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DEBT LITERACY, FINANCIAL EXPERIENCES, AND OVERINDEBTEDNESS

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ABSTRACT

We analyze a national sample of Americans with respect to their debt literacy, financial experiences, and their judgments about the extent of their indebtedness. Debt literacy is measured by questions testing knowledge of fundamental concepts related to debt and by self-assessed financial knowledge. Financial experiences are the participants' reported experiences with traditional borrowing, alternative borrowing, and investing activities. Overindebtedness is a self-reported measure. Overall, we find that debt literacy is low: only about one-third of the population seems to comprehend interest compounding or the workings of credit cards. Even after controlling for demographics, we find a strong relationship between debt literacy and both financial experiences and debt loads. Specifically, individuals with lower levels of debt literacy tend to transact in high-cost manners, incurring higher fees and using high-cost borrowing. In applying our results to credit cards, we estimate that as much as one-third of the charges and fees paid by less knowledgeable individuals can be attributed to ignorance. The less knowledgeable also report that their debt loads are excessive or that they are unable to judge their debt position.

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Individuals need financial skills—perhaps more now than ever before. Research in financial literacy has typically related individuals' knowledge of economics and finance with their financial decisions related to savings, retirement planning, or portfolio choice. Financial competence has become more essential as financial markets offer more complex choices and as the responsibility for saving and investing for the future has shifted from government and employers onto individuals. As the credit crises of the recent past show, borrowing decisions are also critical. However, little research has been done on the relationship between financial literacy and indebtedness. Rapid growth in household debt and its link to the current financial crisis raises the question of whether individuals' lack of financial knowledge led them to take out mortgages and incur credit card debt they could not afford.

To fill the research gap and assess how much knowledge individuals have with respect to debt, we designed and fielded a new survey focused specifically on "debt literacy," an important component of overall financial literacy. Debt literacy refers to the ability to make simple decisions regarding debt contracts, applying basic knowledge about interest compounding to everyday financial choices. We seek to understand the relationship between debt literacy and financial decision-making as well as how both relate to overindebtedness.

We contribute to the existing literature in three ways. First, the questions we designed allow us to measure financial knowledge specifically related to debt, as well as individuals' overindebtedness. Second, unlike much of the previous work, we propose a method to consider the entire *set* of financial experiences in which individuals engage: opening a checking account, buying bonds and stocks, and borrowing from traditional and alternative credit providers. Some transactions, such as credit card borrowing, are repeated over time; others are discrete events that take place only once or twice over a lifetime. We translate the rich multidimensional set of experiences into more compact consumer segments. Finally, we measure indebtedness in a new way by asking people to assess their comfort with handling their current levels of debt.

In our empirical work, we find strikingly low levels of debt literacy across the U.S. population. Only one-third of respondents in the population can apply concepts of interest compounding to everyday situations or understand the workings of credit cards. Debt illiteracy is particularly severe among women, the elderly, minorities, and those who are divorced or separated. We identify four different groups of individuals on the basis of common financial experiences—*pay in full*, *borrowers/savers*, *fee-payers*, and *alternative financial services (AFS) users*—and find that debt literacy is related to the financial experiences that people have had.

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For example, fee-payers (e.g., those who make only minimum payments on their credit card bills and incur late and over-the-limit fees) and alternative financial services users are less debt literate, even after controlling for many individual characteristics. Similarly, when we apply our results to credit card behavior, we find that the less knowledgeable pay a disproportionately high share of fees and finance charges. Specifically, the less knowledgeable cardholders pay about 50 percent higher fees than the average cardholder. Moreover, even when using very conservative assumptions, we find that as much as one-third of the charges and fees paid by the less knowledgeable are related to lack of knowledge versus other observable demographic factors.

We also find a link between debt literacy and overindebtedness: those with lower levels of debt literacy tend to judge their debt as excessive or report that they are unsure about the appropriateness of their debt position, even after controlling for many demographic factors. Not surprisingly, what you don't know *can* hurt you. Well before the current financial crisis raged, more than a quarter of Americans judged their debt to be excessive. We believe these results suggest that lack of financial skills is and continues to be a cause for concern.

1.   Review of the Literature on Financial Literacy and Financial Decision-Making

Over the last decade, several researchers have 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. More recently, Hilgert, Hogarth, and Beverly (2003) report that most Americans fail to understand basic financial concepts, particularly those relating to bonds, stocks, and mutual funds.[1] In a survey of Washington state residents, Moore (2003) finds that people frequently fail to understand terms and conditions of consumer loans and mortgages. This problem may persist for some time. The National Council on Economic Education's report (NCEE 2005) shows a widespread lack of knowledge regarding fundamental economic concepts among high school students, confirming similar findings by the Jump$tart Coalition for Personal Financial Literacy (Mandell, 2008).

Low levels of financial skills is not only a U.S. problem: The 2005 report on financial literacy by the Organization for Economic Co-operation and Development (OECD) and Smith and Stewart (2008) document low levels of financial literacy in several countries. Similarly, the Survey of Health, Aging and Retirement in Europe (SHARE) shows that respondents score

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[1] Other surveys on smaller samples find similar results. See Agnew and Szykman, 2005.

poorly on financial numeracy and literacy scales (Christelis, Jappelli, and Padula, 2008). Consistent with the findings of Moore (2003), Miles (2004) reports that UK borrowers have a poor understanding of mortgages and interest rates.

Lusardi and Mitchell's (2006, 2008a) module on planning and financial literacy for the 2004 Health and Retirement Study (HRS) provides further evidence of financial illiteracy. They find that many older (50+) individuals cannot do simple interest-rate calculations, such as calculating how money would grow at an interest rate of 2%, and do not know about the workings of inflation and risk diversification. Similar results are seen in a sample of early Baby Boomers (ages 51–56): most respondents display low numeracy and a very limited knowledge of the power of interest compounding (Lusardi and Mitchell, 2007a).

Financial literacy has been linked to saving behavior and portfolio choice, often connecting financial knowledge to one specific type of transaction. For example, the less financially literate are found to be less likely to plan for retirement (Lusardi and Mitchell, 2006, 2008), to accumulate wealth (Stango and Zinman, 2008), and to participate in the stock market (van Rooij, Lusardi, and Alessie, 2007; Yoong 2008; Christelis, Jappelli, and Padula, 2008). Moreover, less literate individuals are less likely to choose mutual funds with lower fees (Hastings and Tejeda-Ashton, 2008).[2] There is also some indication that literacy may affect debt as well. Moore (2003) reports that respondents with lower levels of financial literacy are more likely to have costly mortgages. Similarly, Campbell (2006) reports 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.

This previous work offers an important starting point. However, unlike these studies, we try to relate financial capability to rich *patterns* of financial transactions, placing a particular emphasis on the relationship of capability to indebtedness.

2.   Methodology and Survey Design

We partnered with the leading commercial market research firm, Taylor Nelson Sofres (TNS) Global, to develop and administer a survey that reports information on financial knowledge related to debt. In addition to measuring participants' financial skills, we collected

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[2] Financial knowledge is also found to be linked to the ability to budget, save money, and control spending (Perry and Morris, 2005).

demographic characteristics as well as data on individuals' financial experiences and their judgments about their indebtedness.

Our approach to measuring financial literacy has two elements. First, we devised questions to assess key debt literacy concepts, such as the power of interest compounding. Our aim is to assess *debt literacy* in the population, i.e., to measure knowledge and skills closely related to debt.[3] The debt literacy questions can be solved with simple reasoning and do not require a calculator. Second, we asked participants to judge their financial knowledge, and related this self-assessment to their performance on the debt literacy questions. Because individuals engage in many financial transactions that require consideration of interest rates and comparisons of alternatives, we collected data on a rich array of financial activities, asking not only about borrowing but also about financial investments. Finally, to evaluate the consequences of the financial transactions in which people engage and the level of debt literacy with which people are equipped, we examined levels of overindebtedness.

The survey was fielded in November 2007 by the staff of TNS Global. The data were collected via a phone interview from a sample of 1,000 U.S. residents. The survey collected information on a number of self-reported demographic characteristics, such as age, gender, race and ethnicity, marital status, employment, region of residence, family size and type, income, and wealth.[4]

3.   **Measuring Debt Literacy**

In partnership with TNS, we designed and tested questions measuring financial knowledge related to debt. While there are a few national surveys that measure financial knowledge in the United States, such as the HRS, the Rand American Life Panel (ALP), and the Survey of Consumers,[5] few ask questions that focus specifically on borrowing and debt behavior. Our survey included three new questions designed to measure debt literacy. Specifically, respondents were asked questions that assessed their knowledge about the power of interest

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[3] Given the information collected in the literacy questions, we are not able to distinguish between pure financial knowledge and ability, including numeracy and cognitive ability—an issue which can be important when considering the elderly and those with low educational attainment. Thus, we use the terms "financial literacy" and "debt literacy" to encompass all of these characteristics. However, in our empirical work, we always account for income and wealth. Thus, our measures of literacy will capture knowledge and ability above and beyond what is accounted for by income and wealth.

[4] See the description of the survey and the variables used in our work in the appendix.

[5] These surveys cover adults. Surveys of high school students include those by the Jump$tart Coalition for Personal Financial Literacy and the National Council on Economic Education.

compounding and the workings of credit card debt and their ability to choose the most advantageous means of payment, given two options.[6] For each question we listed a set of answer choices. Tallying respondents' correct and incorrect responses allowed us to classify individuals according to their respective levels of financial knowledge (from those who made small mistakes to those who made large mistakes to those who admitted to not knowing the answer) and to evaluate the link between financial knowledge and borrowing behavior.

The first question measuring interest compounding is as follows:

Suppose you owe $1,000 on your credit card and the interest rate you are charged is 20% per year compounded annually. If you didn't pay anything off, at this interest rate, how many years would it take for the amount you owe to double?
(i) 2 years;
(ii) Less than 5 years;
(iii) 5 to 10 years;
(iv) More than 10 years;
(v) Do not know.
(vi) Prefer not to answer.

Ignoring interest compounding, borrowing at 20% per year would lead to doubling in five years; someone who knew about interest on interest might have selected a number less than five; someone who knows the "rule of 72" heuristic would know that it would be about 3.6 years (i.e., correct answer (ii) "less than 5 years"). Answers above five years reflect misunderstanding of the concept of interest accrual and a choice of more than ten years implies a major misunderstanding.

Table 1, panel A, reports the responses to this question. Fewer than 36% of respondents answered this question correctly. This is a rather low percentage given how many individuals have credit cards and maintain revolving balances. However, this finding is consistent with the evidence reported in Lusardi and Mitchell (2007a) that only a small fraction of respondents between the ages of 51 and 56 can correctly perform an interest-compounding calculation when asked to report how the amount in a savings account would grow over a two-year period at an interest rate of 10%. The larger fraction, 43%, performed only a simple interest rate calculation, without taking into account that interest grows on interest. What we know from psychology and marketing is confirmed here: many people are not numerate and have difficulty grasping percentages (Peters et al., 2007; Chen and Rao, 2007). These findings confirm evidence from the health literature that patients have difficulty doing simple calculations (Volk, 2007).

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[6] In this survey, we were limited to three questions only.

The evidence reported in panel A points to two other results. First, a sizable proportion of respondents, close to 20%, reported that they "do not know" the answer to this question. As reported in other papers (Lusardi and Mitchell, 2006, 2007a, 2007b; and van Rooji, Lusardi, and Alessie, 2007), "do not know" answers identify respondents with the lowest level of financial knowledge. Second, more than 30% of respondents overestimated, sometimes by a wide margin, the number of years it would take for debt to double when borrowing at a high rate. Overall, while many individuals deal frequently with credit cards and credit card debt, there seems to be limited knowledge of interest compounding.

We find similar evidence from the second literacy question, which asks respondents to calculate how many years it would take to pay off credit card debt when making minimum payments equal to the interest payments on the outstanding debt. Given that one is only paying interest, the principal balance will never decline. The exact wording of the question is as follows:

> *You owe $3,000 on your credit card. You pay a minimum payment of $30 each month. At an Annual Percentage Rate of 12% (or 1% per month), how many years would it take to eliminate your credit card debt if you made no additional new charges?*
> *(i) Less than 5 years;*
> *(ii) Between 5 and 10 years;*
> *(iii) Between 10 and 15 years;*
> *(iv) Never, you will continue to be in debt;*
> *(v) Do not know;*
> *(vi) Prefer not to answer.*

Similar to the previous question, this question assesses whether individuals can perform simple interest-rate calculations. Our results illustrate that many respondents don't understand the workings of credit card interest and payments. **Table 1, panel B,** shows that only slightly more than 35% of respondents appreciated that making minimum payments equal to the interest payment on the outstanding debt will never eliminate debt. A sizable fraction heavily underestimated the amount of time it would take to eliminate debt; more than 15% of respondents thought it will take five to ten years to eliminate debt, and another 20% thought that it will take ten to fifteen years to eliminate debt. A substantial fraction of respondents, about 22%, simply did not know the answer to this question.

