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Borrowing Decisions of Credit Constrained Consumers and The Role of Financial Literacy

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Abstract

This study uses a new nationally representative dataset (National Financial Capability Study, 2009) to examine the association between individuals' financial literacy and their high-cost borrowing decisions. The results indicate that financial literacy is indeed negatively associated with high-cost borrowing behaviors. Other factors such as lower levels of income, gender, educational attainment, and the recent downturn in economic fortune of a household were also associated with high-cost borrowing behaviors. This study's findings have important policy implications for improving individual financial decision-making of credit constrained consumers.

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1. Introduction

In the light of the recent economic crisis, a lot attention has been focused on individuals' financial decision-making and has underscored the need for increasing households' capabilities for making more informed financial decisions (Agarwal, Amromin, & Ben-David, 2010; Chatterjee & Zahirovic-Herbert, 2010). Recent literature on financial decision-making has shown that individuals make cognitive mistakes when selecting financial products and when making financial decisions (Kim et al., 2012; Agarwal, Driscoll, & Laibson, 2008; Lusardi & Mitchell, 2006; Gartner & Todd, 2005). Extensive work by Lusardi and Mitchell (2011; 2009; 2007; 2006) has shown that one explanation for this type of sub-optimal individual behavior is widespread financial illiteracy among households.

The market for high-cost alternative credit has grown substantially over the past decade (King & Parrish, 2007). The market for these loans caters to credit-constrained households and charges extraordinarily high rates of interest that sometimes reaches three digits. The proponents of this lending industry, however, argue that the alternative lenders such as payday lenders, although expensive, make credit accessible to the segment of consumers whom traditional lenders would consider to be too risky to receive any type of loan (Lawrence & Elliehausen, 2008). While in most cases it would be considered highly irrational for any individual to access these types of high-interest loans, an earlier study by Elliehausen and Lawrence (2001) suggests that this type of borrowing decision can sometimes be rational and justified.

In the aftermath of the recent economic crisis it is possible that the widespread lack of financial literacy coupled with the easy access to the high-cost credit may lead to another undesirable economic situation where there is an increase in financially uninformed borrowers participating in the alternative borrowing market. In this paper we examine whether financial literacy, as suggested in many earlier studies (Lusardi & Tufano, 2008; Lusardi, 2006), is a mitigating factor in a household's decision to participate in high-interest borrowing.

2. Theoretical Framework

The theoretical framework for this paper is based on the consumer credit use models developed by Lawrence and Elliehausen (2007), Juster and Shay (2004), Hirschleifer (1958), and Fisher (1930). According to these studies, borrowers typically use their loans to buy goods or services that will either provide them with instant benefits or provide for many periods of benefits in the future. The value of these goods and services increases with their frequency of use (Dunkelberg & Stephenson, 1975). Consumers therefore view their purchases as investments, where the present value of benefits is calculated based on their borrowing rate or their rate of time preference (Lawrence & Elliehausen, 2007).

In order to mitigate their risk of default, lenders ration the supply of credit to consumers who are financially constrained by subjecting them to higher interest rates for accessing credit. The decision to accept the lender's terms will be optimal for consumers only when they meet one of the following conditions: low current income or a higher rate of time preference (Juster & Shay, 2004). Therefore, consumers who are either financially constrained or have a high rate of time preference are likely to be less sensitive to higher interest rates because they either discount future consumption at a substantially higher rate or their access to credit is more limited. Meier and Sprenger (2009) found that consumers who have a high rate of time preference are also more likely to have lower credit scores. However, Meier and Sprenger's (2008) study suggests that financial literacy reduces the rate of time preference among borrowers.

We therefore hypothesize that respondents who are constrained either by lower levels of income or lower credit scores are more likely to obtain high-interest, short-term loans through alternative financial providers such as payday lenders, auto title lenders, or pawnshops. Due to the correlation between credit score and time preference (Meier & Springer, 2008), credit scores are used as a proxy for the individual's time preference; however, financial literacy is expected to reduce the respondent's preference for financing their current consumption by borrowing from these high-cost lenders.

