	7.2%	8.1%
Payday loan	9.3%	14.9%	9.0%	11.7%	13.8%	11.5%
Refund anticipation loan	5.7%	15.0%	5.2%	9.1%	15.4%	8.5%
Pawn shop	11.8%	37.4%	10.5%	19.5%	41.3%	17.4%
Rent-to-own store	6.3%	15.2%	5.8%	9.5%	15.6%	8.9%
One of these methods	**23.9%**	**50.3%**	**22.6%**	**33.7%**	**52.5%**	**31.9%**
N	**26,364**	**1,281**	**25,083**	**7,475**	**641**	**6,834**

Note: All statistics are weighted

Table 3. AFS use across products

	Auto Title Loan	**Payday Loan**	**Refund anticipation loan**	**Pawn shop**	**Rent-to-own store**
Auto title loan	100.0%	32.5%	21.2%	32.9%	23.1%
Payday loan	22.1%	100.0%	25.4%	43.7%	30.3%
Refund anticipation loan	23.5%	41.3%	100.0%	46.2%	34.7%
Pawn shop	17.5%	34.2%	22.3%	100.0%	26.5%
Rent-to-own store	23.1%	44.5%	31.3%	49.7%	100.0%

Note: Percentages are calculated with respect to the product listed in rows.
N= 26,364

Table 4. Preferences and financial fragility

	Full sample			Aged 18-34		
	Total	non-AFS users	AFS users	Total	non-AFS users	AFS users
Preferences						
Preference toward fin. risk	4.33	4.34	4.31	4.77	4.78	4.74
Std. dev.	[2.62]	[2.57]	[2.77]	[2.64]	[2.58]	[2.77]
Financial fragility						
Unemployed	9.4%	7.8%	14.5%	13.0%	11.1%	16.8%
Income shock	39.6%	35%	54.4%	40.9%	32.6%	57.1%
Precautionary savings	36.5%	42.4%	17.8%	28.3%	32.7%	19.6%
Home ownership	59.7%	66.3%	38.5%	32.2%	35.7%	25.3%
No health insurance	19.5%	15.8%	31.1%	29.6%	25.6%	37.5%
N	26,364	20,060	6,304	7,475	4,957	2,518

Note: All statistics are weighted

Table 5. Financial literacy

	Full sample			Aged 18-34		
	Total	non-AFS users	AFS users	Total	non-AFS users	AFS users
Interest question correct	79.3%	81.1%	73.5%	77.0%	79.2%	72.5%
Inflation question correct	66.3%	70.0%	54.5%	50.1%	54.9%	40.5%
Risk question correct	55.2%	58.9%	43.1%	45.8%	49.9%	37.8%
All three q. correct	**40.7%**	**45.2%**	**26.4%**	**29.0%**	**33.9%**	**19.3%**
N	26,364	20,060	6,304	7,475	4,957	2,518