Not surprisingly, responses to these first two questions are highly correlated. More than half (56%) of those who responded correctly to the first question also responded correctly to the second question. "Do not know" responses exhibit an even higher correlation, with 80% of those

who respond "do not know" to the first question responding similarly to the second question. Mistakes are more scattered, but more than 36% of those who thought it will take more than 10 years for credit card debt to double also thought it will take from 10 to 15 years to eliminate credit card debt with minimum payments. Individuals who found it difficult to perform these calculations may not appreciate the consequences of borrowing at a high interest rate.

The third question seeks to determine whether people understand the notion of the time value of money and how skillful they are in comparing payment options:

> *You purchase an appliance which costs $1,000. To pay for this appliance, you are given the following two options: a) Pay 12 monthly installments of $100 each; b) Borrow at a 20% annual interest rate and pay back $1,200 a year from now. Which is the more advantageous offer?*
> *(i) Option (a);*
> *(ii) Option (b);*
> *(iii) They are the same;*
> *(iv) Do not know;*
> *(v) Prefer not to answer.*

By paying $100 a month (versus $1,200 at the end of the year), one foregoes interest that could have accrued by having kept those dollars. Consistent with the findings of Stango and Zinman (2008) that individuals are systematically biased toward underestimating the interest rate out of a stream of payments, we find that a very small proportion of respondents—close to 7%—responded correctly to this question (**Table 1, panel C**). A very high fraction of respondents, 40%, chose option (a) even though the stream of payments to finance the purchase of an appliance at $100 per month in (a) has an APR of about 35% versus the 20% in option (b).[7] About 39% thought that the two payment options were the same, failing to recognize the time value of money. Overall, these results suggest that individuals may underestimate the interest rate at which they are borrowing.[8]

When considering the relationship between the answers to this question and the other two questions, those who chose option (a) and, in effect, underestimated the interest rate implicit in

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[7] An alternative interpretation is that this choice could reflect a willingness to pay others to enter into a "self-control" contract that does budgeting on their behalf, even at the cost of giving up interest.
[8] Given the low correct response rate in all questions, one may wonder whether the framing of the question influences the way individuals respond. We are not able to address this issue in this survey. However, the evidence in other modules on financial literacy that one of the authors designed indicates that the framing of the questions matters for questions measuring advanced rather than basic financial knowledge (see Lusardi and Mitchell 2007c, and van Rooij, Lusardi, and Alessie, 2007). In this respect, framing may have influenced the responses to the third question, which required some reasoning. When evaluating the empirical work, one has to keep in mind that financial knowledge is measured with error.

the stream of payments were more likely to answer the first two questions incorrectly. However, many of those who thought that the payment options were the same were able to answer the first and second questions correctly.

To summarize: debt illiteracy is widespread. Only one-third of respondents can correctly answer a question about the power of interest compounding or about the workings of credit cards. The fraction shrinks when faced with a comparison of two methods of payment that requires somewhat more complex calculations. This evidence provides some reason for concern in an economy in which consumers routinely borrow and save using debt-like instruments.

3a.   Who Is More Debt Literate?

As we report below, illiteracy is particularly acute in specific demographic groups.   First, we report responses by age, gender, and income. Then, we use regression analysis to relate debt literacy to a range of demographic characteristics.

Table 1 (panels A, B, and C) reports the distribution of the responses to the first literacy question across different demographic groups. The elderly (those older than 65) display the lowest amount of knowledge about interest compounding. Not only were they less likely to answer this question correctly, but they were also more likely to answer "do not know." They also displayed difficulty answering the second question: more than 30% of respondents older than 65 did not know the answer to the second question. On the opposite end of the distribution, young respondents (younger than age 30) performed best on the first question, but not as well on the second and third questions. Thus, debt literacy is low among the young, too. While in a single cross-section we cannot differentiate between age and cohort effects, differences in literacy are sizable across age/generations.

There are **s**harp differences between male and female debt literacy levels. In each of the three questions, women were much less likely to respond correctly than were men, sometimes by as much as 20 percentage points. Furthermore, many women stated they did not know the answer to the literacy questions. Since our survey covers the entire age group, we also have investigated gender differences among those younger than 30 and those older than 65. We find that gender differences are significant among both the young and the old, confirming findings in other research about the low levels of literacy of women in younger and older generations (Lusardi and Mitchell, 2008; Lusardi, Mitchell, and Curto, 2008).

Debt literacy increases sharply with income. While close to 50% of respondents with income above $75,000 answered the first question correctly and 43% answered the second question correctly, only a little more than 25% of respondents whose income is below $30,000 answered these two questions correctly. For brevity, we do not report the figures, but we find that financial literacy is lower among respondents with low wealth; those who are divorced, widowed, or separated; and among African-Americans and Hispanics. We assess next which demographic characteristics remain significant when we account for all these demographic variables together.

We perform a multinomial logit regression, shown in the appendix, for each of the three debt literacy questions. We include dummies for age groups; for being female; for being African-American and Hispanic (the reference group is white respondents); and for marital status (the reference group is married respondents). We also add dummies for household income (the reference group is those with annual income lower than $30,000) and household wealth (the reference group is those with wealth greater than $250,000).[9] **Table A1** reports the logit estimates for responding correctly to the debt literacy questions. (Rather than reporting the estimates with respect to a specific reference group, we calculate the marginal effects for each set of answers.)

Even after accounting for all of these demographic variables simultaneously, age continues to be statistically significant; the elderly display less understanding of interest compounding and the workings of credit cards. Women are still found to be less knowledgeable than men. Race and income also continue to be powerful predictors of literacy, although wealth is not predictably related to literacy (**Table A1**). While debt literacy levels are low, the relatively poorer performance by certain traditionally disadvantaged groups—women, the elderly, and minorities—is particularly troubling.

3b.   Who *Thinks* They Are Financially Literate?

In addition to asking questions about some specific concepts related to debt, we also asked respondents to judge their financial knowledge. The wording of this self-assessment is as follows:

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[9] Although we do not have information about educational attainment in the survey, income and wealth can also proxy for education.

> *On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?*

We asked this question for several reasons. First, our questions on debt literacy cover specific concepts, but they hardly exhaust the list of topics that can affect debt behavior. This question asks about "overall financial knowledge" and thus is more expansive. Second, we can evaluate and compare the answers to this self-reported measure of literacy with the answers to more objective measures to determine whether people know how much they know. Third, it provides respondents with a straightforward and easy-to-answer question.[10]

Table 1, panel D, reports the answers to the self-reported literacy question across the whole sample. Contrary to the widespread debt illiteracy we find when examining the answers to the three questions measuring debt literacy, most respondents think they are above average in terms of their financial knowledge. The average score in the sample is 4.88 out of 7, and more than 50% of respondents chose a score as high as 5 or 6. Conversely, only a little more than 10% of respondents chose a score below 4, a striking fact given the relatively poor performance of the sample in answering simple debt questions.

In general, the *patterns* of self-reported financial literacy correlate with our measures of debt literacy, suggesting self-awareness: those who believe they are more knowledgeable generally are more knowledgeable. For example, women's self-reported levels of literacy are much lower than men's levels. African-Americans and Hispanics also report lower literacy, even though differences in the self-reported measures across race and ethnicity are less sharp than across the three measures of debt literacy. Self-reported literacy also increases steadily with income.

Nevertheless, there are some notable discrepancies between self-reported and actual measures of debt literacy. While the elderly display very low levels of debt literacy across the three questions, they rank themselves highest in terms of financial knowledge: the average score among respondents older than 65 is as high as 5.33. This self-confidence combined with lack of skill or cognition could put the elderly at risk for making financial mistakes or suffering from scams.

4. Measuring Financial Experiences

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[10] This question was asked to respondents before the three debt literacy questions.

Individuals engage in many financial transactions that require careful consideration of interest rates and comparisons of alternatives. Those who are less knowledgeable may engage in higher-cost borrowing, sloppier financial behaviors, or less advantageous financial contracts. If so, we expect to see a negative relationship between financial skills and certain wealth-depleting financial behaviors.[11]

Experience measures. The TNS survey allows us to characterize a wide range of borrowing and investing experiences and transaction patterns of respondents. While we cannot measure their intensity or frequency, we can identify the types of transactions in which individuals have engaged.[12] This typology includes four classes of transactions: traditional borrowing, alternative financial services borrowing, saving/investing, and credit card use. The parenthetical text below was not part of the survey, but is provided here to organize this information for the reader.

(1) *(Experience with traditional borrowing, excluding credit cards.)* Have you ever…

    a. Taken out a loan for student education
    b. Taken out an auto loan
    c. Taken out a home equity loan
    d. Gotten (or refinanced) a mortgage

(2) *(Experience with alternative financial services borrowing.)* Have you ever…

    a. Gotten a short-term "payday" or "salary advance" loan
    b. Gotten a "refund anticipation loan" to accelerate the receipt of your taxes
    c. Gotten an auto title loan
    d. Used a pawn shop
    e. Bought goods on a lay-away plan or at a rent-to-own store

(3) *(Experience with saving/investing and payments.)* Have you ever…

    a. Opened a checking or debit card account
    b. Opened a savings account or bought a CD
    c. Bought a savings bond or other bonds
    d. Invested in mutual funds
    e. Invested in individual stocks

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[11] Financial experience could also affect financial knowledge, and we will discuss this issue in more detail in the empirical work.

[12] The failure to engage in certain transactions could, of course, also be a function of individual choice or of supply constraints, i.e., the product was not available to the individual. For example, some may not have credit cards by choice, while others might be unable to obtain a credit card.

(4) *(Typical transaction mode for credit cards.)* In the last twelve months, which of the following describes your use of credit cards?

    a. I don't have any credit cards or did not use them
    b. In some months, I ran an outstanding balance and paid finance charges
    c. In some months, I paid the minimum payment only
    d. In some months, I was charged a late charge for late payments
    e. In some months, I was charged an over the limit charge for charging more than my credit limit
    f. In some months, I used the cards for a cash advance
    g. My account was closed down by the credit card company
    h. I always paid my credit cards in full

While not exhaustive, this simple list includes many of the transactions in which a person might have needed to make a financial calculation regarding interest or fees.[13] **Table 2** provides the weighted incidences of the various transaction types for our sample population. Some activities are quite common—91% of the population has experience with checking accounts, 81% has experience with savings accounts or CDs, and 79% currently has credit cards. Other activities are fairly rare. For example, in our sample only 4.4% had ever gotten a refund anticipation loan, only 6.5% had ever had an auto title loan, and only 7.8% had ever taken out a payday loan. As for credit cards, some (20%) do not have a card or do not use them. However, a majority of respondents use credit cards and do not pay the balances in full each month.

    Experience segments. A number of studies look at single activities, intensively studying consumers who use payday lending, refund anticipation lending, or credit cards. But these single-dimensional characterizations of consumer behavior cannot capture the fact that consumers engage in many activities simultaneously. **Table 3** provides a two-way matrix of the incidence of each experience conditional on a second characteristic. For example, while the unconditional incidence of having used a payday loan is 7.8%, when conditioned on not having a credit card, the incidence is nearly double (15%). Further, conditional on paying off credit card balances on time each month, the incidence of having used a payday loan is less than half (3%). Focusing on one transaction only gives a narrow view of individuals' borrowing and saving behavior. While it is possible to analyze each type of experience in **Table 3** one at a time, or to consider dyads or triads of behaviors, the large matrix contains a set of correlated activities.

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[13] Because of space constraints, we could not include other choices, including the use of bank overdraft lines, car leases, annuities, and other insurance products.

To reduce the dimensionality of this matrix, we rely on techniques used in marketing and market research. In particular, we use cluster analysis, a technique related to principal components analysis or factor analysis in that it reduces the dimensionality of a rich data set. In this case, the cluster analysis is used to determine which groups of individuals have had similar financial experiences or could be considered "market segments." This segmentation is carried out solely on the basis of transaction activity, without referring to demographics, literacy, or self-judged indebtedness. We first create the segments on the basis of common financial experiences, and then relate them to the other information.

