Debt Literacy, Financial Experiences and Overindebtedness*

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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, especially among women, the elderly, minorities and those with low income and wealth. 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 fees and using high-cost borrowing). In applying our results to credit cards, we estimate that less knowledgeable individuals pay 46 percent more fees than do the more knowledgeable individuals. The less knowledgeable also report that their debt loads are excessive or that they are unable to judge their debt position.

Keywords: Financial literacy, numeracy, debt loads, credit card borrowing
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Individuals need financial skills—now perhaps more than ever before. Research in the area of financial literacy has typically focused on individuals' knowledge of economics and finance and its effects on financial decisions, usually related to savings, retirement planning, or portfolio choice. Certainly, it has become all the more important as financial markets become and remain precarious and when decisions about how much to save and how to invest for the future become more complex, such as with the shift from defined-benefit to defined-contribution pension plans. 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 has highlighted our consumer weaknesses, and raises the question of whether individuals' lack of financial knowledge led them to take out mortgages and revolving credit they could not afford.

To fill this 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, in particular how one applies basic knowledge about interest compounding, measured in the context of everyday financial choices. We seek to understand the relationship between debt literacy and financial decision-making as well as how they may combine to cause overindebtedness.

This paper contributes to the existing literature in three ways. First, our research questions allow us to measure financial knowledge specifically related to debt, as well as individuals' overindebtedness. Rather than relying on existing debt indicators, we ask individuals to judge their own debt levels. 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 multi-dimensional set of experiences into more compact consumer segments. Finally, we assess how literacy is linked to both financial experiences and overindebtedness.

We find strikingly low levels of debt literacy across the U.S. population. It is particularly severe among women, the elderly, minorities, and those who are divorced and separated. We identify four different categories of individuals—the "in control", the borrowers/savers, the overextended and the fringe borrowers— and find that debt literacy is related to the financial

experiences that people have had. For example, individuals who transact in ways that incur high fees (e.g., only pay minimums on their credit card bills, incur late and overlimit fees) and those who use high-cost alternative financial services are less debt literate, even after controlling for many individual characteristics. Similarly, when we apply our results to credit card behaviors, we find that the less knowledgeable pay a disproportionately high share of fees and financing charges. Specifically, the less knowledgeable pay 46% higher fees than do the more knowledgeable. Debt literacy also is related to the level of overindebtedness. In particular, those who have the highest levels of debt literacy are more likely to report facing no problems with debt, while those with lower levels of debt literacy tend to judge their debt as excessive or report that they are unsure about their debt position. All together, these findings point to the fact that widespread lack of financial skills is a reasonable cause for concern.

1. Review of the literature

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, Hilgerth, Hogarth, and Beverly (2003) report that most Americans fail to understand basic financial concepts, particularly those relating to bonds, stocks, and mutual funds.[1] Most importantly, in a survey of Washington state residents, Moore (2003) indicates that people frequently fail to understand terms and conditions of consumer loans and mortgages. Furthermore, we can't assume that the next generation will do better. The National Council on Economic Education's (NCEE 2005) study of high school students shows a widespread lack of knowledge regarding fundamental economic concepts, confirming similar findings by the Jump$tart Coalition for Personal Financial Literacy (Mandell, 2009).

This is not only a U.S. problem: The 2005 report on financial literacy by the Organization for Economic Co-operation and Development (OECD) documents low levels of financial illiteracy among several countries. Similarly, the Survey of Health, Aging and Retirement in Europe (SHARE) shows that respondents score poorly on financial numeracy and literacy scales (Christelis, Jappelli, and Padula, 2008). Similar to the findings of Moore (2003), Miles (2004) reports that U.K. borrowers have a poor understanding of mortgages and interest rates.

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

Lusardi and Mitchell's (2006, 2008a) module on planning and financial literacy for the 2004 Health and Retirement Study, offers insight as well. They find that many older (50+) individuals cannot do simple interest-rate calculations, such as calculating how money would growth at an interest rate of 2%, and do not know about the working 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 less likely to accumulate wealth (Stango and Zinman, 2008), less likely to plan for retirement (Lusardi and Mitchell, 2006, 2008), and less likely to invest in stocks (van Rooij, Lusardi and Alessie, 2007; Yoong 2007; Christelis, Jappelli, and Padula, 2008). Moreover, less-literate individuals also are less likely to choose mutual funds with lower fees (Hastings and Tejeda-Ashton, 2008). There is also some indication that literacy may affect debt as well. Moore (2003) reports that respondents with lower levels of financial literacy were 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 staring point. However, unlike these studies, we try to relate financial capability to rich *patterns* of financial transactions, placing a particular emphasis on its relationship to indebtedness.

2. Methodology and Survey Design

We partnered with the market research firm TNS to develop and administer a survey that reports information on financial knowledge related to debt. In addition to measuring participants' financial skills, we collected 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* among the population, i.e., to measure knowledge and skills closely

related to debt.[2] These questions can be solved with simple reasoning and do not require a calculator. Second, we ask participants to judge their knowledge of finance, and can relate this self-assessment to their performance on our questions.

The survey was fielded in November 2007 by the staff of TNS, a leading market research firm.[3] 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 US 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 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 their total *investable* assets fall into (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.[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 Health and Retirement Study (HRS), the Rand American Life Panel (ALP), and the Survey of Consumers, few ask questions that focus specifically on borrowing and debt behavior.[5] Our survey included three new questions designed to measure debt literacy. Specifically, respondents were asked questions that determined their knowledge about the power of interest compounding, the working of credit card debt as well as

[2] 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 word "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.

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

[4] 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.

[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.

to determine the most advantageous mean of payment, given two options.[6] For each question we listed a set of answer choices. Tallying respondents' correct and incorrect responses allows us to classify individuals according to their respective levels of financial knowledge 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) Refuse to answer.

Table 1, panel A, reports the responses to this question. Ignoring interest compounding would lead to doubling in 5 years; someone who knew about interest on interest might have selected a number less than 5; 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.

Fewer than 36% of respondents answer 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 by Lusardi and Mitchell (2006) that many older respondents cannot do simple interest rate calculations. It is also consistent with the findings in Lusardi and Mitchell (2007a) that only a small fraction of respondents between the age of 51 and 56 performed a correct interest-compounding calculation when asked to report how the amount in a saving account would grow over a two-year periods 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 also confirmed here: many people are not numerate and have difficulties grasping percentages and working with fractions (Peters et al, 2007; Chen and Rao, 2007). Finally, our findings confirm evidence from the health literature that patients have difficulty doing simple calculations (Volk, 2007).

[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 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 over-estimated, 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.

Similar evidence emerges when considering 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 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 year;*
> *(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 working of credit card interest and payments. **Table 1, panel b** shows that slightly more than 35% of respondents appreciate 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 think it will take five to ten years to eliminate debt, and another 20% think that it will take between ten to fifteen years to eliminate debt. Note also that a substantial fraction of respondents, more than 21%, simply do 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 respond correctly to the first question also respond correctly to the second question. The "do not know" responses exhibit an even higher correlation, with 80% of

the "do not knows" from the first question responding similarly to the second question. Mistakes are more scattered, but more than 36% of those who think it will take more than 10 years for credit card debt to double also think it will take from 10 to 15 years to eliminate credit card debt with minimum payments. Individuals who find 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 methods of payment:

> *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.*

We expected this would be a relatively simple question: by paying $100 a month versus $1200 at the end of the year, one gives money away earlier and foregoes interest that could have accrued by having kept those dollars. As reported in **panel C of table 1**, a very small proportion of respondents—close to 7%— responded "correctly" to this question. A very high fraction of respondents, 40%, chose option (a)[7] 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). About 39% thought that the two payment methods were the same, failing to recognize the time value of money. Overall, these results suggests that individuals may underestimate the interest rate at which they are borrowing, confirming the evidence reported in Stango and Zinman (2008) that individuals are systematically biased toward underestimating the interest rate out of a stream of payments.[8]

[7] This could also reflect their willingness to pay others to enter into a "self-control" contract that did budgeting on their behalf, even at the cost of giving up interest. Our measure of debt literacy in this question reflects this potential feature too.

[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 Alessies, 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.

When considering the relationship between the answers to this question and the other two questions, those who chose option (a) and, in effect, underestimate the interest rate implicit in the stream of payments are more likely to answer the first two questions incorrectly. However, many of those who thought that the payment options are the same are able to answer correctly to the first two questions.

4. Who is More Debt Literate?

Based on our metrics, debt illiteracy is widespread, and as we report here, particularly acute in specific demographic groups. First, we report responses by age, gender, and marital status. Then, we use regression analysis to relate debt literacy to a range of demographic characteristics.