Note: All statistics are weighted

Table 6A. AFS use and financial literacy

	(1)	(2)	(3)	(4)	(5)
Financial literacy					
All three questions correct	-0.151***	-0.077***	-0.058***	-0.053***	-0.053***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Socio-demographic controls					
Age 25-34		0.024**	0.039***	0.045***	0.045***
		(0.010)	(0.010)	(0.010)	(0.010)
Age 35-44		-0.006	0.003	0.022**	0.022**
		(0.011)	(0.011)	(0.010)	(0.010)
Age 45-54		-0.046***	-0.040***	-0.010	-0.009
		(0.011)	(0.011)	(0.011)	(0.011)
Age 55-64		-0.089***	-0.081***	-0.035***	-0.035***
		(0.012)	(0.012)	(0.012)	(0.012)
Female		-0.016***	-0.015**	-0.010*	-0.010*
		(0.006)	(0.006)	(0.006)	(0.006)
Non-White		0.053***	0.057***	0.042***	0.042***
		(0.007)	(0.007)	(0.006)	(0.006)
Single		0.010	0.016**	-0.001	-0.003
		(0.008)	(0.008)	(0.008)	(0.008)
Separated		0.063***	0.068***	0.041***	0.038***
		(0.009)	(0.009)	(0.009)	(0.009)
Widow		0.075***	0.079***	0.068***	0.068***
		(0.021)	(0.021)	(0.020)	(0.020)
One kid		0.097***	0.092***	0.085***	0.083***
		(0.008)	(0.008)	(0.008)	(0.008)
Two kids		0.103***	0.099***	0.089***	0.087***
		(0.009)	(0.009)	(0.009)	(0.009)
Self-employed		0.004	0.003	-0.009	-0.010
		(0.010)	(0.010)	(0.010)	(0.010)
Unemployed		0.065***	0.056***	0.019**	0.012
		(0.009)	(0.009)	(0.009)	(0.010)
Retired		-0.027**	-0.030**	-0.009	-0.010
		(0.012)	(0.012)	(0.012)	(0.012)
Income USD 15-25k		0.093***	0.100***	0.098***	0.107***
		(0.011)	(0.011)	(0.011)	(0.011)
Income USD 25-35k		0.031***	0.044***	0.064***	0.074***
		(0.011)	(0.011)	(0.011)	(0.011)
Income USD 35-50k		-0.000	0.018*	0.053***	0.064***
		(0.011)	(0.011)	(0.011)	(0.011)
Income USD 50-75k		-0.075***	-0.050***	0.009	0.020*
		(0.011)	(0.011)	(0.011)	(0.011)
Income USD 75-100k		-0.130***	-0.094***	-0.020	-0.010
		(0.012)	(0.012)	(0.013)	(0.013)
Income USD 100-150k		-0.154***	-0.107***	-0.016	-0.007
		(0.013)	(0.013)	(0.014)	(0.014)
Income more USD 150k		-0.190***	-0.130***	-0.024	-0.015
		(0.015)	(0.016)	(0.016)	(0.016)
High school			-0.097***	-0.090***	-0.076***
			(0.016)	(0.016)	(0.016)
Some college			-0.132***	-0.129***	-0.111***
			(0.016)	(0.016)	(0.016)
College			-0.196***	-0.180***	-0.162***

	(0.017)	(0.017)	(0.017)
Post graduate	-0.210***	-0.194***	-0.177***
	(0.019)	(0.019)	(0.019)

Preferences

Preference toward fin. risk		0.007***	0.008***
		(0.001)	(0.001)

Financial fragility

Income shock		0.092***	0.092***
		(0.006)	(0.006)
Precautionary savings		-0.077***	-0.075***
		(0.006)	(0.006)
Home ownership		-0.125***	-0.122***
		(0.007)	(0.007)
No health insurance		0.016**	0.011
		(0.007)	(0.007)

Financial inclusion

Banked					-0.102***
					(0.013)
Constant	0.326***	0.344***	0.440***	0.410***	0.481***
	(0.004)	(0.026)	(0.030)	(0.030)	(0.031)
State dummies	No	Yes	Yes	Yes	Yes
Observations	22,464	22,464	22,464	22,464	22,464
R-squared	0.028	0.124	0.132	0.165	0.167

Note: Weighted OLS regressions. Sample restricted to respondents aged 18-64. Coefficients for state dummies and coefficients for 3 kids and 4 or more kids are not reported in the table. Baseline categories dropped in the regression: age 18-24, income lower than 15,000 dollars, less than high school education, respondent is married, no financially dependent children, and state of Alabama. Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6B. Young adults:
AFS use and financial literacy (sample restricted to ages 18-34)