Cluster analysis is used commonly in biology, linguistics, and marketing. It is used to segment a heterogeneous population into groups that are more homogeneous. Essentially, it parses the data into groups, testing for differences among groups as it divides the data into two, three, four, or more groups.[14] For our purposes, a key analytic question was which transaction types to include in the analysis. We include *all* of the transaction activity listed above in defining the cluster. The procedure groups the data into any arbitrary number of clusters. One must use statistics, judgment, and sensitivity testing to ensure that the clustering is correct and sensible.[15]

Based on the results of the cluster analysis, we reliably identify four main segments defined by common experiences. **Table 4** identifies the transaction characteristics of the four groups. While we "name" these clusters for the sake of exposition, these names cannot fully characterize the range of behaviors that these groups share. Cluster 1, comprising about 26% of the sample, are people firmly engaged in the traditional financial system. These individuals all have credit cards but do not carry any revolving balances. This is such a distinctive characteristic

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[14] Cluster analysis is related to factor analysis; the latter identifies common traits and the former identifies similar populations of individuals on the basis of underlying factors.

[15] We used Ward's linkage method (Ward, 1963), which is an agglomerative, hierarchical clustering method, as implemented in Stata, to perform the cluster analysis. The procedure works as follows: The N observations in the sample start out as N separate groups each of size one. The two closest observations are merged into one group, producing N-1 total groups. This process continues until all of the observations are merged into one large group. This produces a hierarchy of groupings from one group to N groups. The definition of "closest two groups" is based on minimizing the sum of squared errors. In order to select an optimal number of clusters, we relied on both statistical criteria and inspection of the clustering results. Our statistical criteria were the Calinski/Harabasz pseudo-F index, and the Duda/Hart index. These results suggested that we use three, four, or five clusters. We then analyzed the outputs for each of these possible numbers of clusters, for instance by examining the means and standard deviations of the variables in each cluster. We chose to use four clusters because using five clusters yielded some individual groups that were rather small for proper analysis, and using three clusters resulted in groups that were still quite heterogeneous.

that, for descriptive purposes, we use the name "**pay in full**" to identify this cluster. These people have relatively high (but not the highest) levels of experience with mutual funds, stocks, and bonds. With respect to the other clusters, respondents in cluster 1 are most likely to have a mortgage and are fairly likely to have some experience with auto loans and home equity loans. Moreover, they have the lowest levels of alternative financial services usage (payday lending, pawn shops, tax refund loans, etc.).

At the other end of the spectrum (cluster 4) is the 30% of our sample that does not use traditional financial services as often as the others. For descriptive purposes, we name them "**users of alternative financial services**" or "**AFS users**" in brief. For example, when compared with cluster 1, their usage of alternative financial services is considerably more frequent, using payday loans, tax refund loans, and pawn shops 5, 16, and 9 times more frequently. Most individuals in this cluster (68%) do not have credit cards and are more likely to be "unbanked" (20% do not have a checking account and 38% do not have a savings account). At the same time, the likelihood that they have ever invested in a stock, a bond, or a mutual fund—or held a mortgage—is about one-fifth that of the pay in full group.

In between are two groups that comprise 43% of the sample. Almost all have credit cards and virtually all carry revolving balances most months. They are virtually all "banked," with checking or debit accounts. The smaller subgroup, accounting for about 12% of the sample, is comprised of what we call the "**borrowers/savers**" (cluster 2). This group has the highest level of experience with savings and investments of any of the four clusters, with 98% having experience with savings or CD products, 83% owning mutual funds, 83% owning stocks, and 65% owning bonds or savings bonds. At the same time, this group has the highest levels of debt exposure too, with the most frequent experience with student loans (46%), home equity loans (54%), auto loans (94%), and virtually the same levels of mortgage loans as the pay in full group (77%). This group seems much more extended than the pay in full group, with 95% carrying a revolving balance on credit cards, 27% paying the minimum balance only, 12% incurring late fees, and 6% going beyond their credit limit and incurring over-the-limit fees.

The final 31% of the sample is what we call the "**pay fees**" group (cluster 3). Relative to the three other groups, this group has the highest likelihood of paying the minimum amount due on their credit cards (56%), running late fees on their credit cards (17%), incurring over-the-limit fees (11.8%), and using their cards to get cash advances (16.1%). At the same time, they have far less experience than the borrowers/savers or the pay in full group with respect to mutual

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funds, stocks, or bonds, as well as less experience than these other groups with home equity loans, mortgages, and auto loans.

4a.   Characteristics by Experience Segment

Our segmentation captures meaningfully different behaviors, even though the four clusters are defined only with respect to shared experiences, not on the basis of demographics, debt literacy, or perceived level of indebtedness. Therefore, we set out to examine whether there is a relationship between demographics, debt literacy, and these clusters: Are those in the pay in full group financially better off (e.g., in terms of income or wealth), more financially knowledgeable, and/or more secure in their level of indebtedness? Are the AFS users financially worse off, less financially literate, and/or less secure in their level of indebtedness? Finally, who are the fee payers? **Table 5** provides descriptive statistics for these four clusters with respect to their demographics (panel A) and debt literacy (panel B). Following this discussion we report the results of a multinomial logit analysis which examines cluster assignment as a function of all these factors.

With respect to demographics, the payers in full have the highest income (43% have income over $75,000) and wealth (74% have financial assets in excess of $50,000). They are more likely to be married and to be white than are members of the other three clusters. Borrowers/savers have incomes almost as high as the pay in full group, similar levels of marriage, are the second-oldest group, and tend to be men (62%). In terms of wealth, this group is not quite as wealthy as the payers in full, with only 52% having financial assets above $50,000. The AFS users have the lowest income (53% have income below $30,000) and are most likely to be women (58%) and to be single or separated (47%). Finally, the fee payers look most like the "average" American, with income distributed roughly similarly as in the overall sample, and other demographics (age, gender, marital status, and race) roughly comparable to the entire sample. Both the AFS users and the fee payers have considerably fewer financial assets than do the other two groups, with only 24% and 28%, respectively, having financial assets in excess of $50,000.

With respect to debt literacy (panel B), the payers in full and borrowers/savers are both more knowledgeable than the other two segments, scoring a considerably larger fraction of correct answers on the three questions than the latter two groups. The fee payers and AFS users are more likely to admit to not knowing the answers to the questions. These patterns are also

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reflected in measures of self-reported financial literacy; the fee payers and AFS users judge themselves to be much less knowledgeable than do payers in full and borrowers/savers. We can see this both in the average scores as well as in the distribution of scores. Whereas 48% and 53% of the payers in full and borrowers/savers ranked themselves in the top two scores with respect to their financial knowledge, for fee payers and AFS users, these comparable figures are 15.3 and 23.5%, respectively. In short, from the univariate statistics, the two clusters that pay the highest credit card fees and access the highest cost borrowing methods tend to be financially worse off and have lower levels of debt literacy.

Of course, all of these univariate measures are correlated, and therefore we must consider all of the demographic variables simultaneously by using a multivariate approach to tease out the marginal relationship between debt literacy and behavior. The dependent variable in our analysis is an indicator for the four clusters we have identified in the data, and we use a multinomial logit analysis.

We have four correlated measures of financial literacy: the self-reported measure of literacy and objective measures resulting from the answers to the three questions discussed above. The answers to the latter questions can be more finely characterized. For example, respondents with incorrect answers to the question about interest compounding are divided into two groups: those who underestimated and those who overestimated how quickly debt can double. Moreover, we add a dummy for those who did not know the answer to this question as this is a sizable and also distinct group of respondents. We also include a dummy for those who refused to answer the literacy questions.[16]

All incorrect responses to the second literacy question were underestimates of how many years it would take to eliminate credit card debt. We aggregate the responses into those who made large underestimates (answered that it would take less than five years and between five and ten years to eliminate credit card debt) versus those who chose a longer yet incorrect time period (between ten and fifteen years). The incorrect answers to the third question characterize two distinct types of respondents: those who failed to realize that the implicit interest rate out of a stream of payment is higher than 20%, and those who failed to recognize that the stream of payments has a higher present value and incorrectly stated that the two payment options are the

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[16] This is a small but rather heterogeneous group of respondents. For some questions, there is a high prevalence of African-Americans who refused to answer the literacy questions.

same. We keep these two groups separate. For the second and third measures of literacy we again add dummies for those who did not know the answer or refused to answer.

Among the demographic variables, we include age and age squared to capture the potential nonlinear impact of age. We also include dummies for gender, race, and marital status. We add dummies for larger household sizes, characterizing those with four members and five or more members, and a dummy for those who are not employed; these families may be more vulnerable to shocks. Finally, we add dummies for household income and wealth, which can capture financial situation, skills and ability, or individual preferences such as patience and thriftiness. To consider how these demographic variables explain the four clusters, in the appendix we report a multinomial logit regression across the four clusters considering the demographic variables only (**Table A2**), and we then add the financial literacy variables to the set of demographics (**Table 6**).

Table 6 reports the marginal effect of each variable in the multinomial logit regressions across the four clusters. For brevity, we report the estimates of the financial literacy variables only but we comment on the estimates of the demographic variables when appropriate. Moreover, rather than reporting the estimates with respect to a reference group, we calculate the marginal effects in comparison to all the other clusters. We first consider the self-reported measure of literacy (**Table 6**, first set of estimates). Even after accounting for demographics, those who display higher levels of literacy are more likely to locate in cluster 1. Levels of self-assessed literacy above the mean score (score of higher than 4) are associated with higher chances of being among those who pay in full, and the likelihood of being in this group is greatest for those with high self-assessed knowledge (scores of 6 and 7). Individuals in this cluster are also those with high incomes (income greater than $75,000) and high wealth (see also **Table A2**). Note that African-Americans and Hispanics and those with large families are less likely to be in the pay in full group.

Self-reported financial knowledge is not related to the behavior of those in cluster 2, the borrowers/savers.[17] These individuals have relatively high income, as noted before, and they do not display characteristics that are usually associated with debt problems (e.g., large families, unemployed, or divorced or separated). Income and race are the only variables that characterize

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[17] Note that this finding goes against the argument of "learning by experience." Respondents in cluster 2 have the highest experience with saving and borrowing. They own the highest percentage of assets and have used borrowing the most. Nevertheless they carry balances on their credit cards and pay fees and finance charges.

those in cluster 2. While borrowers/savers do carry credit card balances and tend to pay finance charges, this behavior seems less likely to be due to lack of knowledge, and may reflect "inattention" as pointed out in other papers that look at credit card mistakes.[18]

Those in cluster 3, the fee payers, are considerably less likely to report high levels of financial knowledge, even after controlling for many demographic traits. These respondents are also more likely to have lower levels of wealth, to be African-American, and to have large families.

Low levels of financial literacy also characterize AFS users in cluster 4. These respondents are much less likely to report high levels of literacy and more likely to be unemployed or to have lower incomes (income less than $30,000). We find similar patterns when we use the three measures of debt literacy instead of the self-reported measures of financial literacy (**Table 6**, last three sets of estimates). Those who overestimated how long it takes for debt to double may be lulled into borrowing more or not paying on time. Indeed, those who are less likely to be knowledgeable about interest compounding, both because they overestimated the number of years it takes for debt to double or because they did not know the answer to this question, are less likely to belong to the pay in full group and more likely to belong to the AFS users group. As mentioned above, these two clusters characterize very different types of borrowing behavior and debt literacy remains a predictor of these two groups even after accounting for a rich set of characteristics, including income and wealth. Being unable to answer the question about interest compounding also characterizes those who belong to cluster 3, the pay fees segment, who tend to carry balances and pay finance charges and penalty fees. On the other hand, those who did not know the answer to the question about interest compounding are less likely to belong to cluster 2, the borrowers/savers, who are likely to carry balances and not pay on time.

Turning to the question about minimum credit card payments (second measure of literacy), we find that those who make mistakes, both small and large, in answering this question are significantly more likely to belong to the AFS users group. Those who display the lowest level of debt literacy, i.e., responded that they do not know the answer to this question, are also more likely to belong to this group. Conversely, those who made small mistakes or did not know the answer to the question are *less* likely to belong to the pay in full or borrowers/savers clusters.

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[18] See Scholnick, Massoud, and Saunders (2008).