Table 2, panel A, reports the distribution of the responses to the three literacy questions across age groups. The elderly (those older than 65) display the lowest amount of knowledge about interest compounding. Not only are they less likely to answer this question correctly, but also they are also more likely to answer "do not know." The elderly also display difficulty answering the second question. More than 30% of respondents older than 65 do not know the answer to the second question. On the opposite end of the distribution, young respondents (younger than age 30) do best on the first question, but answer incorrectly on the second and third question. Thus, debt literacy is low among the young too.[9]

While in a single cross-section we cannot differentiate between age and cohort effects, differences in literacy are sizable across age/generations. Notably, the elderly display very low literacy levels. This is an important finding, as there is some evidence of the prevalence of financial mistakes among the elderly (Agarwal et al., 2007). Lusardi and Mitchell (2006) find that older respondents display difficulty even in answering a simple question about interest rate, with the fraction of correct responses declining sharply with age. While this finding may reflect declines in both knowledge and cognition, it is important because older households have to make important financial decisions until late in life.

Table 2, panel B, reports sharp differences between male and female debt literacy levels. In each of the three questions on financial literacy, women are much less likely to respond

[9] On the other hand, young respondents have less experience in dealing with credit card debt. See also Agarwal et al. (2007).

correctly than are men, sometimes by as much as 20 percentage points. Furthermore, many women state they do not know the answer to the literacy questions. For example, as many as 25% of women report they do not know the answer to the first question, 28% do not know the answer to the second question, and 13% do not know the answer to the third question. The corresponding fractions among men are much lower. Since our survey covers the entire age group, we also have investigated gender differences among persons younger than 30 and those older older than 65. We find that gender differences are large among the young and continue to be strong among the old, again confirming findings in other papers about the low literacy of women in young and old generations (Lusardi and Mitchell, 2008; Lusardi, Mitchell and Curto, 2008).

Table 2, panel C, reports differences in literacy across marital status. Differences exist not only between the married and the unmarried, but also among the unmarried. For example there are sizable differences between those who never married versus those who are divorced/widowed/separated. This latter group displays the lowest level of literacy, both in terms of the much lower fraction of correct responses in every question and the much higher proportion of "do not know" responses. This is particularly the case for the second question where the fraction of "do not know" responses among the divorced/separated/widowed is as high as 27%. This finding may be due to the fact that divorced/separated/widower includes a high proportion of female and elderly respondents. The never married group also includes a high proportion of female respondents.

A relatively high fraction of respondents who are divorced/separated/widowed and the never married are African-Americans. Only 14% African-Americans correctly answer the first question, 18% the second question, and 3% the third question. In contrast, these percentages for Hispanics are 26, 27, and 2% respectively, while for Whites they are 37, 38, and 7% respectively (see also Lusardi and Mitchell 2006, 2007a, 2007b).

We also find that financial literacy increases sharply with income (**Table 2, panel D**). Given that income (and wealth) are lower among the young and the elderly, female, minorities, and those who are not married, we assess next which demographic characteristics remain significant when we account for all these demographic variables together.

We perform a multionomial logit regression, shown in **Table 3**, for each of the three debt literacy questions. We include dummies for age groups, being female, African-Americans and Hispanics (the reference group is White respondents), and for marital status (the reference is

those who are married). We also add dummies for household income (the reference group is those with income lower than $30,000) and household wealth (the reference group is those with wealth greater than $250,000).[10] The table reports the marginal effects. (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, both age and gender continue to be statistically significant when considering the responses to the first literacy question. Women and the elderly display less understanding of interest compounding, even after accounting for many demographic characteristics. African-Americans also show lower understanding of this concept. Differences across marital status are no longer significant in a multivariate framework, while differences in literacy across income are large and statistically significant, particularly for those whose income is greater than $75,000.

We find similar results when considering the responses to the second question. Age (being older than 65), gender, race, and income continue to be predictors for differences in literacy. Differences are statistically significant and sizable. For example, differences in male versus female respondents, and differences for those at the top of the income distribution continue to be large even after accounting for many demographic characteristics. When considering the third question, gender and income are predictors. Race and ethnicity is important as well, in this case highlighting Hispanics, who are less likely to respond correctly to this question and are much more likely to report they do not know the answer.

While debt literacy levels are low, the relatively poorer performance by certain groups—women, the elderly, and minorities—is particularly troubling.

5. Who *thinks* they are financially literate?

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

> *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?*

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

We asked this question for several reasons. First, the questions on debt literacy we have designed 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 of literacy and assess how they compare: do people know what they know? Third, it provides a simple and easy to answer question.[11]

Table 4 reports the answers to the self-reported literacy across the whole sample. Contrary to the widespread debt illiteracy we find in the first three questions, most respondents think they are above average in term 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.

In general, self-reported literacy correlates with our measures of debt literacy, which indicates that people who think they know more generally do (although at a level lower than one might imagine.) For brevity we do not report how self-reported literacy varies across demographic groups, but we find a similar pattern as in the other measures of debt literacy in **Tables 2**. For example, women's self-reported levels of literacy are much lower than are men's levels. African-Americans and Hispanics also report lower self-confidence, even though differences in the self-reported measures across race and ethnicity are less sharp than across measures of debt literacy. Self-reported literacy increases steadily with income and wealth.

While self-reported literacy correlates strongly with debt literacy, there are some notable discrepancies between self-reported measures of literacy and actual measures of debt literacy across some specific groups. For example, while the elderly display very low levels of debt literacy across the three questions, they rank themselves highest in term of financial knowledge; the average score among respondents older than 65 is 5.3. Similarly, those who are divorced/separated/widowed display very low levels of debt literacy but rank themselves rather high in term of self-reported literacy, with an average score of 4.79.

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

6. Measuring Financial Experience

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 or less advantageous financial contracts; thus, we expect to see a negative relationship between financial skills and certain wealth-depleting financial behaviors.[12]

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.[13] This typology includes the four large related classes of transactions: traditional borrowing, alternative financial service borrowing, saving/investing and credit card usage. The parenthetical headlines below were not part of the survey, but are given here to organize this information for the reader.

(1) *(Experience with traditional borrowing)* 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. Got (or refinanced) a mortgage

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

a. Got a short-term "payday" or "salary advance" loan
b. Got a "refund anticipation loan" to accelerate the receipt of my taxes
c. Got 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 savings/ 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

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

[13] 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 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. I always paid my credit cards in full
c. In some months, I ran an outstanding balance and paid finance charges
d. In some months, I paid the minimum payment only
e. In some months, I was charged a late charge for late payments
f. In some months, I was charged an over the limit charge for charging more than my credit limit
g. In some months, I used the cards for a cash advance
h. My account was closed down by the credit card company.

While not exhaustive, this simple list contains many of the transactions in which a person might have needed to make a financial calculation regarding interest or fees.[14]

Table 5 provides the weighted incidence of the various transaction types for our sample population. Some activities are quite common—91% of the population have experience with checking accounts, 81% have experience with savings accounts or CDs, and 79% currently have credit cards. Other activities are fairly rare. For example, in our sample only 4.4% had ever gotten a refund anticipation loan, 6.5% had ever had an auto title loan and 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 6** 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 pay-day loan is less than half (3%). This table is important as it shows that, focusing on one transaction only, as it has been done in many other studies, can give a narrow view of the behavior of individuals' borrowing and saving

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

behavior. While it is possible to analyze each type of experience in **Table 6** one at a time, or to consider dyads or triads, the large matrix contains a set of correlated activities. 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 dataset. 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, not with reference 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 a data analysis tool used to characterize high-dimensional data.[15] This technique is used commonly in biology, linguistics and marketing. It is used to characterize a heterogeneous population into groups that are more homogeneous. Essentially, it uses orthogonal factors to parse the data into groups, testing for differences among groups as it divides the data into 2, 3, 4, or more groups.[16] 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.

Based on the results of the cluster analysis, we reliably identify four main segments defined by common experiences. **Table 7** identifies the transaction characteristics of four groups, which we describe hereafter and characterize with a name that summarizes their typology. Cluster 1, the "**in-control**," 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 (i.e., commonly called "transactors"). They have relatively high (but not the highest) levels of experience with mutual funds, stocks, and bonds. Among the four clusters they are most likely to have a mortgage, and fairly likely to have some experience with auto loans and home equity loans. However, among the four groups, they have the lowest levels of alternative financial services usage (payday lending, pawn shops, tax refund loans, etc.).

[15] See Lehman, Gupta and Steckel (1998).
[16] 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.

At the other end of the spectrum (Cluster 4) are the 30% of our sample that one might consider **"**fringe" users of the financial service sector ("**fringe**" hereafter). Most (68%) do not have credit cards—although when they do have them, they pay them in full, as required by secured cards. When compared with the "in control," 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. 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 in-control group.

In between are two groups that comprise 43% of Americans. 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 "**borrower/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, they have the highest levels of debt exposure too, with the most frequent experience with student loans (46%), home equity lines (54%), auto loans (94%) and virtually the highest levels of mortgage loans (77%). This group seems much more extended than the "in control" group, with 95% carrying a revolving balance on their credit card, 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 are what we call the "**over-extended**" (Cluster 3). In many ways they look like the borrower/savers, except that they have both less experience with savings and more markers of extended credit. Relative to all 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 card to get cash advances (16.1%). At the same time, they have far less experience than the borrower/savers or the in-charge group with respect to mutual funds, stocks, or bonds, as well as less experience than these other groups with home equity, mortgage and auto loans.