	(1)	(2)	(3)	(4)	(5)
Financial literacy					
All three questions correct	-0.159***	-0.102***	-0.071***	-0.069***	-0.068***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Socio-demographic controls					
Age 25-34		-0.003	0.022*	0.025**	0.026**
		(0.012)	(0.013)	(0.012)	(0.012)
Female		-0.015	-0.008	-0.004	-0.006
		(0.011)	(0.011)	(0.011)	(0.011)
Non-White		0.006	0.012	-0.002	-0.003
		(0.012)	(0.012)	(0.011)	(0.011)
Single		0.040***	0.033**	0.020	0.016
		(0.014)	(0.014)	(0.014)	(0.014)
Separated		0.079***	0.072***	0.046*	0.035
		(0.025)	(0.025)	(0.024)	(0.024)
Widow		0.041	0.041	0.116	0.124
		(0.130)	(0.129)	(0.126)	(0.126)
One kid		0.158***	0.140***	0.129***	0.126***
		(0.015)	(0.015)	(0.015)	(0.015)
Two kids		0.182***	0.155***	0.137***	0.133***
		(0.017)	(0.017)	(0.017)	(0.017)
Self-employed		0.030	0.021	-0.005	-0.005
		(0.022)	(0.022)	(0.022)	(0.022)
Unemployed		0.092***	0.072***	0.023	0.014
		(0.016)	(0.016)	(0.016)	(0.016)
Income USD 15-25k		0.162***	0.166***	0.158***	0.164***
		(0.018)	(0.017)	(0.017)	(0.017)
Income USD 25-35k		0.066***	0.075***	0.091***	0.099***
		(0.018)	(0.018)	(0.018)	(0.018)
Income USD 35-50k		0.044**	0.062***	0.083***	0.092***
		(0.018)	(0.018)	(0.018)	(0.018)
Income USD 50-75k		-0.030	-0.005	0.033*	0.041**
		(0.019)	(0.019)	(0.019)	(0.019)
Income USD 75-100k		-0.087***	-0.047**	0.003	0.009
		(0.022)	(0.022)	(0.022)	(0.022)
Income USD 100-150k		-0.137***	-0.082***	-0.016	-0.010
		(0.025)	(0.026)	(0.026)	(0.026)
Income more USD 150k		-0.104***	-0.039	0.037	0.040
		(0.034)	(0.034)	(0.034)	(0.034)
High school			-0.056**	-0.047*	-0.031
			(0.026)	(0.025)	(0.025)
Some college			-0.111***	-0.108***	-0.086***
			(0.026)	(0.025)	(0.025)
College			-0.206***	-0.190***	-0.168***
			(0.029)	(0.028)	(0.028)
Post graduate			-0.248***	-0.234***	-0.211***
			(0.034)	(0.033)	(0.033)
Preferences					
Preference toward fin. risk				0.013***	0.013***
				(0.002)	(0.002)
Financial fragility					

Income shock				0.155***	0.155***
				(0.011)	(0.011)
Precautionary savings				-0.048***	-0.045***
				(0.012)	(0.012)
Home ownership				-0.087***	-0.085***
				(0.013)	(0.013)
No health insurance				0.008	0.003
				(0.012)	(0.012)
Financial inclusion					
Banked					-0.100***
					(0.019)
Constant	0.383***	0.306***	0.384***	0.294***	0.358***
	(0.006)	(0.047)	(0.051)	(0.052)	(0.053)
State dummies	No	Yes	Yes	Yes	Yes
Observations	7,475	7,475	7,475	7,475	7,475
R-squared	0.023	0.121	0.134	0.171	0.174

Note: Weighted OLS regressions. Sample restricted to respondents aged 18-34. Coefficients for state dummies and coefficients for 3 kids and 4 or more kids are not reported in the table. Baseline categories dropped in the regression: age 18-24, income lower than 15,000 dollars, less than high school education, respondent is married, no financially dependent children, and state of Alabama. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 7A. Sensitivity analysis with different measures of financial literacy