Estimates for the third debt literacy question, which was answered correctly only by a small fraction of respondents, show similar findings: those who answered this question incorrectly (i.e., chose option (a) or thought the two options were the same) or did not know the answer to the question are much less likely to belong to the pay in full group. On the other hand, those who made mistakes in answering this question are more likely to belong to the pay fees cluster. As with other literacy questions, those who are less knowledgeable are also less likely to belong to cluster 2, again emphasizing the differences between this cluster and clusters 3 and 4.[19]

In summary, for each measure of financial literacy, there is a strong relationship between literacy and debt behavior, even after controlling for demographics. The more financially knowledgeable, who grasp basic concepts about debt, are much more likely to pay their credit cards in full, while those who are less literate are more likely to pay fees or be AFS users. Our borrowers/savers are rather knowledgeable and have high incomes, yet tend to carry credit card balances and pay finance charges, perhaps because these charges are not particularly consequential for this group. In the next section we try to address this issue by examining self-reported debt loads.

5.   Overindebtedness

According to intertemporal models, consumers borrow to smooth consumption over the life cycle. Variations in debt over time and across individuals would not necessarily indicate that anyone was "overlevered" or "underlevered." Yet imperfections in financial markets and shocks might lead individuals to conclude that their debt level was suboptimal. Some may suffer from credit constraints and be unable to borrow as much as they would like. Others may be hit by unexpected negative shocks and carry higher debt loads than they might otherwise prefer. The existing literature has largely failed to consider that some may accumulate too much debt by being unaware of the consequences of their own choices. We consider the latter possibility, looking for links between debt levels and lack of financial knowledge.

In the survey, we sought to understand whether people have difficulties paying off their debt. While we recognize the potential problems with self-reported measures of debt levels, these reports give information about credit constraints and consumers' interest in additional borrowing. To gauge debt levels, we asked individuals the following question:

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[19] If debt literacy is measured with error and the errors are random (the classical measurement error problem), then our estimates of debt literacy underestimate the true effect.

Which of the following best describes your current debt position?
   a. *I have too much debt right now and I have or may have difficulty paying it off.*
   b. *I have about the right amount of debt right now and I face no problems with it.*
   c. *I have too little debt right now. I wish I could get more.*
   d. *I just don't know.*

In aggregate, in November 2007, before the financial crisis hit the economy, 26.4% of respondents in our representative sample of Americans already said they have or may have difficulty paying off debt (*have difficulty with debt*). Another group, 11.1%, "just didn't know" their debt position (*unsure*). We focus primarily on these two groups.

Paralleling our analysis in the last section, we first report on the traits of these different groups in univariate terms (**Table 7**) and then provide a multinomial logit analysis of debt loads (**Table A3**). Looking at **Table 7**, one can see that relative to those who are comfortable with their level of debt, those experiencing difficulty with debt are younger and have fewer financial assets and lower incomes. Note that they are disproportionately drawn from the pay fees cluster, while almost none are part of the pay in full segment. In terms of debt literacy, they rank themselves the lowest of the four groups.

The "unsure," the 11% who were unable to judge whether they have too much or too little debt, tend to be disproportionately female (nearly 70%), African-American (18%), and unmarried (60%): the same characteristics displayed by those with low debt literacy. With respect to income, they are disproportionately drawn from the lowest income group (59% with household income under $30,000 per year), and have considerably less wealth than the 60% who categorized their debt load as "about right." With respect to financial knowledge, their debt literacy is considerably weaker than that of respondents who judged their debt to be either about right or even too high. Respondents in this group were also more likely to select "do not know" as the answer to the debt literacy questions than were the other two groups. This group is disproportionately drawn from the AFS users segment.

We perform a multinomial logit analysis of the three groups mentioned above: those having difficulty with debt, the unsure, and those with the right amount of debt. As predictors for these debt outcomes, we add dummies for the different measures of financial literacy (**Table 8**). Moreover, we use demographic variables, including age and age squared, and dummies for gender, marital status, race, family size, employment status, and income and wealth. Given that

estimates for these demographics alone are reported in the appendix (**Table A3**), we do not report these estimates in the table, but we comment on them in the text when appropriate.

We find that self-reported literacy again shows a very strong relationship to self-assessed debt burdens. Those who reported higher levels of literacy are more likely to belong to the group who reported having no difficulty handling their current debt. The effect is not only sizable but it tends to increase with higher scores for self-assessed literacy. Conversely, those with lower self-reported literacy levels are much more likely to have reported having difficulty with debt, and again there is a monotonic (negative) relationship between financial literacy and having too much debt. Although the estimates are less sizable than for those who have or may have difficulty with debt, the unsure are also much less likely to display high levels of self-assessed literacy (**Table 8**). Moreover, those who are employed and have higher income and higher wealth are much more likely to have reported that they have the right amount of debt. Finally, women, African-Americans, and those with low income and wealth are more likely to have reported an inability to judge their debt load (see also **Table A3**).

When we consider the other measures of literacy, we find similar results. Most importantly, these results are consistent with the multinomial logit for the experience segments. Specifically, those who overestimated the number of years it takes for debt to double (first measure of literacy) are also more likely to have reported that they have or may have difficulty paying off debt. On the other hand, those who made mistakes in answering this question or did not know the answer to this question are much less likely to have reported that they have the right amount of debt; they are more likely to belong to the unsure group.

Knowledge about how to eliminate credit card debt (second literacy question) is also related to self-assessed levels of debt. In this case, those who display the least knowledge, i.e., claimed not to know the answer to this question, are less likely to have reported having the right amount of debt. Turning to the answer to the question about the more advantageous payment option, we find again that those who were not able to answer this question are less likely to have reported having the right amount of debt; they are more likely to belong to the unsure group.

For completeness, in **Table 9** we report the estimates in which we also account for the three dummies characterizing different clusters (the first cluster is the reference group). In this way, we can assess whether financial experiences have a direct effect on the amount of debt that respondents have and whether the effect of debt literacy remains significant after accounting for the behavior characterized by the four clusters. **Table A4** reports the estimates excluding the

literacy variables. As shown in **Table 9**, the effect of literacy weakens only for the third measure of debt literacy; otherwise, there is still an effect even after accounting for the clusters. Thus, financial literacy is related to debt loads above and beyond the effect it has on financial experiences. Moreover, even after accounting for a large set of demographic characteristics, those who belong to the three segments that do not pay credit cards in full are disproportionately more likely to have difficulty with debt (**Table A4**). Similarly, members of clusters 2, 3, and 4 are much less likely to have reported that they have the right amount of debt. Note that not just the fee payers and the AFS users reported having difficulty with debt, but those in cluster 2, who carry some balances and pay some finance charges, also end up with too much debt (**Tables 9 and A4**).

6.   The Cost of Ignorance

In this section, we offer partial estimates of what we call "the cost of ignorance," or the financial transaction costs incurred by less-informed Americans and the component of these costs that is particularly related to lack of financial knowledge. For the purpose of our calculations, we focus exclusively on credit card debt (**Table 10**).

This calculation of expected costs has two components—the likelihood of and the costs of various behaviors. First, we calculate the *likelihood* of engaging in various credit card behaviors that give rise to explicit fees or finance charges: paying bills late, going over the credit limit, using cash advances, and paying the minimum amount only. These likelihoods come directly from empirical estimates using the data on credit card behavior, debt literacy, and demographics. We compare consumers with higher versus lower financial knowledge, with the least financially savvy in our population defined as those who judge their financial knowledge equal to 4 or lower on our seven-point scale. Among cardholders, this group comprises 28.7% of the population. As we have mentioned before, the large majority of respondents chose values well above 4. For the less knowledgeable, we calculate both the *average* likelihood of engaging in fee-inducing credit card behaviors as well as the *incremental* likelihood of engaging in these behaviors as a function of having lower financial skills. The latter estimates come directly from specifications analogous to those we employ to characterize the determination of experience segments, where we analyze credit card behavior instead of experience segments. For example, the unconditional likelihood that a cardholder reported incurring at least one over-the-limit charge in the prior year was 5.6%. Our estimation, after controlling for income, demographics,

and other factors, is that the incremental probability of incurring an over-the-limit fee for a low literacy individual is 1.5%. Thus, the average likelihood of a less financially literate individual (representing 28.7% of the population) incurring at least one over-the-limit fee is 7.1%.

The second part of the calculation estimates the *costs* incurred by the cardholder, conditional on engaging in the particular behavior. For late fees, over-the-limit fees, and cash advances, we assume that the individual who admits to these activities has only *one* of these events per year, which is a very conservative assumption. We estimate the cost per incidence from industry data. For cardholders who pay only the minimum amount, we estimate the finance charges paid for one year assuming that the cardholder's balance equals the national average balance (about $6,000), that stated finance charges equal the national average (14.5% in 2007), and that the cardholder makes no additional purchases during the year. Again, we select these assumptions to be conservative. We are not attempting to measure all of the costs of transacting, even with a credit card, as we have not included finance charges for revolvers who pay more than the minimum, charges for insufficient funds, annual fees, or other charges.

As **Table 10** shows, these four behaviors give rise to collective fees and charges of $26.8 billion paid by cardholders, most of which are finance charges due to paying only the minimum amount due. While the less knowledgeable account for only 28.7% of the cardholder population, they account for 42% of these charges, because of their higher likelihood of incurring them. Thus, they bear a disproportionate share of the fees associated with fee-inducing behaviors. Specifically, the average fees paid by a low-knowledge individual are 50% higher than those paid by an average cardholder. Perhaps more importantly, of these four types of charges incurred by less-knowledgeable cardholders, one-third are incremental charges that are empirically linked to low financial literacy after controlling for many variables, including income, age, family structure, wealth, and other demographic factors.[20] Regardless of whether one judges these fees to be appropriate, the cost of ignorance is sizable.

7. **Implications and Conclusions**

With this work, we hope to break new ground in a few ways. First, we focus attention on an important component of financial literacy—debt literacy. Second, we consider the rich set of financial experiences that individuals have, rather than simply focusing on one behavior. Third,

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[20] This number can be derived from table 10 by dividing $3.5 billion by $11.2 billion.

we take into account individuals' assessments of their own debt levels. Finally, we design a collaborative research project that blends scholarly research with timely market research. Our conclusions suggest a complex set of interactions among debt literacy, financial experiences, demographics, and debt loads.

Low levels of debt literacy are the norm, and understanding of the basic mechanics of debt is especially limited among the elderly, women, certain minorities, and people with lower incomes and wealth. Particularly intriguing—and worthy of additional research—is the notion that certain respondent groups, like the elderly, *think* they know considerably more than they actually do. This disparity may help explain the incidence of financial frauds perpetrated against the elderly. Moreover, women—both young and old—exhibit substantially lower debt literacy than men.

Second, people have rich sets of financial experiences. Our work collapses these experiences into four segments and shows that the segments are closely linked with both demographics and financial knowledge. While it may be reassuring to know that the people who always pay credit cards in full are more financially skilled, it is troubling that the people whose financial transaction patterns are characterized by high-cost borrowing are those who come from vulnerable demographic groups and—even after controlling for these factors—are less debt literate. People who make financial choices that incur avoidable fees and charges (e.g., only paying the minimum balance on credit cards, incurring late or over-the-limit fees, using alternative financial service credit such as payday loans, tax refund loans, or pawnshops) are those with a weaker understanding of the implications of debt. While our sample did not specifically study subprime mortgages, it would be useful to know if subprime borrowers were disproportionately drawn from the low debt literacy groups.

Finally, in November 2007, over a quarter of Americans felt overburdened with respect to their debt loads and another 11% were unable to assess their debt position. Thus, even before the onset of the current financial crisis, more than 40% of families had issues with their debt position. Moreover, those facing difficulty paying off debt were drawn from certain demographic groups, had common financial experiences characterized by costly borrowing, and tended to have lower levels of debt literacy.

Our empirical results suggest a sizeable cost of financial ignorance as well. Using credit cards as an example, we find that the less financially knowledgeable pay a disproportionately larger fraction of fees and finance charges than do the more knowledgeable. Our empirical

analysis suggests that about a third of the fees and charges paid by low literacy individuals are related to lack of knowledge, even after controlling for observable differences in income, wealth, family status, and other factors.

We think there are a number of implications from our findings. If poor financial decisions partly result from lack of financial knowledge, then in certain circumstances, one may be able to design mechanisms to compensate for it. These solutions might be embodied in auto enrollment options, such as those studied by Choi, Laibson, Madrian, and Metrick (2003, 2004), and Choi, Laibson, and Madrian (2004), among others. However, once one recognizes the wide range of financial choices that consumers may potentially face, it becomes harder to conceive that poor financial decisions can be overcome in this fashion. For example, someone who needs additional funds will have to search for and compare alternatives ranging from extending their borrowing on their credit cards to taking out a home equity loan to overdrafting a bank account to taking out a payday loan to borrowing from a friend or going to a pawn shop. As much as we could try to circumscribe the choices, individuals will need to make active decisions. Our work suggests that financial literacy is related to the choices that people make, with less knowledgeable people making more costly decisions—even after controlling for a host of other factors. We interpret this to mean that additional research on financial literacy remains an important priority.