7. 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, financial literacy, or perceived level of indebtedness. Nevertheless, we set out to examine

whether there is a relationship between demographics, debt literacy and these clusters: Are the "in control" 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 "fringe" financially worse off, less financially literate, and/or less secure in their level of indebtedness? Finally, how bad off are the overextended? **Table 8** provides descriptive statistics for these four clusters with respect to their demographics (panel A) and financial literacy (panel B). Following this discussion we report the results of a multinomial logit analysis which examines cluster assignment as a function of these factors.

With respect to demographics, the in-control have the highest incomes (53% over $75,000 per year) and wealth (74% with 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. Borrower/savers have incomes almost as high as the in-control, 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 in-control group, with only 52% having financial assets above $50,000. The fringe group has the lowest income (53% below $30,000 per year), and is most likely to be women (58%) who are single or separated (47%). Finally, the extended group looks most like the "average" American, with income distributed roughly similar to the overall sample, and other demographics (age, gender, marital status and race) roughly comparable to the entire sample. Both the fringe and over-extended have considerably fewer financial assets than do the other two groups, with only 24 and 28% having financial assets in excess of $50,000.

With respect to debt literacy (panel B), the in-charge and borrower/savers are both more knowledgeable than either the overextended or fringe segments. Looking across the three questions, the first two groups have considerably larger fractions correct on the three questions than do the latter two groups. A large fraction of the overextended and fringe admit to not knowing the answers to the questions. These patterns also are reflected in measures of self-reported financial literacy. The overextended and fringe each judge themselves to be much less knowledgeable than do members of the in-control and borrower/saver groups. We can see this both in the average scores as well as in the distribution of scores. For example, about 48% of those in-control and 53% of the borrower/savers ranked themselves in the top two scores with respect to their financial knowledge. In comparison, for the overextended and fringe, these percentages are 15.3 and 23.5% respectively. In short, from the univariate statistics, the two clusters that seem to pay the highest credit card fees and access the highest-cost borrowing

methods, i.e., the overextended and fringe, tend to be financially worse off and have lower levels of debt literacy.

Of course, all of these univariate measures are likely correlated, and therefore we must consider all of the demographic variables simultaneously. Furthermore, we must use a multivariate approach if we hope to understand the marginal relationship between debt literacy and behavior. Since the dependent variable is an indicator for the four clusters we have identified in the data, 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. We further organize these data when performing the empirical work in order to characterize the types of errors individuals make. For example, persons with incorrect answers to the question about interest compounding are divided into two groups: those who made "under-estimates" and those who made "over-estimates" of how quickly debt can double. Moreover, we add a dummy for those who do not know the answer to this question as this is a sizable and also distinct group of respondents. As we argued earlier, prior research shows that this group tends to characterize those with the lowest level of knowledge. We also include a dummy for those who refuse to answer the literacy questions.[17]

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 make large underestimates (answer it would take less than 5 years and between 5 and 10 years to eliminate credit card debt) versus those who chose a longer yet incorrect time period (between 10 and 15 years). The erroneous answers to the third question characterize two distinct types of respondents: those who fail to realize that the implicit interest rate out of a stream of payment is higher than 20%, and those who fail to recognize that the stream of payments has a higher present value and incorrectly state that the two payment options are the same. We keep these two groups separate. For the second and third measure of literacy we again add dummies for those who do not know the answer or refuse to answer.

Among the demographic variables, we include age and age squared to capture the potential non-linear 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 those

[17] 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.

with 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. We include these dummies to proxy for both the resources that respondents have available for their consumption and also to buffer themselves against shocks. Moreover, income and wealth can control for skills and ability (in addition to education) as well as control for individual preferences, such as patience and thriftiness.

Table 9 reports the marginal effect of each variable in the multinomial logit across the four clusters. 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, which is the most comprehensive measure of knowledge. Those who display higher levels of literacy are more likely to locate in the first cluster (in control). Levels of literacy above the mean score (score higher than 4) are associated with higher chances of being among those in control, and chances become higher at top levels of knowledge (scores of 6 and 7). In other words, those who report higher levels of financial knowledge are more likely to pay credit cards on time. Note that African-Americans and Hispanics and those with large families are less likely to locate in the in-control cluster. Individuals in this cluster are also those with high incomes (income greater than $75,000) and high wealth; individuals in cluster 1 are less likely to report financial assets in the three lowest brackets, and particularly below $50,000.

Self-reported financial knowledge is not related to the behavior of those in cluster 2, the borrower/savers.[18] Those 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, not employed, split families). Income and race (specifically, not being Hispanic) are the only variables that characterize those in cluster 2. However, the borrower/savers do carry balances and tend to pay finance charges. The behavior in this group may simply be due to "inattention" as pointed out in other papers that look at credit card mistakes.[19]

The dummies for self-reported high financial literacy turn negative when considering cluster 3, the overextended. Even after controlling for many demographic traits, respondents in this cluster are much less likely to report high levels of literacy, and estimates are larger and more negative for those who chose the highest score. These respondents are also those more

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

likely to have lower levels of wealth, to be African-American, and to have large families. However, even after accounting for demographics, income and wealth, literacy remains an important and significant predictor for being over-extended.

Low levels of financial literacy also characterize those in cluster 4, the fringe group. These respondents are much less likely to report high levels of literacy. Respondents in this cluster also have low levels of income; for example they are disproportionately more likely to have income less than $30,000. They are also more likely to report they are not employed. Employment status, income, and self-reported literacy are the most important predictors for the respondents in this cluster.

In panels b through d of **Table 9** we have replaced the self-reported measure of literacy with the three measures of debt literacy. Since the estimates of the demographic variables are not affected by the measure of literacy we use, this discussion focuses on coefficients related to debt literacy. Those who over-estimate 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 over-estimate the number of years it takes for debt to double or because they do not know the answer to this question, are less likely to be in-control (cluster 1) and more likely to belong to the fringe (cluster 4). 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 overextended who tend to carry balances and pay finance charges and penalty fees. On the other hand, those who do not know the answer to the question about interest compounding are less likely to belong to cluster 2, our borrower/savers who are likely to carry balances and not pay on time.

Turning to the question about minimum credit card payments, we find that those who make mistakes in answering this question, both small and large, are significantly more likely to belong to the fringe group (cluster 4). Those who display the lowest level of debt literacy, i.e., respond that they do not know the answer to this question, are also more likely to belong to this group. Conversely, those who make small mistakes or do not know the answer to the question are *less* likely to belong to the in-control or borrower/saver clusters.

Estimates for the third question of financial literacy, 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 are the same) or do not know the answer to the question are much less likely to belong to the in-control cluster. On the other hand, those who make mistakes in answering this question are more likely to belong to the overextended 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.[20]

In summary, for each measure of financial literacy, there is a strong relationship between literacy and debt behavior. The more financially knowledgeable who grasp basic concepts about debt are much more likely to be in control of their finances, while those less literate are more likely to be over-extended or be fringe borrowers. Thus, the relationship illustrated in Table 8 continues to hold even after accounting for demographic traits. The curious group is those in cluster 2, our borrower/savers who are rather knowledgeable and have high incomes, yet tend to carry credit card balances and pay finance charges. One may argue that these charges are not sizable and are not of much consequence for borrowers. In the next section we try to address this issue by examining self-reports of debt loads.

8. **Difficulties paying off debt**

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 are 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 have had.

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:

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.

[20] 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.

d. I just don't know.

In aggregate, in November 2007, before the financial crisis hit the economy, already 26.4% of respondents in our representative sample of Americans said they have or may have difficulties paying off debt (overburdened). Another group, 11.1% "just didn't know" (unsure) their debt position. Thus, close to 40% of Americans could experience some problems with debt, even when the economy was not in a recession. 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 10**) and then provide a multinomial logit analysis of debt loads (**Table 11**).

Looking at **Table 10**, one can see that relative to those comfortable with their level of debt, the overburdened are younger, and have lower financial assets and incomes. Note that they are disproportionately drawn from the overextended cluster, while almost none are part of the in-charge segment. In terms of debt literacy, the overburdened rank themselves the lowest of the four groups, although their actual level of debt literacy (as measured by percentage correct) was only somewhat lower than those who considered their debt levels to be about right.

The "unsure," the 11% who were unable to judge whether they had too much or too little debt, tended 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% making 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 literacy, their debt literacy is considerably weaker than those who judged their debt to be either about right or even too high. People in this group also were 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 "fringe" segment.

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

We find that self-reported literacy again shows a very strong relationship to debt. Those who report higher levels of literacy are more likely to belong to the group who report having no difficulties paying off debt. The effect is not only sizable but it increases with higher scores for self-assessed literacy. Conversely, those who are less literate are much more likely to report having difficulties 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 difficulties with debt, the unsure also are much less likely to display high levels of literacy. Demographic variables are related to debt loads as well. Those who are employed and have higher income and higher wealth are much more likely to report they have the right amount of debt. Finally, women, African-Americans and those with low income and wealth are more likely to be unable to judge their debt load.

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 overestimate the number of years it takes for debt to double (recall that these respondents are much more likely to belong to the fringe groups and much less likely to belong to the in-control group) are also more likely to report they have or may have difficulties paying off debt. On the other hand, those who make mistakes in answering this question or do not know the answer to this question are much less likely to report they have the right amount of debt, while they are more likely to belong to the unsure group.