3. Research Methodology

Data

This study uses data from the National Financial Capability Study, which includes nationally representative state-by-state survey data from approximately 25,000 respondents. The survey data was collected from the respondents between May and July 2009. The National Financial Capability Study is supported by the FINRA Investor Education Foundation. The survey instruments for this dataset were designed by Dr. Annamaria Lusardi of Dartmouth College, Applied Research and Consulting LLC (ARC), the FINRA Investor Education Foundation, and the Office of Financial Education of the U.S. Treasury Department. This data oversamples African Americans, Hispanics, Asian Americans, and adults with less than a high school education to ensure adequate representation from financially under-served groups. The dataset is similar to ones previously collected from the United Kingdom, New Zealand, Australia, Ireland, Canada, and the Netherlands between 2005 and 2009. The U.S. Financial Capability Study contains rich data on respondents' financial literacy and financial attitudes along with their demographic, behavioral, and financial capability-related characteristics (Lusardi, 2010; FINRA Foundation, 2009).

Variables

Dependent Variables

The respondents were asked whether in the past five years they had used a "payday loan," an "auto title loan," or a "pawnshop" to address their borrowing needs. The three dependent binary variables for utilization of payday loans, auto title loans, and pawnshops were coded as '1' if the specific service was utilized and as '0' if otherwise.

Independent Variables

Financial Literacy

The primary variable of interest is financial literacy, which was measured by following the methods suggested in Lusardi (2010). The respondents were asked the following set of questions related to basic concepts of economics and finance that they utilize in everyday life:

Interest rate question: Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? The multiple choice options were: (1) More than \$102; (2) Exactly \$102; and (3) Less than \$102.

Inflation question: Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account? The respondents had to select between the following options: (1) More than today; (2) Exactly the same; and (3) Less than today.

Bond question: If interest rates rise, what will typically happen to bond prices? The multiple-choice options were: (1) They will rise; (2) They will fall; (3) They will stay the same; and (4) There is no relationship between bond prices and interest rates.

Mortgage question: A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less. The respondents had to choose between: (1) True; and (2) False.

Risk question: Buying a single company's stock usually provides a safer return than a stock mutual fund. The respondents had to choose between: (1) True; and (2) False.

If the respondents answered all five of the above questions correctly, the financial literacy variable was coded as '1' and as '0' if otherwise.

Self-Assessed Financial Literacy: The respondents' self-assessed financial literacy scores were recorded based on their responses to the following question:

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?

Financial Attitude and Behavior Questions: The financial attitude and behavior-related variables that were included in the model comprised of financial satisfaction (1=not at all satisfied; 10=extremely satisfied); willingness to accept investment risk (1=not at all willing; 10=very willing); spending more than one's income (1=yes; 0=otherwise); difficulty in making payments (1=very difficult; 0=otherwise); and sudden drop in income (1=yes; 0=otherwise).

Credit Score: The respondents' self-reported credit scores were included in the model. Respondents with credit scores of 720 or higher were included as the reference group. Binary variables of respondents with credit scores of 630–710 and of respondents with credit scores of 620 or lower were compared against the reference group.

Demographic and Socio-Economic Variables

The demographic variables included in the model were binary variables for age groups, levels of educational attainment, gender, race, marital status, income, and region of residence.

Analysis

After controlling for a number of other financial-attitude and behavior-related factors, and various demographic and socioeconomic related factors, three logit models were run to examine whether respondents' level of financial literacy reduced their likelihood of borrowing through payday loans, auto title loans and pawnshops. Odds ratios of the control variables were

also computed. Logit analysis was carried out instead of a regular OLS model because the dependent variables in this study were binary (Wooldridge, 2006).

4. Results

Descriptive statistics from Table 1 show that approximately 9% of the respondents have borrowed using a payday loan in the last five years. Similarly, 12% have used a pawnshop and 6% have taken out an auto title loan to meet their short-term borrowing needs. Respondents in the lowest income category (household income being less than \$5,000) reported the highest rate of pawnshop borrowing. The income category with the highest proportion (20%) of payday loan borrowers ranged from \$35,000 to \$50,000. Additionally, the respondents with household incomes between \$35,000 and \$75,000 had the highest number of borrowers for auto title loans (19%). Although 53% of the respondents in the sample were female, they made up a smaller percentage of the borrowers for all three types of high-cost loans. Conversely, 62% of the respondents in the sample did not complete college, but the percentage of respondents without a college education was much higher among respondents who utilized alternative financial services. Married respondents indicated that they utilized high-cost lenders at an equal or lower rate when compared to single or divorced respondents. Greater proportions of individuals residing in the southern and western parts of the United States utilized high-cost lenders. Additionally, 25% of the respondents in the dataset were non-white, but the percentages of non-white respondents who accessed payday loans, auto title loans, or pawnshops were much higher.