Appendix

Description of the survey

The survey was fielded in November 2007 by the staff of TNS Global. TNS is the largest custom market research provider in the United States. It is a leader in opinion polling and political and social research. It has offices in more than eighty countries across the Americas, Africa, Asia Pacific, Europe, and the Middle East.[21]

The data were collected via a phone interview from a sample of 1,000 U.S. respondents. Weights were constructed to make the final sample representative of the U.S. population with respect to income, gender, age, and other observable traits such as household size, region, and market size. The survey reports information on several demographic characteristics, such as age, gender, race and ethnicity, marital status, employment, region of residence, family type, and

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[21] See http://www.tnsglobal.com/.

family size. In addition, it provides self-reported information on family income and wealth. Respondents identified their household income category (one of four options) and the category into which their total *investable* assets fall (ten brackets are provided). Total investable assets include any sums in cash, checking or savings accounts, stocks, bonds, mutual funds, insurance policies, and any money in IRAs. Respondents are asked to exclude primary residence, real estate, closely-held businesses or assets in any employer-sponsored savings or retirement plans, including a 401(k) plan, from their measure of investable assets.

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Table 1. TNS Survey Debt Literacy Questions: Weighted Results

Panel A: First literacy question

Suppose you owe $1,000 on your credit card and the interest rate you are charged is 20% per year compounded annually. If you didn't pay anything off, at this interest rate, how many years would it take for the amount you owe to double?

	Total	Age					Gender		Household income			
		< 30	31 to 40	41 to 50	51 to 65	> 65	Male	Female	Under $30,000	$30,000 - $49,999	$50,000 - $74,999	Above $75,000
2 years	9.6%	9.7%	13.8%	9.6%	6.7%	9.8%	8.5%	10.6%	13.6%	6.9%	10.3%	6.4%
Less than 5 years (correct)	35.9%	43.2%	33.4%	34.2%	38.0%	28.6%	46.3%	25.5%	25.6%	32.4%	38.7%	48.4%
Between 5 and 10 years	18.8%	22.4%	20.2%	21.0%	15.7%	15.9%	16.1%	21.5%	18.2%	19.4%	20.3%	18.1%
More than 10 years	13.1%	5.0%	10.7%	14.4%	18.1%	11.3%	14.1%	12.2%	10.3%	18.2%	17.3%	10.2%
Do not know	18.3%	16.2%	16.1%	19.2%	16.3%	28.4%	11.4%	25.2%	26.5%	18.1%	11.4%	13.5%
Prefer not to answer	4.3%	3.5%	5.8%	1.7%	5.1%	6.0%	3.6%	5.1%	6.0%	5.0%	2.1%	3.4%
Number of observations	1,000	141	189	226	328	116	505	495	264	163	193	380

Panel B: Second literacy question

You owe $3,000 on your credit card. You pay a minimum payment of $30 each month. At an Annual Percentage Rate of 12% (or 1% per month), how many years would it take to eliminate your credit card debt if you made no additional new charges?

	Total	Age					Gender		Household income			
		< 30	31 to 40	41 to 50	51 to 65	> 65	Male	Female	Under $30,000	$30,000 - $49,999	$50,000 - $74,999	Above $75,000
Less than 5 years	3.8%	6.8%	2.8%	4.5%	3.6%	1.1%	2.0%	5.6%	6.3%	1.3%	1.7%	4.1%
Between 5 and 10 years	12.4%	15.9%	13.6%	11.1%	10.9%	12.9%	11.4%	13.4%	15.4%	10.8%	13.6%	9.4%
Between 10 and 15 years	21.6%	20.5%	24.3%	23.2%	21.4%	15.3%	21.3%	21.8%	16.2%	25.5%	26.3%	21.9%
Never, continue to be in debt (correct)	35.4%	36.1%	31.5%	33.9%	39.8%	32.4%	45.0%	25.8%	28.0%	35.4%	36.6%	43.2%
Do not know	21.7%	17.0%	20.1%	24.7%	19.3%	30.7%	15.7%	27.7%	28.1%	21.9%	19.4%	15.6%
Prefer not to answer	5.1%	3.7%	7.8%	2.6%	4.9%	7.7%	4.6%	5.6%	6.1%	5.0%	2.5%	5.7%
Number of observations	1,000	141	189	226	328	116	505	495	264	163	193	380

Panel C: Third literacy question

You purchase an appliance which costs $1,000. To pay for this appliance, you are given the following two options: a) Pay 12 monthly installments of $100 each b) Borrow at a 20% annual interest rate and pay back $1200 one year from now. Which is the more advantageous offer, in other words which one will cost less?

	Total	Age					Gender		Household income			
		< 30	31 to 40	41 to 50	51 to 65	> 65	Male	Female	Under $30,000	$30,000 - $49,999	$50,000 - $74,999	Above $75,000
Option (a)	40.6%	43.0%	41.7%	40.0%	39.9%	39.0%	36.3%	45.0%	46.0%	39.7%	39.2%	36.0%
Option (b) (correct)	6.9%	6.5%	6.2%	7.7%	7.5%	5.8%	9.3%	4.6%	3.7%	5.9%	8.9%	10.1%
They are the same	38.8%	37.5%	41.3%	37.2%	39.5%	37.6%	44.6%	33.0%	32.8%	41.9%	41.6%	41.8%
Do not know	9.2%	9.9%	5.0%	11.1%	9.5%	10.8%	5.3%	13.0%	12.3%	8.0%	6.6%	8.1%
Prefer not to answer	4.5%	3.2%	5.9%	4.0%	3.6%	6.9%	4.5%	4.4%	5.2%	4.6%	3.7%	4.0%
Number of observations	1,000	141	189	226	328	116	505	495	264	163	193	380

Panel D: Self-Assessed Financial Literacy

On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?

	Total	Age					Gender		Household income			
		< 30	31 to 40	41 to 50	51 to 65	>65	Male	Female	Under $30,000	$30,000 - $49,999	$50,000 - $74,999	Above $75,000
1 = Very low	2.0%	2.60%	3.00%	1.60%	1.80%	0.90%	1.80%	2.20%	4.70%	0.60%	0.90%	0.50%
2	2.9%	2.60%	0.70%	3.70%	3.90%	2.80%	2.50%	3.20%	4.60%	4.10%	1.40%	1.10%
3	7.7%	8.80%	10.50%	9.90%	5.70%	3.20%	6.60%	8.80%	10.80%	7.00%	5.50%	6.20%
4	19.5%	27.20%	26.70%	18.10%	15.50%	12.10%	16.70%	22.50%	24.10%	18.40%	15.40%	17.90%
5	31.9%	30.40%	31.20%	27.70%	36.20%	30.80%	32.30%	31.50%	26.70%	30.50%	40.30%	33.40%
6	18.9%	12.60%	14.80%	20.20%	19.20%	30.70%	22.60%	15.30%	12.80%	19.70%	21.80%	23.80%
7 = Very High	10.7%	9.20%	7.70%	12.40%	9.90%	16.30%	11.50%	9.80%	8.00%	9.90%	11.10%	14.00%
Do not know	2.3%	3.80%	0.70%	3.20%	2.20%	1.70%	1.90%	2.60%	2.50%	5.10%	1.50%	0.50%
Prefer not to answer	3.9%	2.70%	4.70%	3.10%	5.50%	1.30%	3.80%	4.00%	5.70%	4.50%	2.10%	2.60%
Average score	4.88	4.66	4.67	4.89	4.93	5.33	5.01	4.74	4.45	4.91	5.1	5.17
Number of observations	1,000	141	189	226	328	116	505	495	264	163	193	380

Note: The average score excludes the survey answers "Do not know" and "Prefer not to answer."

Table 2. Financial Experience Measures, Total Sample

This table reports the mean and standard deviation of the frequencies of the various financial experiences by 1,000 survey respondents. All frequencies are weighted. The survey was conducted in November 2007 by TNS Global.

In the last twelve months, which of the following describes your use of credit cards?	Short name	Sample mean	Sample SD
I don't have any credit cards or did not use them	CC None	.206	.405
In some months, I ran an outstanding balance and paid finance charges	CC Balance	.308	.462
In some months, I paid the minimum payment only	CC Min	.213	.410
In some months, I was charged a late charge for late payment	CC Late	.076	.265
In some months, I was charged an over the limit charge for charges exceeding my credit line	CC OTL	.044	.206
In some months, I used the cards for a cash advance	CC Advance	.052	.223
My account was closed down by the credit card company	CC Closed	.015	.122
I always paid my credit cards in full	CC PIF	.368	.482

Which of the following financial transactions have you EVER done?	Short name	Sample mean	Sample SD
I opened a checking or debit card account	Checking	.914	.280
I opened a savings account or bought a CD	Savings	.806	.395
I invested in mutual funds	Mut. Fund	.388	.488
I invested in individual stocks	Stocks	.341	.474
I bought savings bonds or other bonds	Bonds	.349	.477
I took out a loan for student education	Loan: Stu	.270	.444
I took out an auto loan	Loan: Auto	.637	.481
I took out a home equity loan	Loan: HE	.305	.461
I got (or refinanced) a mortgage	Loan: Mort	.493	.500
I got a short term "payday" or "salary advance" loan	Loan: Payday	.078	.269
I got a "refund anticipation loan" to accelerate the receipt of my tax payments	Loan: Refund	.044	.204
I got an auto title loan	Loan: Title	.065	.247
I used a pawn shop	Loan: Pawn	.107	.310
I bought goods on a lay-away plan or at a rent-to-own store	Lay-A-Way/Rent	.191	.393

Table 3. Conditional Financial Experience Measures, Total Sample

Each cell represents the fraction of individuals who have certain financial experiences, conditional on having experience with the activity listed at the top of the column. The first column reports the unconditional probabilities. The cells in gray represent the cases where conditional values exceed unconditional values of financial experiences. The survey of 1,000 people was conducted by TNS Global in November 2007.