Knowledge about how to eliminate credit card debt by making minimum payments (second literacy question) is also related to self-assessed levels of debt. In this case, those who display the lowest amount of knowledge, i.e., claim not to not know the answer to this question, are less likely to report having the right amount of debt. Those who claim not to know the answer or make large mistakes are more likely to belong to the unsure group. Similar patterns were found for the clusters; for them as well, being unable to answer the question is an important determinant of debt behavior as characterized by the clusters.

Turning to the answer to the question about the more advantageous payment option, we find again that those who are not able to answer this question are less likely to report having the right amount of debt, while they are more likely to belong to the unsure.

For completeness, in **Table 12** we report the estimates where 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 financial literacy remains significant after accounting for the debt behavior characterized by the four clusters. As shown in **Table 12**, the effects 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 can affect debt loads above and beyond the effect it has on financial experiences. Moreover, even after accounting for a large set of characteristics, those who report having difficulties with debt are disproportionately likely to belong to the three segments that are not in control. Conversely, members of clusters 2, 3 and 4 are much less likely to report they have the right amount of debt. Note that not just the over-extended and the fringe borrowers report having difficulties with debt, but also those in cluster 2, who carry some balances and pay some finance charges, end up with too much debt.

9. **The Cost of Ignorance**

In this section, we offer some 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 particularly related to their lack of financial knowledge. For the purpose of our calculations, we focus exclusively on credit card debt (**Table 13**).

This calculation of expected costs has two components—the likelihood of and costs of various behaviors. First, we calculate the *likelihood* of engaging in various credit card behaviors that give rise to explicit fees or financing charges: paying bills late, going over limit, using cash advances and paying the minimum amount only. These likelihoods come directly from our empirical work. 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 less on our seven point scale. Among cardholders this group comprises 28.7% of the population. For the less knowledgeable, we calculate both the *average* likelihood of engaging in these behaviors as well as the *incremental* likelihood of engaging in these behaviors as a function solely of having lower financial skills. The latter estimates come directly from estimates analogous to the ones we show in Table 9. For example, the unconditional likelihood that a cardholder reports incurring at least one over-the-limit charge in the prior year was 5.6%. From our dprobits, even after controlling for income, demographics and other factors, the incremental level of incurring an over-the-limit fee is 1.5%. From these two numbers and the fact that 28.7% of the population are less knowledgeable, we can calculate that the average likelihood of a less financially literate individual 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 $6000), stated finance charges equal the national average (14.5% in 2007), and 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 non-sufficient-funds, annual fees, or other charges.

As the table shows, these four behaviors minimally account for collective fees of $26.8 billion paid by cardholders. While the less informed account for only 28.7% of the cardholder population, they account for 42%% of these charges, because of their higher likelihood of incurring them. They bear a disproportionate share of the fees associated with these behaviors, in particular, their share of fees is 46% higher than their share of the cardholder population. Perhaps more importantly, of these four charges incurred by less-knowledgeable cardholders, 32% are incremental charges that are empirically linked to low financial literacy after controlling for many variables, including income, age, family structure, wealth ($3.5 billion incremental charges divided by the $11.2 billion total charges incurred by the less knowledgeable).

While we do not make a judgment about whether these fees are appropriate, we note that that they are disproportionately borne by consumers with low levels of financial skills. Furthermore, our empirical results suggest that perhaps a third or more of the fees paid by less knowledgeable consumers might be the result of—or at least linked to—their low level of skills.

10. 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. Secondly, we consider the rich set of financial experiences that individuals have, rather than focus simply on one behavior. Thirdly, we listen to individuals about their own debt levels. Finally, we designed a collaborative research project that blended scholarly research with timely market research. Our conclusions suggest a complex set of interactions among literacy, experience, demographics and debt loads.

While future research must refine some of the findings, there are a few emerging results. Low levels of debt literacy are the norm, and understanding of the basic mechanics of debt is especially limited among certain groups including the elderly, women, certain minorities, and people with lower incomes and wealth. Particularly intriguing—and worthy of additional research—is the notion that certain 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 display substantially lower debt literacy than men and this finding holds true even among the young.

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 are "in control" of their finances are more financially skilled, it is troubling that 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 are making financial choices that might be considered mistakes (e.g., only paying the minimum balance on their 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 weaker grasps 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 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. Almost no one wished they could get more debt. Given how extensively financial service firms have pushed to make credit available, this is not surprising. Perhaps also not surprising is that those who have or may have difficulties paying off debt were drawn from certain demographic groups, had common financial experiences, and tended to have lower levels of financial 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 a large fraction, about a third, of the costs that consumers pay are related to lack of knowledge, 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 financial choices to compensate for it. These solutions might be embodied in auto-default mechanisms, such as studied by Choi et al (2003, 2004a, 2004b, among others). However, once one recognizes the wide range of financial choices that consumers will face, it becomes harder to conceive that all of them can be solved 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, taking out a home equity loan, overdrafting a bank account, taking out a payday loan, or going to a pawn shop. As much as we could try to circumscribe their alternatives, individuals will need to make active choices. Our work suggests that financial literacy is related to the choices that people make, with people with less knowledge making more costly decisions—even after controlling for a host of other factors. We interpret this to mean that additional research on financial literacy—and education to enhance financial literacy—can complement, and not substitute for, auto-default and other comparable approaches.

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Table 1. TNS Survey Financial 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
2 years	9.56%
Less than 5 years	35.88%
Between 5 and 10 years	18.78%
More than 10 years	13.14%
Do not know	18.32%
Prefer not to answer	4.33%
Number of observations	1,000

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
Less than 5 years	3.81%
Between 5 and 10 years	12.41%
Between 10 and 15 years	21.56%
Never, you will continue to be in debt	35.41%
Do not know	21.69%
Prefer not to answer	5.12%
Number of observations	1,000

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
Option (a)	40.62%
Option (b)	6.93%
They are the same	38.83%
Do not know	9.17%
Prefer not to answer	4.46%
Number of observations	1,000

Table 2. TNS Survey Financial Literacy: Descriptive Statistics

Panel A: Literacy and Age

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?

		Age groups (weighted)				
	Total	Less than 30 years	31 - 40 years	41 - 50 years	51 - 65 years	Over 65 years
2 years	9.56%	9.73%	13.84%	9.58%	6.72%	9.79%
Less than 5 years	35.88%	43.16%	33.44%	34.15%	38.04%	28.62%
Between 5 and 10 years	18.78%	22.38%	20.18%	21.00%	15.70%	15.92%
More than 10 years	13.14%	5.01%	10.68%	14.42%	18.06%	11.28%
Do not know	18.32%	16.18%	16.10%	19.20%	16.32%	28.37%
Prefer not to answer	4.33%	3.54%	5.75%	1.66%	5.06%	6.01%
Number of observations	1,000	141	189	226	328	116

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?

		Age groups (weighted)				
	Total	Less than 30 years	31 - 40 years	41 - 50 years	51 - 65 years	Over 65 years
Less than 5 years	3.81%	6.79%	2.77%	4.54%	3.62%	1.07%
Between 5 and 10 years	12.41%	15.89%	13.62%	11.05%	10.91%	12.87%
Between 10 and 15 years	21.56%	20.51%	24.31%	23.24%	21.41%	15.29%
Never, you will continue to be in debt	35.41%	36.11%	31.45%	33.85%	39.80%	32.35%
Do not know	21.69%	17.02%	20.07%	24.72%	19.31%	30.68%
Prefer not to answer	5.12%	3.68%	7.78%	2.60%	4.94%	7.74%
Number of observations	1,000	141	189	226	328	116

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?

		Age groups (weighted)				
	Total	Less than 30 years	31 - 40 years	41 - 50 years	51 - 65 years	Over 65 years
Option (a)	40.62%	42.97%	41.72%	39.97%	39.93%	39.02%
Option (b)	6.93%	6.45%	6.17%	7.70%	7.50%	5.75%
They are the same	38.83%	37.49%	41.25%	37.21%	39.52%	37.59%
Do not know	9.17%	9.90%	4.99%	11.10%	9.49%	10.78%
Prefer not to answer	4.46%	3.20%	5.87%	4.02%	3.57%	6.86%
Number of observations	1,000	141	189	226	328	116

Table 2. TNS Survey Financial Literacy: Descriptive Statistics

Panel B: Literacy and Gender

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?

		Gender (weighted)	
	Total	Male	Female
2 years	9.56%	8.54%	10.59%
Less than 5 years	35.88%	46.28%	25.47%
Between 5 and 10 years	18.78%	16.06%	21.50%
More than 10 years	13.14%	14.11%	12.17%
Do not know	18.32%	11.44%	25.20%
Prefer not to answer	4.33%	3.58%	5.07%
Number of observations	1,000	505	495

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?

		Gender (weighted)	
	Total	Male	Female
Less than 5 years	3.81%	2.03%	5.60%
Between 5 and 10 years	12.41%	11.39%	13.43%
Between 10 and 15 years	21.56%	21.27%	21.84%
Never, you will continue to be in debt	35.41%	45.01%	25.82%
Do not know	21.69%	15.66%	27.71%
Prefer not to answer	5.12%	4.64%	5.61%
Number of observations	1,000	505	495

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?