	(1)	(2)	(3)
Financial literacy measures			
Interest question correct	-0.019***		
	(0.007)		
Inflation question correct	-0.046***		
	(0.007)		
Risk question correct	-0.045***		
	(0.006)		
Five questions correct		-0.076***	
		(0.008)	
Self-assessed math knowledge			-0.009***
			(0.002)
Socio-demographic controls			
Age 25-34	0.024**	0.023**	0.021**
	(0.010)	(0.010)	(0.010)
Age 35-44	-0.003	-0.009	-0.012
	(0.011)	(0.011)	(0.011)
Age 45-54	-0.043***	-0.050***	-0.054***
	(0.011)	(0.011)	(0.011)
Age 55-64	-0.085***	-0.094***	-0.100***
	(0.012)	(0.012)	(0.012)
Female	-0.017***	-0.009	-0.004
	(0.006)	(0.006)	(0.006)
Non-White	0.053***	0.055***	0.058***
	(0.007)	(0.007)	(0.007)
Single	0.010	0.010	0.010
	(0.008)	(0.008)	(0.008)
Separated	0.064***	0.064***	0.064***
	(0.009)	(0.009)	(0.009)
Widow	0.076***	0.071***	0.074***
	(0.021)	(0.021)	(0.021)
One kid	0.095***	0.099***	0.100***
	(0.008)	(0.008)	(0.008)
Two kids	0.102***	0.107***	0.108***
	(0.009)	(0.009)	(0.009)
Self-employed	0.005	0.004	0.002
	(0.010)	(0.010)	(0.010)
Unemployed	0.065***	0.066***	0.068***
	(0.009)	(0.009)	(0.009)
Retired	-0.028**	-0.028**	-0.030**
	(0.012)	(0.012)	(0.012)
Income USD 15-25k	0.095***	0.091***	0.092***
	(0.011)	(0.011)	(0.011)
Income USD 25-35k	0.035***	0.029***	0.032***
	(0.011)	(0.011)	(0.011)
Income USD 35-50k	0.004	-0.004	-0.007
	(0.011)	(0.011)	(0.011)
Income USD 50-75k	-0.072***	-0.082***	-0.085***
	(0.011)	(0.011)	(0.011)
Income USD 75-100k	-0.127***	-0.140***	-0.146***
	(0.012)	(0.012)	(0.012)

Income USD 100-150k	-0.151***	-0.165***	-0.174***
	(0.013)	(0.013)	(0.013)
Income more USD 150k	-0.188***	-0.200***	-0.213***
	(0.015)	(0.015)	(0.015)
Constant	0.379***	0.328***	0.365***
	(0.027)	(0.026)	(0.028)
State dummies	Yes	Yes	Yes
Observations	22,464	22,464	22,297
R-squared	0.124	0.121	0.119

Note: Weighted OLS regressions. Sample restricted to respondents aged 18-64. Coefficients for state dummies and coefficients for 3 kids and 4 or more kids are not reported in the table. Baseline categories dropped in the regression: age 18-24, income lower than 15,000 dollars, respondent is married, no financially dependent children, and state of Alabama. Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 7B. Sensitivity analysis with different measures of financial literacy
(Sample restricted to ages 18-34)