	Unconditional Probability	CC: None	CC: Balance	CC: Min Pay	CC: Late	CC: OTL	CC: Cash Adv	CC: Closed	CC: PIF	Checking	Savings	Mut. Fund	Stocks	Bonds	Loan: Stu	Loan: Auto	Loan: HE	Loan: Mort	Loan: Payday	Loan: Refund	Loan: Title	Pawn	Lay-A-Way/Rent
CC: None	37%	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.15	0.06	0.06	0.09	0.17	0.14	0.09	0.10	0.40	0.34	0.20	0.44	0.34
CC: Balance	31%	0.00	1.00	0.52	0.64	0.67	0.55	0.21	0.03	0.32	0.34	0.32	0.31	0.36	0.45	0.39	0.35	0.36	0.33	0.27	0.41	0.24	0.38
CC: Minimum Pay	21%	0.00	0.36	1.00	0.63	0.60	0.59	0.22	0.02	0.22	0.21	0.17	0.16	0.16	0.29	0.23	0.21	0.21	0.30	0.31	0.24	0.30	0.32
CC: Late	8%	0.00	0.16	0.23	1.00	0.60	0.25	0.31	0.02	0.08	0.08	0.06	0.06	0.05	0.12	0.08	0.05	0.06	0.12	0.14	0.09	0.08	0.10
CC: OTL	4%	0.00	0.09	0.12	0.35	1.00	0.21	0.27	0.00	0.04	0.05	0.03	0.04	0.04	0.07	0.05	0.03	0.03	0.09	0.08	0.06	0.02	0.04
CC: Cash Advance	31%	0.00	0.09	0.14	0.17	0.25	1.00	0.00	0.01	0.05	0.05	0.03	0.03	0.05	0.05	0.05	0.05	0.03	0.11	0.04	0.05	0.04	0.08
CC: Closed	2%	0.00	0.01	0.02	0.06	0.09	0.00	1.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.02	0.03	0.00	0.03	0.01
CC: PIF	37%	0.00	0.03	0.03	0.08	0.03	0.07	0.05	1.00	0.37	0.40	0.56	0.54	0.49	0.26	0.37	0.44	0.45	0.12	0.14	0.28	0.13	0.16
Checking	91%	0.83	0.96	0.96	0.94	0.93	0.88	1.00	0.92	1.00	0.97	0.97	0.97	0.97	0.96	0.97	0.97	0.97	0.99	1.00	0.98	0.95	0.95
Savings	81%	0.59	0.89	0.81	0.83	0.93	0.78	0.67	0.89	0.85	1.00	0.95	0.96	0.96	0.88	0.90	0.91	0.92	0.82	0.79	0.96	0.74	0.83
Mut. Fund	39%	0.11	0.40	0.31	0.33	0.31	0.24	0.13	0.59	0.41	0.46	1.00	0.77	0.63	0.43	0.47	0.58	0.54	0.25	0.21	0.36	0.24	0.27
Stocks	34%	0.10	0.34	0.26	0.29	0.28	0.19	0.13	0.50	0.36	0.41	0.67	1.00	0.58	0.37	0.42	0.52	0.49	0.26	0.33	0.33	0.30	0.26
Bonds	35%	0.15	0.41	0.26	0.24	0.30	0.31	0.21	0.47	0.37	0.41	0.57	0.60	1.00	0.41	0.45	0.49	0.48	0.25	0.31	0.42	0.21	0.31
Loan: Stu	27%	0.22	0.39	0.37	0.41	0.44	0.28	0.13	0.19	0.28	0.30	0.30	0.30	0.32	1.00	0.34	0.35	0.32	0.36	0.41	0.37	0.28	0.33
Loan: Auto	64%	0.44	0.80	0.71	0.71	0.79	0.59	0.38	0.64	0.68	0.71	0.78	0.78	0.82	0.81	1.00	0.87	0.85	0.75	0.73	0.85	0.62	0.71
Loan: HE	30%	0.13	0.35	0.30	0.24	0.19	0.31	0.05	0.37	0.32	0.34	0.46	0.46	0.43	0.40	0.42	1.00	0.48	0.26	0.29	0.40	0.23	0.25
Loan: Mort	49%	0.24	0.58	0.49	0.38	0.32	0.31	0.19	0.60	0.53	0.56	0.69	0.71	0.67	0.58	0.66	0.77	1.00	0.44	0.38	0.62	0.38	0.44
Loan: Payday	8%	0.15	0.08	0.11	0.12	0.16	0.16	0.13	0.03	0.08	0.08	0.05	0.06	0.05	0.10	0.09	0.07	0.07	1.00	0.59	0.20	0.37	0.19
Loan: Refund	4%	0.07	0.04	0.06	0.08	0.07	0.03	0.08	0.02	0.05	0.04	0.02	0.04	0.04	0.07	0.05	0.05	0.03	0.33	1.00	0.15	0.22	0.13
Loan: Title	7%	0.06	0.09	0.07	0.07	0.09	0.07	0.00	0.05	0.07	0.08	0.06	0.06	0.08	0.09	0.09	0.09	0.08	0.17	0.22	1.00	0.13	0.14
Pawn	39%	0.23	0.08	0.15	0.12	0.05	0.07	0.21	0.04	0.11	0.10	0.07	0.09	0.06	0.11	0.10	0.08	0.08	0.51	0.53	0.21	1.00	0.30
Lay-A-Way/Rent	19%	0.31	0.23	0.29	0.26	0.17	0.31	0.09	0.08	0.20	0.20	0.13	0.14	0.17	0.23	0.21	0.15	0.17	0.47	0.59	0.41	0.53	1.00

Conditioning Financial Experience

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Table 4: Financial Experience Segments

This table reports the incidences of various financial experiences, conditional on assignment to one of the four experience clusters. The clusters were defined with reference to these experiences and not on the basis of demographic or debt literacy information.

| | | Experience Segments | | | | | | | |
| | | 1: Pay in full | | 2: Borrowers/ Savers | | 3: Pay fees | | 4: AFS users | |
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
In the last twelve months, which of the following describes your use of credit cards?	**Short name**								
I don't have any credit cards or did not use them	CC None	0.000	0.000	0.000	0.000	0.002	0.047	0.680	0.467
In some months, I ran an outstanding balance and paid finance charges	CC Balance	0.010	0.100	0.947	0.225	0.600	0.491	0.015	0.123
In some months, I paid the minimum payment only	CC Minimum	0.010	0.102	0.273	0.447	0.559	0.497	0.008	0.090
In some months, I was charged a late charge for late payment	CC Late	0.019	0.137	0.115	0.321	0.174	0.380	0.009	0.093
In some months, I was charged an over the limit charge for charges exceeding my credit line	CC OTL	0.000	0.000	0.060	0.238	0.118	0.324	0.000	0.000
In some months, I used the cards for a cash advance	CC Advance	0.000	0.000	0.015	0.120	0.161	0.368	0.000	0.000
My account was closed down by the credit card company	CC Closed	0.005	0.067	0.007	0.084	0.042	0.201	0.000	0.000
I always paid my credit cards in full	CC PIF	0.988	0.111	0.037	0.188	0.036	0.186	0.296	0.457
Which of the following financial transactions have you EVER done?	**Short name**								
I opened a checking or debit card account	Checking	0.977	0.151	0.991	0.095	0.939	0.241	0.805	0.397
I opened a savings account or bought a CD	Savings/CD	0.949	0.221	0.982	0.135	0.797	0.403	0.622	0.486
I invested in mutual funds	Mutual Fund	0.723	0.448	0.839	0.369	0.156	0.363	0.156	0.364
I invested in individual stocks	Stocks	0.640	0.481	0.825	0.381	0.119	0.324	0.119	0.325
I bought savings bonds or other bonds	Bonds	0.625	0.485	0.646	0.480	0.226	0.419	0.116	0.321
I took out a loan for student education	Student Loan	0.201	0.402	0.462	0.500	0.334	0.473	0.189	0.393
I took out an auto loan	Auto Loan	0.770	0.422	0.940	0.238	0.657	0.476	0.380	0.486
I took out a home equity loan	Home Equity	0.485	0.501	0.538	0.500	0.251	0.434	0.111	0.314
I got (or refinanced) a mortgage	Mortgage	0.798	0.402	0.774	0.420	0.444	0.498	0.166	0.373
I got a short term "payday" or "salary advance" loan	Payday Loan	0.024	0.154	0.084	0.279	0.079	0.271	0.122	0.328
I got a "refund anticipation loan" to accelerate the receipt of my tax payments	Refund Loan	0.004	0.067	0.047	0.213	0.049	0.216	0.071	0.258
I got an auto title loan	Auto Title Loan	0.047	0.212	0.118	0.324	0.063	0.243	0.064	0.244
I used a pawn shop	Pawn	0.019	0.138	0.135	0.344	0.103	0.304	0.178	0.383
I bought goods on a lay-away plan or at a rent-to-own store	Lay-A-Way/Rent	0.064	0.246	0.248	0.433	0.228	0.420	0.240	0.428
Weighted share of sample		26.6%		11.8%		31.4%		30.2%	
Number of observations (unweighted)		292		130		305		273	

Table 5: Characteristics of Financial Experience Segments

This table reports statistics on the demographic and debt literacy variables for the total sample as well as for the four clusters defined in Table 4.

Panel A: Demographics	Total Sample		1: Pay in full		2: Borrowers/ Savers		3: Pay fees		4: AFS users	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Age	47.8	14.4	53.1	14.4	49.5	12.9	45.1	13.3	45.4	14.9
Female	50.0%	50.0%	43.5%	49.7%	37.8%	48.7%	52.4%	50.0%	58.0%	49.5%
White	85.0%	35.7%	91.1%	28.6%	87.4%	33.3%	80.8%	39.4%	83.1%	37.5%
Black	6.4%	24.6%	2.1%	14.2%	5.2%	22.2%	10.5%	30.7%	6.6%	24.9%
Hispanic	3.6%	18.7%	1.5%	12.3%	1.4%	11.8%	4.9%	21.5%	5.1%	22.0%
Married	64.0%	48.0%	74.3%	43.8%	72.8%	44.7%	62.6%	48.5%	53.1%	50.0%
Single	16.0%	36.7%	9.5%	29.4%	8.6%	28.2%	16.9%	37.6%	23.7%	42.6%
Separated	19.9%	40.0%	16.2%	36.9%	18.6%	39.1%	20.5%	40.4%	23.2%	42.3%
Household Income:										
Under $30,000	32.8%	47.0%	16.7%	37.3%	10.2%	30.4%	35.8%	48.0%	52.9%	50.0%
$30,000 to $49,999	20.4%	40.3%	20.1%	40.1%	17.3%	38.0%	21.1%	40.8%	21.3%	41.0%
$50,000 to $74,999	18.2%	38.6%	20.2%	40.3%	30.8%	46.3%	17.5%	38.0%	12.3%	32.9%
Above $75,000	28.5%	45.2%	43.0%	49.6%	41.7%	49.5%	25.7%	43.8%	13.6%	34.3%
Not employed	13.9%	34.6%	7.9%	27.0%	7.0%	25.6%	12.7%	33.3%	23.2%	42.3%
Financial Assets:										
Under $50,000	58.2%	49.3%	26.5%	44.2%	47.9%	50.1%	76.1%	42.7%	71.6%	45.2%
$50 - $100,000	13.1%	33.8%	18.1%	38.6%	18.9%	39.3%	9.2%	29.0%	10.4%	30.6%
$100 - $250,000	11.6%	32.0%	19.1%	39.3%	13.4%	34.2%	9.6%	29.5%	6.3%	24.4%
Over $250,000	17.1%	37.7%	36.3%	48.2%	19.8%	40.0%	5.1%	22.0%	11.6%	32.1%
Panel B: Debt Literacy										
Question 1 (debt doubling)										
% correct	35.9%	48.0%	44.7%	49.8%	46.7%	50.1%	34.9%	47.7%	24.9%	43.3%
% do not know	18.3%	38.7%	11.7%	32.2%	10.4%	30.7%	23.6%	42.5%	21.7%	41.3%
Question 2 (min pay)										
% correct	35.4%	47.8%	42.0%	49.4%	46.1%	50.0%	38.2%	48.7%	22.5%	41.8%
% do not know	21.7%	41.2%	17.6%	38.1%	15.6%	36.4%	22.8%	42.0%	26.5%	44.2%
Question 3 (retailer)										
% correct	6.9%	25.4%	10.6%	30.9%	13.5%	34.3%	3.7%	18.9%	4.5%	20.7%
% do not know	9.2%	28.9%	7.0%	25.6%	7.2%	25.9%	9.0%	28.7%	12.0%	32.6%
Average self-assessment (1 to 7, excludes na)	4.88	1.34	5.48	1.06	5.24	1.18	4.45	1.25	4.62	1.51
Number of observations										
weighted share of sample	100%		26.6%		11.8%		31.4%		30.2%	
unweighted	1000		292		130		305		273	

Table 6: Multinomial Logit Analyses of Characteristics of Financial Experience Segments

This table reports the logit estimates of belonging to one of four clusters on a set of financial literacy measures and demographic variables (marginal effects are reported). See Table A2 for the list of demographic variables included in these regressions.

Variables	Self-assessed literacy				First measure of literacy				Second measure of literacy				Third measure of literacy			
	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Lit1 (see defn below)	0.0775	0.0662	-0.0758	-0.0679	0.00229	-0.00213	-0.0519	0.0518	0.00753	-0.0219	-0.0989**	0.113**	-0.141**	-0.0771**	0.170**	0.0481
	(0.082)	(0.060)	(0.055)	(0.059)	(0.055)	(0.036)	(0.057)	(0.065)	(0.046)	(0.027)	(0.045)	(0.056)	(0.055)	(0.032)	(0.082)	(0.080)
Lit2 (see defn below)	0.215***	0.0543	-0.131***	-0.138***	-0.0671**	-0.0279	-0.0296	0.125***	-0.0742**	-0.0439**	-0.0603	0.178***	-0.0911*	-0.0768**	0.137*	0.0306
	(0.077)	(0.049)	(0.050)	(0.053)	(0.033)	(0.022)	(0.040)	(0.044)	(0.036)	(0.021)	(0.043)	(0.051)	(0.055)	(0.031)	(0.083)	(0.081)
Lit3 (see defn below)	0.313***	0.0959	-0.254***	-0.155***	-0.137***	-0.0590**	0.0864*	0.110**	-0.0852**	-0.0533**	-0.0374	0.176***	-0.136***	-0.0686***	0.109	0.0965
	(0.090)	(0.064)	(0.043)	(0.055)	(0.034)	(0.024)	(0.050)	(0.053)	(0.037)	(0.023)	(0.044)	(0.050)	(0.048)	(0.026)	(0.110)	(0.100)
Lit4 (see defn below)	0.294***	0.0735	-0.275***	-0.0925	-0.0833	-0.0887***	-0.173***	0.345***	-0.126***	-0.0903***	-0.152**	0.368***	-0.142***	-0.101***	-0.072	0.315***
	(0.100)	(0.070)	(0.040)	(0.068)	(0.058)	(0.025)	(0.066)	(0.084)	(0.045)	(0.021)	(0.063)	(0.077)	(0.050)	(0.018)	(0.110)	(0.120)
DEMOGRAPHIC CONTROLS: YES																
N. of observations	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Pseudo R-squared	0.177	0.177	0.177	0.177	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.160	0.160	0.160	0.160

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Definitions of Lit1-Lit4 variables

Self-assessed literacy: Lit1= 4, Lit2 = 5, Lit3 = 6, Lit4 = 7. Omitted class: low literacy 1-3.