		Gender (weighted)	
	Total	Male	Female
Option (a)	40.62%	36.28%	44.96%
Option (b)	6.93%	9.29%	4.58%
They are the same	38.83%	44.61%	33.04%
Do not know	9.17%	5.33%	13.02%
Prefer not to answer	4.46%	4.51%	4.41%
Number of observations	1,000	505	495

Table 2. TNS Survey Financial Literacy: Descriptive Statistics

Panel C: Literacy and Marital Status

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?

		Marital status (weighted)		
	Total	Now maried	Never Married	Divorced/Widowed/Separated
2 years	9.56%	8.54%	12.43%	10.53%
Less than 5 years	35.88%	40.34%	31.56%	25.00%
Between 5 and 10 years	18.78%	18.31%	18.38%	20.62%
More than 10 years	13.14%	13.69%	7.01%	16.30%
Do not know	18.32%	16.23%	21.43%	22.52%
Prefer not to answer	4.33%	2.89%	9.18%	5.04%
Number of observations	1,000	681	143	176

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?

		Marital status (weighted)		
	Total	Now maried	Never Married	Divorced/Widowed/Separated
Less than 5 years	3.81%	2.90%	2.55%	7.76%
Between 5 and 10 years	12.41%	11.84%	13.30%	13.55%
Between 10 and 15 years	21.56%	22.47%	21.83%	18.40%
Never, you will continue to be in debt	35.41%	39.02%	29.59%	28.52%
Do not know	21.69%	19.69%	22.99%	27.03%
Prefer not to answer	5.12%	4.08%	9.74%	4.74%
Number of observations	1,000	681	143	176

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?

		Marital status (weighted)		
	Total	Now maried	Never Married	Divorced/Widowed/Separated
Option (a)	40.62%	40.23%	39.36%	42.86%
Option (b)	6.93%	7.77%	6.32%	4.72%
They are the same	38.83%	40.66%	36.47%	34.84%
Do not know	9.17%	8.03%	9.09%	12.88%
Prefer not to answer	4.46%	3.30%	8.76%	4.70%
Number of observations	1,000	681	143	176

Table 2. TNS Survey Financial Literacy: Descriptive Statistics

Panel D: Literacy and Household Income

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?

		Household income (weighted)			
	Total	Under $30,000	$30,000 - $49,999	$50,000 - $74,999	Above $75,000
2 years	9.56%	13.61%	6.89%	10.26%	6.37%
Less than 5 years	35.88%	25.57%	32.42%	38.65%	48.44%
Between 5 and 10 years	18.78%	18.15%	19.40%	20.32%	18.09%
More than 10 years	13.14%	10.27%	18.19%	17.29%	10.17%
Do not know	18.32%	26.45%	18.07%	11.40%	13.54%
Prefer not to answer	4.33%	5.96%	5.03%	2.08%	3.38%
Number of observations	1,000	264	163	193	380

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?

		Household income (weighted)			
	Total	Under $30,000	$30,000 - $49,999	$50,000 - $74,999	Above $75,000
Less than 5 years	3.81%	6.26%	1.32%	1.70%	4.13%
Between 5 and 10 years	12.41%	15.40%	10.77%	13.59%	9.40%
Between 10 and 15 years	21.56%	16.16%	25.51%	26.27%	21.93%
Never, you will continue to be in debt	35.41%	28.03%	35.43%	36.55%	43.16%
Do not know	21.69%	28.07%	21.94%	19.38%	15.63%
Prefer not to answer	5.12%	6.08%	5.03%	2.52%	5.74%
Number of observations	1,000	264	163	193	380

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?

		Household income (weighted)			
	Total	Under $30,000	$30,000 - $49,999	$50,000 - $74,999	Above $75,000
Option (a)	40.62%	45.98%	39.67%	39.20%	36.03%
Option (b)	6.93%	3.72%	5.92%	8.94%	10.07%
They are the same	38.83%	32.81%	41.85%	41.59%	41.82%
Do not know	9.17%	12.30%	7.96%	6.62%	8.07%
Prefer not to answer	4.46%	5.20%	4.60%	3.66%	4.00%
Number of observations	1,000	264	163	193	380

Table 3: Multinomial for Literacy Variables

	First measure of literacy					*Second measure of literacy*					*Third measure of literacy*			
Variables	2 years	Correct	5 - 10 years	More than 10	Do not know	< 5 years	5 - 10 years	10 - 15 years	Correct	Do not know	Option (a)	Correct	Same	Do no know
30 < age <= 40	0.045	-0.195***	-0.024	0.093	0.081	-0.019**	-0.012	0.035	-0.116**	0.113*	0.009	-0.013	0.018	-0.014
	(0.042)	(0.050)	(0.046)	(0.071)	(0.059)	(0.009)	(0.037)	(0.055)	(0.055)	(0.064)	(0.060)	(0.026)	(0.060)	(0.030)
40 < age <= 50	-0.003	-0.204***	-0.031	0.128	0.110*	-0.015	-0.047	0.02	-0.119**	0.162**	-0.016	-0.003	-0.036	0.055
	(0.034)	(0.050)	(0.045)	(0.072)	(0.059)	(0.010)	(0.034)	(0.054)	(0.055)	(0.064)	(0.059)	(0.027)	(0.059)	(0.039)
50 < age <= 65	-0.029	-0.129**	-0.079*	0.163	0.074	-0.020*	-0.051	0.012	-0.023	0.082	-0.02	-0.006	-0.007	0.033
	(0.031)	(0.055)	(0.043)	(0.068)*	(0.052)	(0.011)	(0.034)	(0.052)	(0.058)	(0.057)	(0.057)	(0.026)	(0.057)	(0.033)
Age 65+	-0.004	-0.198***	-0.091**	0.063	0.229***	-0.029***	-0.042	-0.066	-0.086	0.224***	-0.036	-0.015	0.005	0.046
	(0.040)	(0.055)	(0.044)	(0.077)	(0.083)	(0.008)	(0.037)	(0.055)	(0.068)	(0.081)	(0.070)	(0.029)	(0.071)	(0.048)
Female	0.019	-0.229***	0.065**	-0.003	0.148***	0.013	0.014	0.039	-0.202***	0.136***	0.077**	-0.038**	-0.108***	0.069***
	(0.021)	(0.035)	(0.029)	(0.024)	(0.028)	(0.010)	(0.025)	(0.030)	(0.035)	(0.030)	(0.036)	(0.017)	(0.035)	(0.019)
Never married	0.006	-0.031	0.005	-0.038	0.057	-0.014	-0.016	0.029	-0.038	0.04	-0.053	0.017	0.016	0.02
	(0.029)	(0.052)	(0.043)	(0.035)	(0.045)	(0.010)	(0.033)	(0.047)	(0.052)	(0.047)	(0.051)	(0.029)	(0.052)	(0.030)
Divorced/Sep.	-0.008	-0.014	0.038	0.028	-0.043	0.031	0.005	-0.014	-0.004	-0.018	-0.036	0.01	0.015	0.011
	(0.027)	(0.051)	(0.043)	(0.034)	(0.032)	(0.020)	(0.033)	(0.042)	(0.049)	(0.038)	(0.048)	(0.027)	(0.049)	(0.024)
Afr. American	0.143**	-0.212***	0.037	0.021	0.012	0.090**	0.044	-0.004	-0.154**	0.025	0.129*	-0.031	-0.066	-0.031
	(0.063)	(0.059)	(0.064)	(0.054)	(0.056)	(0.045)	(0.058)	(0.063)	(0.065)	(0.064)	(0.072)	(0.026)	(0.070)	(0.028)
Hispanic	0.017	-0.133*	0.087	-0.004	0.032	0.026	0.058	0.004	-0.102	0.014	-0.001	-0.045*	-0.107	0.153**
	(0.054)	(0.076)	(0.079)	(0.063)	(0.072)	(0.034)	(0.067)	(0.075)	(0.080)	(0.076)	(0.087)	(0.025)	(0.082)	(0.073)
30K < Y <= 50K	-0.054***	-0.019	0.025	0.082	-0.032	-0.025***	-0.046*	0.103**	0.003	-0.034	-0.075	0.018	0.063	-0.006
	(0.021)	(0.051)	(0.043)	(0.042)	(0.033)	(0.009)	(0.028)	(0.049)	(0.050)	(0.038)	(0.048)	(0.031)	(0.050)	(0.023)
50K < Y <= 75K	-0.031	0.035	0.029	0.062	-0.095***	-0.019*	-0.025	0.099*	-0.002	-0.054	-0.084	0.05	0.052	-0.018
	(0.024)	(0.055)	(0.046)	(0.043)	(0.031)	(0.010)	(0.032)	(0.053)	(0.054)	(0.039)	(0.051)	(0.037)	(0.054)	(0.024)
Y > 75K	-0.077***	0.189***	-0.018	-0.01	-0.084**	-0.005	-0.071**	0.056	0.122**	-0.103***	-0.125***	0.058*	0.076	-0.009
	(0.022)	(0.053)	(0.041)	(0.036)	(0.033)	(0.011)	(0.029)	(0.048)	(0.053)	(0.037)	(0.048)	(0.034)	(0.051)	(0.024)
W < 50K	-0.022	0.039	-0.046	-0.015	0.044	-0.005	-0.052	-0.033	0.048	0.041	-0.023	-0.026	0.04	0.009
	(0.032)	(0.050)	(0.043)	(0.033)	(0.040)	(0.015)	(0.036)	(0.043)	(0.049)	(0.045)	(0.051)	(0.022)	(0.050)	(0.025)
50K < W <= 100K	-0.024	0.116*	-0.007	-0.048	-0.037	0.008	-0.051	0.054	-0.041	0.029	0.109*	-0.034*	-0.011	-0.064***
	(0.032)	(0.066)	(0.049)	(0.033)	(0.047)	(0.021)	(0.033)	(0.056)	(0.062)	(0.059)	(0.064)	(0.019)	(0.063)	(0.020)
100K < W < 250K	-0.011	0.068	-0.029	-0.04	0.012	-0.007	-0.062*	-0.078*	0.071	0.076	-0.056	-0.013	0.079	-0.01
	(0.037)	(0.065)	(0.049)	(0.035)	(0.056)	(0.015)	(0.033)	(0.045)	(0.065)	(0.065)	(0.063)	(0.021)	(0.064)	(0.030)
Observations	959	959	959	959	959	949	949	949	949	949	957	957	957	957