	(1)	(2)	(3)
Financial literacy measures			
Interest question correct	-0.011		
	(0.013)		
Inflation question correct	-0.075***		
	(0.012)		
Risk question correct	-0.040***		
	(0.011)		
Five questions correct		-0.109***	
		(0.019)	
Self-assessed math knowledge			-0.010***
			(0.003)
Socio-demographic controls			
Age 25-34	-0.004	-0.006	-0.011
	(0.012)	(0.012)	(0.012)
Female	-0.019*	-0.005	-0.000
	(0.011)	(0.011)	(0.011)
Non-White	0.007	0.010	0.016
	(0.012)	(0.012)	(0.012)
Single	0.040***	0.041***	0.047***
	(0.014)	(0.014)	(0.014)
Separated	0.080***	0.084***	0.088***
	(0.025)	(0.025)	(0.025)
Widow	0.056	0.045	0.021
	(0.130)	(0.130)	(0.130)
One kid	0.154***	0.162***	0.167***
	(0.015)	(0.015)	(0.015)
Two kids	0.181***	0.189***	0.197***
	(0.017)	(0.017)	(0.017)
Self-employed	0.032	0.033	0.033
	(0.022)	(0.022)	(0.022)
Unemployed	0.089***	0.097***	0.098***
	(0.016)	(0.016)	(0.016)
Income USD 15-25k	0.164***	0.162***	0.161***
	(0.018)	(0.018)	(0.018)
Income USD 25-35k	0.067***	0.068***	0.068***
	(0.018)	(0.018)	(0.018)
Income USD 35-50k	0.046**	0.042**	0.039**
	(0.018)	(0.018)	(0.018)
Income USD 50-75k	-0.028	-0.034*	-0.037**
	(0.019)	(0.019)	(0.019)
Income USD 75-100k	-0.085***	-0.095***	-0.100***
	(0.022)	(0.022)	(0.022)
Income USD 100-150k	-0.136***	-0.144***	-0.151***
	(0.025)	(0.025)	(0.026)
Income more USD 150k	-0.105***	-0.113***	-0.120***
	(0.034)	(0.034)	(0.034)
Constant	0.339***	0.278***	0.306***
	(0.048)	(0.046)	(0.050)

State dummies	Yes	Yes	Yes
Observations	7,475	7,475	7,426
R-squared	0.122	0.116	0.115

Note: Weighted OLS regressions. Sample restricted to respondents aged 18-34. Coefficients for state dummies and coefficients for 3 kids and 4 or more kids are not reported in the table. Baseline categories dropped in the regression: age 18-24, income lower than 15,000 dollars, respondent is married, no financially dependent children, and state of Alabama. Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 8A. Sensitivity analysis: Controlling for credit score

	(1)	(2)	(3)
Financial literacy measures			
All three questions correct	-0.077***	-0.066***	-0.050***
	(0.006)	(0.006)	(0.009)
Socio-demographic controls			
Age 25-34	0.024**	0.023**	-0.012
	(0.010)	(0.010)	(0.015)
Age 35-44	-0.006	-0.007	-0.031**
	(0.011)	(0.010)	(0.015)
Age 45-54	-0.046***	-0.045***	-0.061***
	(0.011)	(0.011)	(0.016)
Age 55-64	-0.089***	-0.082***	-0.088***
	(0.012)	(0.012)	(0.017)
Female	-0.016***	-0.018***	-0.029***
	(0.006)	(0.006)	(0.008)
Non-White	0.053***	0.037***	0.025***
	(0.007)	(0.006)	(0.009)
Single	0.010	0.009	0.006
	(0.008)	(0.008)	(0.011)
Separated	0.063***	0.054***	0.014
	(0.009)	(0.009)	(0.013)
Widow	0.075***	0.075***	0.034
	(0.021)	(0.020)	(0.029)
One kid	0.097***	0.086***	0.061***
	(0.008)	(0.008)	(0.011)
Two kids	0.103***	0.091***	0.052***
	(0.009)	(0.009)	(0.012)
Self-employed	0.004	0.003	-0.006
	(0.010)	(0.010)	(0.014)
Unemployed	0.065***	0.060***	0.031**
	(0.009)	(0.009)	(0.015)
Retired	-0.027**	-0.019	-0.025
	(0.012)	(0.012)	(0.017)
Income USD 15-25k	0.093***	0.087***	0.105***
	(0.011)	(0.011)	(0.018)
Income USD 25-35k	0.031***	0.027**	0.056***
	(0.011)	(0.011)	(0.018)
Income USD 35-50k	-0.000	-0.002	0.038**
	(0.011)	(0.011)	(0.018)
Income USD 50-75k	-0.075***	-0.063***	-0.026
	(0.011)	(0.011)	(0.018)
Income USD 75-100k	-0.130***	-0.104***	-0.054***
	(0.012)	(0.012)	(0.019)
Income USD 100-150k	-0.154***	-0.119***	-0.042**
	(0.013)	(0.013)	(0.020)
Income more USD 150k	-0.190***	-0.143***	-0.074***
	(0.015)	(0.015)	(0.022)
Credit score			
Credit score 630-710		0.083***	0.102***
		(0.011)	(0.010)
Credit score 620 or lower		0.308***	0.348***
		(0.011)	(0.011)