First measure of literacy: Lit1 = underestimate, Lit2 = overestimate, Lit3 = do not know, Lit4 = refuse to answer. Omitted class: Correct.

Second measure of literacy: Lit1 = underestimate, Lit2 = overestimate, Lit3 = do not know, Lit4 = refuse to answer. Omitted class: Correct.

Third measure of literacy: Lit1= option a, Lit2 = same, Lit3 = do not know, Lit4 = refuse to answer. Omitted class: Correct.

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Table 7: Characteristics by Self-Assessment of Level of Indebtedness

This table reports statistics on the demographic, debt literacy, and experience segmentation variables for the total sample as well as for the four groups defined by their self-assessment of the level of their indebtedness.

				Indebtedness Self-Assessment						
	Total Sample		Have Difficulty with Debt		Right Amount		Too Little		Just Don't Know	
Panel A: Demographics	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Age	47.8	14.4	44.1	12.7	49.8	14.5	43.7	16.9	46.6	15.8
Female	50.0%	50.0%	48.4%	50.1%	47.7%	50.0%	30.7%	47.3%	69.5%	46.3%
White	85.0%	35.7%	84.9%	35.9%	87.0%	33.7%	87.9%	33.4%	74.1%	44.0%
Black	6.4%	24.6%	6.9%	25.4%	4.4%	20.4%	0.0%	0.0%	17.9%	38.5%
Hispanic	3.6%	18.7%	4.1%	19.8%	3.4%	18.1%	6.1%	24.6%	3.5%	18.5%
Married	64.0%	48.0%	62.5%	48.5%	69.2%	46.2%	59.6%	50.4%	40.0%	49.2%
Single	16.0%	36.7%	16.1%	36.8%	12.8%	33.5%	33.6%	48.4%	30.3%	46.2%
Separated	19.9%	40.0%	21.4%	41.1%	17.9%	38.4%	6.9%	26.0%	29.7%	45.9%
Household Income:										
Under $30,000	32.8%	47.0%	41.0%	49.3%	24.2%	42.9%	38.0%	49.8%	59.3%	49.4%
$30,000 to $49,999	20.4%	40.3%	21.1%	40.9%	19.9%	39.9%	13.7%	35.2%	23.1%	42.3%
$50,000 to $74,999	18.2%	38.6%	18.3%	38.8%	20.4%	40.3%	15.0%	36.6%	6.5%	24.8%
Above $75,000	28.5%	45.2%	19.5%	39.7%	35.5%	47.9%	33.4%	48.4%	11.1%	31.6%
Not employed	13.9%	34.6%	15.6%	36.3%	12.4%	33.0%	17.0%	38.5%	17.7%	38.4%
Financial Assets:										
Under $50,000	58.2%	49.3%	82.7%	37.9%	46.5%	49.9%	30.2%	47.1%	68.8%	46.6%
$50 - $100,000	13.1%	33.8%	10.0%	30.0%	14.5%	35.2%	8.5%	28.7%	13.7%	34.6%
$100 - $250,000	11.6%	32.0%	4.5%	20.7%	15.8%	36.5%	26.8%	45.5%	2.7%	16.2%
Over $250,000	17.1%	37.7%	2.9%	16.8%	23.2%	42.2%	34.3%	45.7%	14.8%	35.7%
Panel B: Debt Literacy										
Question 1 (debt doubling)										
% correct	35.9%	48.0%	32.1%	46.8%	41.7%	49.3%	30.8%	47.3%	14.2%	35.1%
% do not know	18.3%	38.7%	19.1%	39.4%	15.5%	36.2%	37.7%	49.7%	28.4%	45.3%
Question 2 (min pay)										
% correct	35.4%	47.8%	38.2%	48.7%	38.0%	48.6%	16.2%	37.8%	18.0%	38.6%
% do not know	21.7%	41.2%	21.6%	41.3%	19.5%	39.7%	37.7%	49.7%	30.9%	46.4%
Question 3 (retailer)										
% correct	6.9%	25.4%	6.0%	23.8%	8.3%	27.6%	8.1%	28.0%	1.7%	12.9%
% do not know	9.2%	28.9%	8.0%	27.2%	7.9%	27.0%	6.1%	24.6%	19.1%	39.5%
Average self-assessment (1 to 7, excludes na)	4.88	1.34	4.34	1.41	5.16	1.17	6.17	1.17	4.41	1.58
Panel C: Experience Clusters										
1: Pay in full	26.6%	44.2%	2.6%	16.1%	38.1%	48.6%	62.4%	49.7%	14.4%	35.3%
2: Borrowers/Savers	11.9%	32.3%	15.4%	36.1%	11.7%	32.1%	0.0%	0.0%	6.6%	25.0%
3: Pay fees	31.4%	46.4%	53.3%	50.0%	25.1%	43.4%	0.0%	0.0%	18.8%	39.3%
4: AFS users	30.2%	45.9%	28.7%	45.3%	25.1%	43.4%	37.6%	49.7%	60.2%	49.2%
Number of observations										
weighted share of sample	100%		26.4%		60.5%		20.0%		11.1%	
Unweighted	1000		248		634		20		98	

Table 8: Multinomial Logit Analyses of Self-Assessed Debt Levels

This table reports the logit estimates of belonging to a specific debt group on a set of financial literacy measures and demographic variables (marginal effects are reported). See Table A3 for the list of demographic variables included in these regressions.

Variables	Self-assessed literacy			First measure of literacy			Second measure of literacy			Third measure of literacy		
	Have difficulty with debt	Just right	Just do not know	Have difficulty with debt	Just right	Just do not know	Have difficulty with debt	Just right	Just do not know	Have difficulty with debt	Just right	Just do not know
Lit1 (see defn below)	-0.107***	0.145***	-0.0375**	0.0149	-0.132**	0.117**	-0.039	-0.0347	0.0737**	0.0285	-0.115	0.0865
	(0.037)	(0.044)	(0.019)	(0.053)	(0.066)	(0.057)	(0.039)	(0.051)	(0.037)	(0.062)	(0.079)	(0.071)
Lit2 (see defn below)	-0.135***	0.225***	-0.0902***	0.0791**	-0.127***	0.0478	-0.00288	0.0135	-0.0106	-0.0235	-0.0464	0.0699
	(0.037)	(0.042)	(0.021)	(0.037)	(0.042)	(0.029)	(0.038)	(0.043)	(0.026)	(0.060)	(0.079)	(0.070)
Lit3 (see defn below)	-0.171***	0.228***	-0.0574***	0.0434	-0.173***	0.130***	-0.0115	-0.0788*	0.0903**	-0.0559	-0.233*	0.288*
	(0.033)	(0.039)	(0.018)	(0.045)	(0.054)	(0.046)	(0.038)	(0.047)	(0.036)	(0.072)	(0.140)	(0.170)
Lit4 (see defn below)	-0.182***	0.217***	-0.0343	-0.162***	-0.197*	0.358***	-0.107*	-0.146	0.252***	-0.130**	-0.235	0.365*
	(0.031)	(0.039)	(0.022)	(0.048)	(0.100)	(0.100)	(0.055)	(0.091)	(0.088)	(0.064)	(0.170)	(0.200)
DEMOGRAPHIC CONTROLS: YES												
N. of observations	980	980	980	980	980	980	980	980	980	980	980	980
Pseudo R-squared	0.189	0.189	0.189	0.170	0.170	0.170	0.164	0.164	0.164	0.163	0.163	0.163

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Definitions of Lit1-Lit4 variables

Self-assessed literacy: Lit1= 4, Lit2 = 5, Lit3 = 6, Lit4 = 7. Omitted class: low literacy 1-3.

First measure of literacy: Lit1 = underestimate, Lit2 = overestimate, Lit3 = do not know, Lit4 = refuse to answer. Omitted class: Correct.

Second measure of literacy: Lit1 = underestimate, Lit2 = overestimate, Lit3 = do not know, Lit4 = refuse to answer. Omitted class: Correct.

Third measure of literacy: Lit1= option a, Lit2 = same, Lit3 = do not know, Lit4 = refuse to answer. Omitted class: Correct.

Table 9: Multinomial Logit Analyses of Self-Assessed Debt Levels, Including Experience Segments

This table reports the logit estimates of belonging to a specific debt group on a set of financial literacy measures, experience segments, and demographic variables (marginal effects are reported). See Table A4 for the list of demographic variables included in these regressions.

Variables	*Self-assessed literacy* Have difficulty w/ debt	Just right	Just do not know	*First measure of literacy* Have difficulty w/ debt	Just right	Just do not know	*Second measure of literacy* Have difficulty w/ debt	Just right	Just do not know	*Third measure of literacy* Have difficulty w/ debt	Just right	Just do not know
Lit1 (see defn below)	-0.0904***	0.131***	-0.0410**	0.0326	-0.136**	0.103*	-0.0157	-0.0445	0.0602*	0.00245	-0.0972	0.0947
	(0.031)	(0.038)	(0.018)	(0.050)	(0.066)	(0.055)	(0.037)	(0.049)	(0.035)	(0.054)	(0.080)	(0.072)
Lit2 (see defn below)	-0.102***	0.193***	-0.0912***	0.0861**	-0.119***	0.0326	0.0105	0.0136	-0.0241	-0.0391	-0.0397	0.0788
	(0.033)	(0.039)	(0.020)	(0.034)	(0.040)	(0.027)	(0.034)	(0.040)	(0.023)	(0.052)	(0.079)	(0.070)
Lit3 (see defn below)	-0.125***	0.183***	-0.0572***	0.0211	-0.143***	0.122***	-0.00233	-0.0678	0.0702**	-0.0686	-0.236	0.304*
	(0.031)	(0.037)	(0.018)	(0.038)	(0.053)	(0.046)	(0.034)	(0.045)	(0.033)	(0.053)	(0.150)	(0.170)
Lit4 (see defn below)	-0.127***	0.167***	-0.0404**	-0.116**	-0.178*	0.294***	-0.072	-0.128	0.200**	-0.102*	-0.246	0.348*
	(0.032)	(0.038)	(0.019)	(0.046)	(0.100)	(0.100)	(0.052)	(0.090)	(0.082)	(0.054)	(0.180)	(0.200)
Borrowers/Savers	0.565***	-0.535***	-0.03	0.572***	-0.537***	-0.0351	0.568***	-0.535***	-0.0327	0.568***	-0.535***	-0.0332
	(0.082)	(0.074)	(0.023)	(0.081)	(0.073)	(0.023)	(0.081)	(0.073)	(0.023)	(0.082)	(0.073)	(0.024)
Pay fees	0.478***	-0.428***	-0.0500**	0.502***	-0.451***	-0.0512**	0.503***	-0.459***	-0.0448**	0.503***	-0.455***	-0.0481**
	(0.070)	(0.067)	(0.021)	(0.068)	(0.065)	(0.021)	(0.068)	(0.065)	(0.020)	(0.068)	(0.064)	(0.021)
AFS users	0.334***	-0.365***	0.0313	0.342***	-0.379***	0.0373	0.349***	-0.390***	0.0412	0.350***	-0.389***	0.0395
	(0.070)	(0.067)	(0.021)	(0.077)	(0.069)	(0.028)	(0.077)	(0.069)	(0.028)	(0.077)	(0.068)	(0.028)
DEMOGRAPHIC CONTROLS: YES												
N. of observations	980	980	980	980	980	980	980	980	980	980	980	980
Pseudo R-squared	0.245	0.245	0.245	0.233	0.233	0.233	0.227	0.227	0.227	0.225	0.225	0.225

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Definitions of Lit1-Lit4 variables

Self-assessed literacy: Lit1 = 4, Lit2 = 5, Lit3 = 6, Lit4 = 7. Omitted class: low literacy 1-3.

First measure of literacy: Lit1 = underestimate, Lit2 = overestimate, Lit3 = do not know, Lit4 = refuse to answer. Omitted class: Correct.