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

Table 4. TNS Survey Financial Literacy: Self-reported Literacy (weighted)

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
1 = Very low	2.00%
2	2.90%
3	7.70%
4	19.50%
5	31.90%
6	19.00%
7 = Very High	10.70%
Do not know	2.30%
Prefer not to answer	3.90%
Average score	4.88
Number of observations	1,000

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

Table 5. Financial Experience Measures, Total Sample

This table reports the mean and standard deviation of the frequencies of the various financial experiences by 1000 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 always paid my credit cards in full	CC PIF	36.75%	48.24%
I don't have any credit cards or did not use them	CC None	20.62%	40.48%
In some months, I ran an outstanding balance and paid finance charges	CC Balance	30.75%	46.17%
In some months, I paid the minimum payment only	CC Min	21.28%	40.95%
In some months, I was charged a late charge for late payment	CC Late	7.58%	26.49%
In some months, I was charged an over the limit charge for charges exceeding my credit line	CC OTL	4.42%	20.56%
In some months, I used the cards for a cash advance	CC Advance	5.23%	22.27%
My account was closed down by the credit card company	CC Closed	1.52%	12.24%

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	91.44%	28.00%
I opened a savings account or bought a CD	Savings	80.62%	39.54%
I invested in mutual funds	Mut. Fund	38.77%	48.75%
I invested in individual stocks	Stocks	34.13%	47.44%
I bought savings bonds or other bonds	Bonds	34.85%	47.67%
I took out a loan for student education	Loan: Stu	27.03%	44.44%
I took out an auto loan	Loan: Auto	63.65%	48.12%
I took out a home equity loan	Loan: HE	30.48%	46.06%
I got (or refinanced) a mortgage	Loan: Mort	49.32%	50.02%
I got a short term "payday" or "salary advance" loan	Loan: Payday	7.82%	26.86%
I got a "refund anticipation loan" to accelerate the receipt of my tax payments	Loan: Refund	4.36%	20.44%
I got an auto title loan	Loan: Title	6.54%	24.73%
I used a pawn shop	Loan: Pawn	10.72%	30.95%
I bought goods on a lay-away plan or at a rent-to-own store	Lay-A-Way/Rent	19.05%	39.29%

Table 6. 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. Table 6 reports the unconditional probabilities. The survey of 1000 people was conducted by TNS Global in November 2007.

Conditioning Financial Experience

	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

Table 7: Financial Experience Segments

Reports the incidence 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 literacy information

		Segment							
		1: In Charge		2:Borrower/Savers		3: Over-extended		4: Fringe	
		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	
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
Number of observations (weighted)		265.7		118.5		313.6		302.3	
Number of observations (unweighted)		292		130		305		273	

Table 8: Characteristics of Financial Experience Segments

This table reports the demographic and debt literacy variables for the total sample as well as for the four clusters defined in Table 7.

			Experience Segments							
	Total Sample		**1: In-Control**		**2: Borrower / Savers**		**3: Overextended**		**4: Fringe**	
Panel A: Demographics	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-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										
unweighted	1000		292		130		305		273	
weighted	1000		265.7		118.5		313.5		302.3	

Table 9: Multinomial Logit Analyses of Characteristics of Financial Experience Segments

	Self-assessed literacy				*First measure of literacy*				*Second measure of literacy*				*Third measure of literacy*			
Variables	Cluster 1:In Control	Cluster 2: Borrower / Savers	Cluster 3: Over-Extended	Cluster 4: Fringe	Cluster 1:In Control	Cluster 2: Borrower / Savers	Cluster 3: Over-Extended	Cluster 4: Fringe	Cluster 1:In Control	Cluster 2: Borrower / Savers	Cluster 3: Over-Extended	Cluster 4: Fringe	Cluster 1:In Control	Cluster 2: Borrower / Savers	Cluster 3: Over-Extended	Cluster 4: Fringe
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)
Age	-0.00736	0.00406	0.00657	-0.00326	-0.00946	0.00289	0.00976	-0.00318	-0.00979	0.00273	0.00863	-0.00157	-0.00868	0.00309	0.00819	-0.00261
	(0.007)	(0.005)	(0.008)	(0.008)	(0.007)	(0.005)	(0.008)	(0.008)	(0.007)	(0.005)	(0.008)	(0.008)	(0.007)	(0.005)	(0.008)	(0.008)
Age sq. /100	0.0126*	-0.00236	-0.0101	-0.000151	0.0160**	-0.000932	-0.0143*	-0.000724	0.0162**	-0.000857	-0.0128	-0.00252	0.0146**	-0.00138	-0.0122	-0.00107
	(0.007)	(0.006)	(0.009)	(0.008)	(0.007)	(0.006)	(0.009)	(0.008)	(0.007)	(0.005)	(0.009)	(0.008)	(0.007)	(0.005)	(0.009)	(0.008)
Female	-0.0168	-0.0345	0.0259	0.0253	-0.00708	-0.0272	0.0258	0.00843	-0.0197	-0.0278	0.04	0.00751	-0.019	-0.0337	0.0281	0.0246
	(0.033)	(0.023)	(0.037)	(0.038)	(0.034)	(0.023)	(0.037)	(0.037)	(0.034)	(0.023)	(0.037)	(0.037)	(0.034)	(0.023)	(0.037)	(0.037)
Never married	-0.0247	-0.0127	-0.0224	0.0598	-0.0262	-0.0117	-0.00871	0.0467	-0.0237	-0.00918	-0.00705	0.0399	-0.0338	-0.0147	0.000575	0.0479
	(0.049)	(0.035)	(0.051)	(0.055)	(0.050)	(0.035)	(0.052)	(0.054)	(0.050)	(0.036)	(0.053)	(0.054)	(0.049)	(0.035)	(0.053)	(0.054)
Divorced/Sep.	-0.0593	0.0453	-0.00903	0.023	-0.0527	0.0509	-0.00214	0.00389	-0.0519	0.0498	-0.0045	0.00655	-0.0518	0.0507	-0.000222	0.00129
	(0.040)	(0.037)	(0.049)	(0.050)	(0.042)	(0.038)	(0.049)	(0.048)	(0.042)	(0.037)	(0.049)	(0.048)	(0.042)	(0.038)	(0.049)	(0.048)
Afr. American	-0.136***	-0.00405	0.217***	-0.0771	-0.132***	-0.00184	0.230***	-0.0965	-0.138***	-0.00408	0.237***	-0.0946	-0.135***	-0.00378	0.221***	-0.0821
	(0.047)	(0.044)	(0.072)	(0.063)	(0.051)	(0.045)	(0.072)	(0.059)	(0.049)	(0.044)	(0.071)	(0.058)	(0.050)	(0.044)	(0.072)	(0.061)
Hispanic	-0.129**	-0.0721**	0.106	0.0947	-0.120*	-0.0653*	0.0919	0.0935	-0.138**	-0.0701**	0.111	0.0973	-0.125**	-0.0684*	0.0959	0.0977
	(0.058)	(0.033)	(0.091)	(0.091)	(0.065)	(0.038)	(0.090)	(0.090)	(0.058)	(0.035)	(0.091)	(0.091)	(0.063)	(0.036)	(0.090)	(0.091)
4 members HH	-0.0583	0.00335	0.0345	0.0205	-0.0564	0.00374	0.0397	0.013	-0.0532	0.00543	0.045	0.0027	-0.0574	0.00376	0.041	0.0126
	(0.040)	(0.030)	(0.053)	(0.055)	(0.041)	(0.030)	(0.052)	(0.053)	(0.041)	(0.030)	(0.053)	(0.052)	(0.040)	(0.030)	(0.052)	(0.053)
5 members HH	-0.127***	0.0108	0.123**	-0.00675	-0.128***	0.00973	0.132**	-0.0138	-0.119***	0.0178	0.133**	-0.032	-0.129***	0.0113	0.139**	-0.0208
	(0.037)	(0.037)	(0.062)	(0.061)	(0.037)	(0.036)	(0.061)	(0.058)	(0.040)	(0.038)	(0.062)	(0.057)	(0.038)	(0.037)	(0.061)	(0.058)
Not employed	-0.0101	-0.0222	-0.0917**	0.124**	-0.0165	-0.0212	-0.0961**	0.134**	-0.0195	-0.0238	-0.0832*	0.127**	-0.0226	-0.0249	-0.0850*	0.133**
	(0.050)	(0.033)	(0.045)	(0.053)	(0.050)	(0.034)	(0.045)	(0.053)	(0.050)	(0.033)	(0.046)	(0.053)	(0.050)	(0.033)	(0.045)	(0.053)
30K < Y <= 50K	0.0323	0.113**	-0.0103	-0.135***	0.0441	0.119**	-0.0217	-0.141***	0.0459	0.119**	-0.0286	-0.136***	0.0334	0.114**	-0.0177	-0.130***
	(0.050)	(0.055)	(0.051)	(0.041)	(0.052)	(0.056)	(0.050)	(0.040)	(0.052)	(0.056)	(0.050)	(0.039)	(0.051)	(0.055)	(0.050)	(0.040)
50K < Y <= 75K	0.0201	0.251***	-0.0513	-0.220***	0.0332	0.254***	-0.06	-0.228***	0.0364	0.263***	-0.0715	-0.228***	0.0255	0.256***	-0.057	-0.225***
	(0.053)	(0.070)	(0.054)	(0.040)	(0.055)	(0.070)	(0.053)	(0.037)	(0.056)	(0.070)	(0.052)	(0.036)	(0.054)	(0.069)	(0.053)	(0.037)
Y > 75K	0.119**	0.227***	-0.0321	-0.315***	0.126**	0.234***	-0.0521	-0.308***	0.132**	0.238***	-0.0582	-0.312***	0.119**	0.234***	-0.0409	-0.313***
	(0.054)	(0.059)	(0.051)	(0.038)	(0.055)	(0.059)	(0.050)	(0.037)	(0.055)	(0.059)	(0.049)	(0.036)	(0.054)	(0.059)	(0.050)	(0.036)
W < 50K	-0.313***	0.00534	0.327***	-0.0194	-0.353***	-0.00363	0.360***	-0.00317	-0.358***	-0.00449	0.360***	0.00234	-0.356***	-0.000408	0.360***	-0.00319
	(0.044)	(0.026)	(0.053)	(0.054)	(0.043)	(0.026)	(0.051)	(0.051)	(0.043)	(0.026)	(0.051)	(0.051)	(0.043)	(0.026)	(0.050)	(0.051)
50K < W <= 100K	-0.0552	0.0375	0.126	-0.108*	-0.0913**	0.0213	0.169*	-0.099	-0.0858**	0.0256	0.166*	-0.106*	-0.0847**	0.0274	0.154*	-0.0969
	(0.043)	(0.043)	(0.087)	(0.063)	(0.039)	(0.040)	(0.087)	(0.063)	(0.040)	(0.041)	(0.087)	(0.061)	(0.040)	(0.041)	(0.087)	(0.063)
100K < W < 250K	-0.0897**	-0.0318	0.243***	-0.121*	-0.0979**	-0.0351	0.258***	-0.125*	-0.0961**	-0.0358	0.249***	-0.118*	-0.0975**	-0.0329	0.256***	-0.126*
	(0.039)	(0.030)	(0.088)	(0.068)	(0.038)	(0.029)	(0.086)	(0.065)	(0.039)	(0.029)	(0.086)	(0.065)	(0.039)	(0.030)	(0.086)	(0.065)
Observations	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Pseudo R-squared	0.1769	0.1769	0.1769	0.1769	0.1629	0.1629	0.1629	0.1629	0.1628	0.1628	0.1628	0.1628	0.16	0.16	0.16	0.16