Credit score missing		0.109***	
		(0.008)	
Constant	0.344***	0.225***	0.161***
	(0.026)	(0.027)	(0.038)
State dummies	Yes	Yes	Yes
Observations	22,464	22,464	9,182
R-squared	0.124	0.153	0.223

Note: Weighted OLS regressions. Sample restricted to respondents aged 18-64. Coefficients for state dummies, coefficients for 3 kids and 4 or more kids, and coefficients for "do not know" or "prefer not to say" answers to the credit score question are not reported in the table. Baseline categories dropped in the regression: aged 18-24, income lower than 15,000 dollars, respondent is married, no financially dependent children, credit score is 720 or higher, and state of Alabama. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 8B. Sensitivity analysis: Controlling for credit score
(sample restricted to ages 18-34)

	(1)	(2)	(3)
Financial literacy measures			
All three questions correct	-0.102***	-0.083***	-0.063***
	(0.012)	(0.012)	(0.017)
Socio-demographic controls			
Age 25-34	-0.003	-0.000	-0.031*
	(0.012)	(0.012)	(0.018)
Female	-0.015	-0.020*	-0.025
	(0.011)	(0.011)	(0.016)
Non-White	0.006	-0.005	0.010
	(0.012)	(0.011)	(0.017)
Single	0.040***	0.036***	-0.002
	(0.014)	(0.014)	(0.019)
Separated	0.079***	0.070***	0.015
	(0.025)	(0.025)	(0.035)
Widow	0.041	0.058	0.112
	(0.130)	(0.128)	(0.213)
One kid	0.158***	0.147***	0.110***
	(0.015)	(0.015)	(0.022)
Two kids	0.182***	0.163***	0.078***
	(0.017)	(0.017)	(0.024)
Self-employed	0.030	0.025	0.054*
	(0.022)	(0.022)	(0.031)
Unemployed	0.092***	0.085***	0.089***
	(0.016)	(0.016)	(0.028)
Income USD 15-25k	0.162***	0.153***	0.153***
	(0.018)	(0.017)	(0.030)
Income USD 25-35k	0.066***	0.057***	0.064**
	(0.018)	(0.018)	(0.029)
Income USD 35-50k	0.044**	0.035*	0.064**
	(0.018)	(0.018)	(0.029)
Income USD 50-75k	-0.030	-0.025	0.007
	(0.019)	(0.018)	(0.030)
Income USD 75-100k	-0.087***	-0.059***	-0.037
	(0.022)	(0.022)	(0.033)
Income USD 100-150k	-0.137***	-0.100***	-0.024
	(0.025)	(0.025)	(0.036)
Income more USD 150k	-0.104***	-0.052	-0.010
	(0.034)	(0.033)	(0.047)
Credit score			
Credit score 630-710		0.128***	0.145***
		(0.021)	(0.020)
Credit score 620 or lower		0.341***	0.374***
		(0.022)	(0.022)
Credit score missing		0.148***	
		(0.018)	
Constant	0.306***	0.143***	0.109
	(0.047)	(0.049)	(0.069)
State dummies	Yes	Yes	Yes
Observations	7,475	7,475	2,958

R-squared	0.121	0.149	0.225

Note: Weighted OLS regressions. Sample restricted to respondents aged 18-34. Coefficients for state dummies, coefficients for 3 kids and 4 or more kids, and coefficients for "do not know" or "prefer not to say" answers to the credit score question are not reported in the table. Baseline categories dropped in the regression: aged 18-24, income lower than 15,000 dollars, respondent is married, no financially dependent children, credit score is 720 or higher, and state of Alabama. Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

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