Second measure of literacy: Lit1 = underestimate, Lit2 = overestimate, Lit3 = do not know, Lit4 = refuse to answer. Omitted class: Correct.

Third measure of literacy: Lit1 = option a, Lit2 = same, Lit3 = do not know, Lit4 = refuse to answer. Omitted class: Correct.

Table 10: Estimates of the "Cost of Ignorance" for Credit Card Holders

Number of American adults [1]	227,713,184
Fraction with credit cards [2]	79.4%
Number of Americans with credit cards	180,758,725

Unconditional likelihood of credit card behaviors	Incidence among credit card holders [3]	Number of Americans	Fee or cost per incidence	Aggregate Fee/Cost
- incurring late fees	9.5%	17,260,659	$ 35.00 [4]	$ 604,123,077
- incurring over-the-limit fees	5.6%	10,064,923	$ 35.00 [5]	$ 352,272,296
- paying minimum only	26.8%	48,457,366	$ 532.71 [6]	$ 25,813,582,483
- use for cash advances	6.6%	11,909,400	$ 5.00 [7]	$ 59,546,998
			Total	$ 26,829,524,853
Fraction of cardholders who are less financially literate	28.7% [8]			
Incremental likelihood of behavior by less literate [9]				
- incurring late fees	1.7%	887,110	$ 35.00	$ 31,048,836
- incurring over-the-limit fees	1.5%	772,979	$ 35.00	$ 27,054,249
- paying minimum only	12.7%	6,567,724	$ 532.71	$ 3,498,673,010
- use for cash advances	3.4%	1,743,093	$ 5.00	$ 8,715,463
			Total	$ 3,565,491,557
Total likelihood of behavior by less literate [10]				
- incurring late fees	11.3%	5,840,918.83	$ 35.00	$ 204,432,159
- incurring over-the-limit fees	7.1%	3,661,611.36	$ 35.00	$ 128,156,398
- paying minimum only	39.5%	20,474,987.60	$ 532.71	$ 10,907,171,183
- use for cash advances	9.9%	5,161,090.20	$ 5.00	$ 25,805,451
			Total	$ 11,265,565,190

Notes and Sources:

(1) U.S. Census, 2007 American Community Survey.

(2) From TNS Survey.

(3) From TNS Survey, unconditional likelihoods divided by number of respondents with active credit cards.

(4) Assumes one incidence per year. Average fee taken from Green, Jeffrey, "Exclusive BankCard Profitability Study and Annual Report 2008," *Cards and Payments*, May 2008.

(5) Assumes one incidence per year. Average fee taken from http://www.cardtrak.com/news/2008/12/17/fees___recession.

(6) One year of finance charges calculated using average revolver balance ($6,000) and average APR for 2007 (14.53%), assuming no additional charges on card and payment of minimum balance (3%) per month. Average APR from Consumer Action's 2007 Credit Card Survey. http://www.consumer-action.org/downloads/english/CA_News_CC_07.pdf. Average balance estimated by authors based on numerous industry reports and surveys.

(7) "Standard" cash advance fee is $5 or 3% of the amount taken out. GAO Report, Credit Cards, September 2006. http://www.gao.gov/new.items/d06929.pdf. Assumes one cash advance per year.

(8) Fraction of respondents who are active credit card holders and who chose 4 or lower on self-assessment of financial literacy.

(9) dprobit coefficients, reflecting incremental probability of these behaviors associated with low financial literacy (self-assessment of 4 or less). Each individual behavior was analyzed using a set of regressors including age, gender, race, marital status, household size, employment status, and income and wealth dummies.

(10) Calculated from the unconditional probabilities of behavior (x), the incremental probability conditional on being less literate (d) and the probability of being less literate (p) given in the table above. These average conditional likelihoods equal $x+d(1-p)$.

Table A1: Multinomial Logit Analyses for Debt Literacy Variables

This table reports the logit estimates of responding correctly to the debt literacy questions (marginal effects are reported).

Variables	First measure of literacy Correct answer	Second measure of literacy Correct answer	Third measure of literacy Correct answer
30 < age ≤ 40	-0.195***	-0.116**	-0.013
	(0.050)	(0.055)	(0.026)
40 < age ≤ 50	-0.204***	-0.119**	-0.003
	(0.050)	(0.055)	(0.027)
50 < age ≤ 65	-0.129**	-0.023	-0.006
	(0.055)	(0.058)	(0.026)
Age 65+	-0.198***	-0.086	-0.015
	(0.055)	(0.068)	(0.029)
Female	-0.229***	-0.202***	-0.038**
	(0.035)	(0.035)	(0.017)
Never married	-0.031	-0.038	0.017
	(0.052)	(0.052)	(0.029)
Divorced/Separated	-0.014	-0.004	0.010
	(0.051)	(0.049)	(0.027)
African-American	-0.212***	-0.154**	-0.031
	(0.059)	(0.065)	(0.026)
Hispanic	-0.133*	-0.102	-0.045*
	(0.076)	(0.080)	(0.025)
30K < income ≤ 50K	-0.019	0.003	0.018
	(0.051)	(0.050)	(0.031)
50K < income ≤ 75K	0.035	-0.002	0.050
	(0.055)	(0.054)	(0.037)
Income > 75K	0.189***	0.122**	0.058*
	(0.053)	(0.053)	(0.034)
Wealth < 50K	0.039	0.048	-0.026
	(0.050)	(0.049)	(0.022)
50K < wealth ≤ 100K	0.116*	-0.041	-0.034*
	(0.066)	(0.062)	(0.019)
100K < wealth < 250K	0.068	0.071	-0.013
	(0.065)	(0.065)	(0.021)
N. of observations	959	949	957
Pseudo R-squared	0.065	0.056	0.041

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2: Multinomial Logit Analyses of Financial Experience Segments

This table reports the logit estimates of belonging to one of four clusters (marginal effects are reported).

Variables	Cluster 1: Pay in full	Cluster 2: Borrowers/ Savers	Cluster 3: Pay fees	Cluster 4: AFS users
Age	-0.00917	0.00294	0.00888	-0.00265
	(0.007)	(0.005)	(0.008)	(0.008)
Age sq. /100	0.00015**	-0.00001	-0.00013	-0.00001
	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.0291	-0.03683	0.03516	0.03078
	(0.033)	(0.023)	(0.036)	(0.036)
Never married	-0.03571	-0.0152	-0.00914	0.06005
	(0.048)	(0.035)	(0.051)	(0.054)
Divorced/Separated	-0.05142	0.05157	-0.00478	0.00463
	(0.041)	(0.038)	(0.048)	(0.048)
African-American	-0.14040***	-0.00909	0.20017***	-0.05068
	(0.048)	(0.043)	(0.070)	(0.062)
Hispanic	-0.13065**	-0.07008**	0.09924	0.1015
	(0.059)	(0.036)	(0.089)	(0.090)
4-member household	-0.06055	0.00097	0.04105	0.01853
	(0.039)	(0.030)	(0.052)	(0.053)
5-member household	-0.12780***	0.00918	0.13606**	-0.01743
	(0.037)	(0.036)	(0.061)	(0.058)
Not employed	-0.02599	-0.02496	-0.08849**	0.13943***
	(0.049)	(0.033)	(0.044)	(0.052)
30K < income < 50K	0.03729	0.11844**	-0.02353	-0.13219***
	(0.051)	(0.056)	(0.049)	(0.039)
50K < income < 75K	0.03114	0.26360***	-0.06622	-0.22852***
	(0.054)	(0.070)	(0.051)	(0.037)
Income > 75K	0.12658**	0.24051***	-0.05283	-0.31426***
	(0.054)	(0.059)	(0.048)	(0.036)
Wealth < 50K	-0.34794***	-0.00119	0.36621***	-0.01708
	(0.042)	(0.026)	(0.049)	(0.051)
50K < wealth < 100K	-0.08697**	0.02439	0.17453**	-0.11195*
	(0.039)	(0.041)	(0.086)	(0.061)
100K < wealth < 250K	-0.09410**	-0.03274	0.26629***	-0.13945**
	(0.038)	(0.030)	(0.085)	(0.062)
N. of observations	1000	1000	1000	1000
Pseudo R-squared	0.149	0.149	0.149	0.149

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3: Multinomial Logit Analyses of Self-Assessed Debt Levels

This table reports the logit estimates of belonging to a specific debt group (marginal effects are reported).

Variables	Have difficulty with debt	Just right	Do not know
Age	0.01620**	-0.01532**	-0.00087
	(0.007)	(0.008)	(0.004)
Age sq. /100	-0.00022***	0.00022***	0.000
	(0.000)	(0.000)	(0.000)
Female	-0.03635	-0.0084	0.04475**
	(0.031)	(0.035)	(0.020)
Never married	-0.02723	0.00083	0.0264
	(0.041)	(0.050)	(0.030)
Divorced/Separated	0.03638	-0.04415	0.00778
	(0.044)	(0.048)	(0.025)
African-American	-0.01471	-0.13449*	0.14920***
	(0.053)	(0.073)	(0.058)
Hispanic	-0.03606	0.01102	0.02504
	(0.063)	(0.082)	(0.058)
4-member household	0.07456	-0.03772	-0.03684
	(0.047)	(0.051)	(0.024)
5-member household	0.09321	-0.04053	-0.05268**
	(0.057)	(0.060)	(0.023)
Not employed	-0.04117	0.05335	-0.01218
	(0.037)	(0.043)	(0.022)
30K < income < 50K	-0.04088	0.06924*	-0.02836
	(0.037)	(0.042)	(0.019)
50K < income < 75K	-0.05371	0.14087***	-0.08716***
	(0.039)	(0.042)	(0.018)
Income > 75K	-0.09967***	0.19949***	-0.09981***
	(0.037)	(0.040)	(0.020)
Wealth < 50K	0.35994***	-0.31160***	-0.04834*
	(0.049)	(0.052)	(0.028)
50K < wealth < 100K	0.29238***	-0.25773***	-0.03465
	(0.102)	(0.093)	(0.025)
100K < wealth < 250K	0.14112	-0.06459	-0.07653***
	(0.107)	(0.104)	(0.021)
N. of observations	980	980	980
Pseudo R-squared	0.146	0.146	0.146

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A4: Multinomial Logit Analyses of Self-Assessed Debt Levels, Including Experience Segments

This table reports the logit estimates of belonging to a specific debt group (marginal effects are reported).

Variables	Have difficulty with debt	Just right	Do not know
Borrowers/Savers	0.56889***	-0.52784***	-0.04106*
	(0.081)	(0.072)	(0.024)
Pay fees	0.50387***	-0.45400***	-0.04987**
	(0.067)	(0.064)	(0.023)
AFS users	0.34718***	-0.39501***	0.04783
	(0.076)	(0.067)	(0.031)
Age	0.01204*	-0.01177*	-0.00026
	(0.006)	(0.007)	(0.004)
Age sq. /100	-0.00017**	0.00017**	0.000
	(0.000)	(0.000)	(0.000)
Female	-0.03535	-0.0085	0.04386**
	(0.028)	(0.033)	(0.020)
Never married	-0.0276	0.00946	0.01814
	(0.035)	(0.046)	(0.029)
Divorced/Separated	0.01949	-0.02232	0.00284
	(0.038)	(0.044)	(0.024)
African-American	-0.05392	-0.13740*	0.19131***
	(0.038)	(0.074)	(0.067)
Hispanic	-0.04887	0.02879	0.02008
	(0.048)	(0.073)	(0.055)
4-member household	0.05509	-0.01629	-0.03880*
	(0.043)	(0.047)	(0.023)
5-member household	0.04475	0.00593	-0.05068**
	(0.047)	(0.052)	(0.023)
Not employed	-0.02363	0.05078	-0.02715
	(0.033)	(0.039)	(0.019)
30K < income < 50K	-0.04867	0.07149*	-0.02282
	(0.032)	(0.037)	(0.019)
50K < income < 75K	-0.06791**	0.14677***	-0.07886***
	(0.032)	(0.037)	(0.018)
Income > 75K	-0.09167***	0.17529***	-0.08362***
	(0.033)	(0.038)	(0.021)
Wealth < 50K	0.24367***	-0.20951***	-0.03416
	(0.050)	(0.053)	(0.028)
50K < wealth < 100K	0.22250**	-0.20284**	-0.01966
	(0.099)	(0.093)	(0.028)
100K < wealth < 250K	0.07159	-0.00522	-0.06636***
	(0.091)	(0.089)	(0.023)
N. of observations	980	980	980
Pseudo R-squared	0.211	0.211	0.211

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1