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

Key for 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 = large underestimate, Lit2 = small underestimate, 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: Characteristics by Self-Assessment of Level of Indebtedness

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

			Indebtedness Self-Assessment							
	Total Sample		Too Much Debt		Right Amount		Too Little		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%
Afr. American	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-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: In Control	26.6%	44.2%	2.6%	16.1%	38.1%	48.6%	62.4%	49.7%	14.4%	35.3%
2: Borower/Saver	11.9%	32.3%	15.4%	36.1%	11.7%	32.1%	0.0%	0.0%	6.6%	25.0%
3: Overextended	31.4%	46.4%	53.3%	50.0%	25.1%	43.4%	0.0%	0.0%	18.8%	39.3%
4: Fringe	30.2%	45.9%	28.7%	45.3%	25.1%	43.4%	37.6%	49.7%	60.2%	49.2%
Number of observations										
unweighted	1000		248		634		20		98	
weighted	1000		264		605		20		111	

Table 11: Multinomial Logit Analyses of Self-Assesed Debt Levels

	Self-assessed literacy			*First measure of literacy*			*Second measure of literacy*			*Third measure of literacy*		
Variables	Too much debt	Just right	Do not know	Too much debt	Just right	Do not know	Too much debt	Just right	Do not know	Too much debt	Just right	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)
Age	0.0154**	-0.0142*	-0.00121	0.0148**	-0.0140*	-0.000817	0.0163**	-0.0160**	-0.00032	0.0164**	-0.0149*	-0.00145
	(0.007)	(0.008)	(0.003)	(0.007)	(0.008)	(0.004)	(0.007)	(0.008)	(0.003)	(0.007)	(0.008)	(0.004)
Age sq. /100	-0.0212***	0.0207**	0.000559	-0.0209***	0.0213***	-0.000376	-0.0225***	0.0232***	-0.000738	-0.0224***	0.0218***	0.000575
	(-0.0077)	(-0.0081)	(-0.0035)	(-0.0075)	(-0.0081)	(-0.0036)	(-0.0076)	(-0.0081)	(-0.0035)	(-0.0076)	(-0.0081)	(-0.0037)
Female	-0.0336	-0.0101	0.0437**	-0.0444	0.0167	0.0278	-0.0334	2.95E-05	0.0334*	-0.0407	0.00408	0.0366*
	(0.032)	(0.035)	(0.019)	(0.032)	(0.036)	(0.019)	(0.032)	(0.036)	(0.019)	(0.031)	(0.036)	(0.019)
Never married	-0.0331	0.00266	0.0305	-0.0184	0.00598	0.0124	-0.0244	0.00203	0.0224	-0.0204	0.00322	0.0172
	(0.041)	(0.050)	(0.030)	(0.042)	(0.049)	(0.027)	(0.042)	(0.049)	(0.028)	(0.042)	(0.050)	(0.027)
Divorced/Sep.	0.0254	-0.0467	0.0213	0.0329	-0.0435	0.0106	0.0364	-0.0472	0.0109	0.0396	-0.0452	0.00552
	(0.044)	(0.049)	(0.026)	(0.043)	(0.048)	(0.024)	(0.044)	(0.048)	(0.024)	(0.044)	(0.048)	(0.023)
Afr. American	-0.00203	-0.106	0.108**	0.0026	-0.0821	0.0795*	0.00741	-0.094	0.0866*	-0.00574	-0.116	0.122**
	(0.057)	(0.074)	(0.052)	(0.058)	(0.071)	(0.047)	(0.059)	(0.072)	(0.048)	(0.056)	(0.074)	(0.055)
Hispanic	-0.0449	0.0183	0.0267	-0.0469	0.0215	0.0254	-0.0358	0.0118	0.024	-0.0383	0.0295	0.00884
	(0.063)	(0.081)	(0.054)	(0.061)	(0.079)	(0.055)	(0.064)	(0.081)	(0.054)	(0.064)	(0.079)	(0.048)
4 members HH	0.0672	-0.0299	-0.0373*	0.0756	-0.0324	-0.0432**	0.0737	-0.0377	-0.0360*	0.0772	-0.0413	-0.036
	(0.048)	(0.050)	(0.021)	(0.048)	(0.051)	(0.021)	(0.048)	(0.051)	(0.022)	(0.048)	(0.051)	(0.022)
5 members HH	0.0732	-0.0305	-0.0427*	0.0973*	-0.0533	-0.0440*	0.0915	-0.0441	-0.0474**	0.0953*	-0.045	-0.0502**
	(0.057)	(0.060)	(0.022)	(0.057)	(0.060)	(0.023)	(0.058)	(0.060)	(0.021)	(0.058)	(0.060)	(0.022)
Not employed	-0.0488	0.0758*	-0.027	-0.0471	0.0621	-0.015	-0.0373	0.0546	-0.0173	-0.0401	0.057	-0.0169
	(0.037)	(0.042)	(0.018)	(0.037)	(0.042)	(0.020)	(0.038)	(0.043)	(0.019)	(0.038)	(0.043)	(0.020)
30K < Y <= 50K	-0.0273	0.0539	-0.0266	-0.0451	0.0696*	-0.0245	-0.0424	0.0645	-0.0221	-0.0391	0.0651	-0.026
	(0.039)	(0.043)	(0.018)	(0.037)	(0.041)	(0.018)	(0.038)	(0.042)	(0.018)	(0.038)	(0.042)	(0.018)
50K < Y < 75K	-0.0415	0.110**	-0.0683***	-0.0561	0.131***	-0.0753***	-0.0559	0.132***	-0.0759***	-0.0524	0.132***	-0.0792***
	(0.041)	(0.044)	(0.017)	(0.039)	(0.042)	(0.017)	(0.040)	(0.042)	(0.016)	(0.040)	(0.042)	(0.017)
Y > 75K	-0.0873**	0.170***	-0.0822***	-0.0930**	0.177***	-0.0840***	-0.103***	0.189***	-0.0869***	-0.0953**	0.186***	-0.0905***
	(0.038)	(0.041)	(0.019)	(0.038)	(0.041)	(0.020)	(0.037)	(0.040)	(0.019)	(0.037)	(0.041)	(0.020)
W < 50K	0.334***	-0.291***	-0.0437	0.360***	-0.322***	-0.0373	0.356***	-0.316***	-0.04	0.358***	-0.317***	-0.0409
	(0.051)	(0.053)	(0.027)	(0.050)	(0.051)	(0.026)	(0.050)	(0.052)	(0.026)	(0.050)	(0.052)	(0.026)
50K < W <= 100K	0.255**	-0.231**	-0.0234	0.297***	-0.273***	-0.0239	0.285***	-0.259***	-0.0262	0.278***	-0.255***	-0.0232
	(0.100)	(0.095)	(0.025)	(0.100)	(0.093)	(0.026)	(0.100)	(0.094)	(0.025)	(0.100)	(0.094)	(0.027)
100K < W < 250K	0.116	-0.0579	-0.0584***	0.142	-0.0757	-0.0659***	0.129	-0.0633	-0.0654***	0.136	-0.0682	-0.0676***
	(0.100)	(0.100)	(0.023)	(0.110)	(0.100)	(0.021)	(0.110)	(0.100)	(0.020)	(0.110)	(0.100)	(0.021)
Observations	980	980	980	980	980	980	980	980	980	980	980	980
Pseudo R-squared	0.189	0.189	0.189	0.1701	0.1701	0.1701	0.1641	0.1641	0.1641	0.1626	0.1626	0.1626

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

Key for 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 = large underestimate, Lit2 = small underestimate, 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 12: Multinomial Logit Analyses of Self-Assesed Debt Levels, including Experience Segments

	Self-assessed literacy			*First measure of literacy*			*Second measure of literacy*			*Third measure of literacy*		
Variables	Too much debt	Just right	Do not know	Too much debt	Just right	Do not know	Too much debt	Just right	Do not know	Too much debt	Just right	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)
Borrower/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)
Over-extended	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)
Fringe	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)
Age	0.0120*	-0.0115	-0.000498	0.0108*	-0.0107	-7.34E-05	0.0122*	-0.0122*	5.42E-06	0.0120*	-0.0111	-0.000874
	(0.006)	(0.007)	(0.003)	(0.006)	(0.007)	(0.003)	(0.006)	(0.007)	(0.003)	(0.006)	(0.007)	(0.003)
Age sq. /100	-0.0168**	0.0168**	-0.0000402	-0.0155**	0.0165**	-0.000976	-0.0171**	0.0179**	-0.000863	-0.0167**	0.0165**	0.00019
	(-0.0068)	(-0.0075)	(-0.0034)	(-0.0067)	(-0.0074)	(-0.0035)	(-0.0068)	(-0.0074)	(-0.0034)	(-0.0067)	(-0.0074)	(-0.0036)
Female	-0.033	-0.00951	0.0425**	-0.0419	0.012	0.0298	-0.0341	-0.000766	0.0349*	-0.0395	0.00395	0.0355*
	(0.028)	(0.033)	(0.018)	(0.028)	(0.033)	(0.019)	(0.028)	(0.033)	(0.018)	(0.028)	(0.033)	(0.019)
Never married	-0.0324	0.00804	0.0243	-0.0194	0.0121	0.00732	-0.0257	0.00982	0.0159	-0.0221	0.00961	0.0125
	(0.035)	(0.045)	(0.028)	(0.036)	(0.044)	(0.025)	(0.036)	(0.045)	(0.026)	(0.036)	(0.045)	(0.026)
Divorced/Sep.	0.0111	-0.0256	0.0145	0.0117	-0.0216	0.00989	0.0197	-0.0285	0.00876	0.0226	-0.0271	0.00443
	(0.038)	(0.044)	(0.024)	(0.037)	(0.044)	(0.024)	(0.038)	(0.044)	(0.023)	(0.039)	(0.044)	(0.023)
Afr. American	-0.0432	-0.103	0.146**	-0.04	-0.0798	0.120**	-0.0398	-0.0897	0.129**	-0.0485	-0.119	0.168***
	(0.041)	(0.073)	(0.062)	(0.041)	(0.069)	(0.057)	(0.042)	(0.071)	(0.059)	(0.039)	(0.074)	(0.065)
Hispanic	-0.0516	0.0305	0.0211	-0.0553	0.04	0.0153	-0.0493	0.0308	0.0184	-0.0486	0.0464	0.00221
	(0.048)	(0.070)	(0.051)	(0.046)	(0.068)	(0.051)	(0.049)	(0.070)	(0.051)	(0.049)	(0.066)	(0.045)
4 members HH	0.047	-0.0111	-0.0359*	0.0569	-0.0131	-0.0438**	0.0539	-0.0178	-0.0361*	0.056	-0.0218	-0.0341
	(0.042)	(0.046)	(0.021)	(0.043)	(0.047)	(0.020)	(0.043)	(0.047)	(0.021)	(0.043)	(0.047)	(0.022)
5 members HH	0.0291	0.0142	-0.0433**	0.0524	-0.00948	-0.0429*	0.045	0.000904	-0.0459**	0.0479	-0.00217	-0.0457**
	(0.046)	(0.051)	(0.021)	(0.048)	(0.052)	(0.022)	(0.048)	(0.052)	(0.020)	(0.048)	(0.052)	(0.021)
Not employed	-0.0334	0.0709*	-0.0375**	-0.0298	0.0567	-0.0269	-0.0234	0.0505	-0.0272	-0.0246	0.0532	-0.0286
	(0.033)	(0.037)	(0.016)	(0.032)	(0.038)	(0.018)	(0.034)	(0.039)	(0.017)	(0.033)	(0.038)	(0.018)
30K < Y <= 50K	-0.0396	0.0652*	-0.0257	-0.0557*	0.0726**	-0.0169	-0.0495	0.0659*	-0.0164	-0.0478	0.0668*	-0.0191
	(0.033)	(0.037)	(0.017)	(0.031)	(0.036)	(0.019)	(0.032)	(0.037)	(0.018)	(0.032)	(0.037)	(0.019)
50K < Y < 75K	-0.0635*	0.129***	-0.0655***	-0.0744**	0.143***	-0.0685***	-0.0699**	0.139***	-0.0691***	-0.0680**	0.142***	-0.0735***
	(0.034)	(0.037)	(0.017)	(0.032)	(0.036)	(0.018)	(0.033)	(0.037)	(0.017)	(0.033)	(0.036)	(0.017)
Y > 75K	-0.0875***	0.160***	-0.0725***	-0.0891***	0.158***	-0.0693***	-0.0933***	0.166***	-0.0727***	-0.0892***	0.165***	-0.0755***
	(0.034)	(0.038)	(0.019)	(0.033)	(0.038)	(0.021)	(0.033)	(0.038)	(0.020)	(0.033)	(0.038)	(0.020)
W < 50K	0.232***	-0.203***	-0.0293	0.244***	-0.222***	-0.0222	0.242***	-0.214***	-0.0281	0.244***	-0.218***	-0.0266
	(0.050)	(0.054)	(0.026)	(0.049)	(0.052)	(0.026)	(0.050)	(0.053)	(0.026)	(0.050)	(0.053)	(0.026)
50K < W <= 100K	0.201**	-0.189**	-0.0123	0.225**	-0.216**	-0.00861	0.218**	-0.205**	-0.0134	0.211**	-0.202**	-0.00916
	(0.098)	(0.093)	(0.027)	(0.100)	(0.093)	(0.029)	(0.100)	(0.094)	(0.027)	(0.099)	(0.093)	(0.029)
100K < W < 250K	0.0594	-0.0119	-0.0475*	0.0644	-0.00935	-0.0551**	0.0635	-0.0071	-0.0564***	0.0683	-0.00921	-0.0591***
	(0.089)	(0.088)	(0.025)	(0.089)	(0.088)	(0.023)	(0.090)	(0.089)	(0.022)	(0.090)	(0.089)	(0.022)
Observations	980	980	980	980	980	980	980	980	980	980	980	980
Pseudo R-squared	0.2455	0.2455	0.2455	0.233	0.233	0.233	0.2267	0.2267	0.2267	0.2252	0.2252	0.2252

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

Key for 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 = large underestimate, Lit2 = small underestimate, 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 13: 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 overlimit 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 overlimit 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 overlimit 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 ($6000) 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).