Table 2 shows that there is very little difference in the average perceived scores of financial knowledge among those who access payday loans, auto title loans, or pawnshop services and the overall sample mean. However, substantial differences in the percentage of respondents who correctly answered all of the measured financial literacy questions were observed. Overall, 17% of the sample correctly answered all five of the financial literacy questions, yet only 9% of payday loan users, 11% of auto title loan borrowers, and 7% of pawnshop borrowers were able to correctly answer all five of the questions. Those who borrowed through high-cost lending services also reported a greater level of difficulty in making payments and conversely a lower level of financial satisfaction. Also, a higher percentage of respondents accessing these services reported spending more than their income and experiencing a sudden drop in income. The self-reported credit scores of respondents reveal that a higher percentage of respondents with a score of lower than 620 reported utilizing the higher-cost lending services.

Who Uses Payday Loans?

The results from Table 3 (columns 1 through 4) indicate that respondents who correctly answered all of the financial literacy questions are 29% less likely to borrow from payday lenders. Compared to respondents who are 65 or older, the younger respondents are more likely to access payday lenders. Additionally, the respondents in the 25–34 age group are 2.6 times more likely than 65 and older respondents to borrow from payday lenders. Likelihood of borrowing from a payday lender decreases with formal educational attainment, with respondents who have less than a high school education being 54% more likely than those who have attended graduate school to take out a payday loan. The results also indicate that the likelihood of participation in payday loans increases for non-white respondents and for those who have a greater number of children. Compared to the reference group of single respondents, those who are divorced, separated, or widowed are more likely to borrow from payday lenders, and

conversely, those who are married are less likely to do so. When compared with the reference group of respondents with household incomes of greater than \$150,000, those who have lower than \$150,000 in household income are more likely to access payday loans. Compared to the residents of the Northeast, residents living in other regions are more likely to borrow from payday lenders. The results also show that perceived financial knowledge and financial satisfaction are negatively associated with payday borrowing. Respondents who report difficulty in meeting their monthly financial obligations and those with a credit score of lower than 620 are more likely to use payday lending services.

Who Uses Auto Title Loans?

The results from Table 3 (columns 5 through 8) indicate that respondents who score high on the measured financial literacy score are 35% less likely to get an auto title loan. Compared to respondents who are 65 or older, respondents with ages between 18 and 54 are more likely to access auto title loans. When compared with respondents who have attended graduate school or higher, respondents who have an educational attainment of lower than a college degree are more likely to get an auto title loan. The results also indicate that the likelihood of participating in auto title loans increases with the number of children the respondent has. Conversely, the likelihood of accessing an auto title loan is lower among women when compared to the reference group of male respondents. Compared to the reference group of single respondents, those who are divorced, separated, or married are more likely to obtain auto title loans. When compared with the reference group of respondents with household incomes of greater than \$150,000, those who have a household income of between \$15,000 and \$75,000 are more likely to access auto title loans. Compared to the residents of the Northeast, residents living in the Mid-West, South, and West are more likely to borrow from auto title lenders. The results also show that respondents who have difficulty making monthly payments and those who have experienced a sudden drop in income are more likely to borrow using an auto title lender. Respondents who report a credit score of lower than 720 are more likely to use auto title loan services.

Who Uses Pawnshops?

The results from Table 3 (columns 9 through 12) indicate that respondents who score high on the measured financial literacy assessment are approximately 40% less likely to use a pawnshop. Compared to respondents who are 65 or older, the younger respondents were more likely to use a pawnshop. When compared with respondents who have attended graduate school or higher, respondents who have an educational attainment of lower than a college degree are more likely to use a pawnshop. The results also indicate that the likelihood of accessing pawnshops increases with the number of children a respondent has. Conversely, the likelihood of accessing pawnshops is lower among women when compared to the reference group of male respondents. Respondents who are divorced or separated and non-white respondents are more likely to use pawnshops. When compared with the reference group of respondents with household incomes of greater than \$150,000, those who have a household income of between \$15,000 and \$75,000 are more likely to use a pawnshop. Compared to the residents of the Northeast, residents living in the South are more likely to borrow from pawnshops. The results also show that respondents who have difficulty making monthly payments and those who have experienced a sudden drop in income are more likely to borrow from pawnshops. When compared to the reference group of respondents with a credit score 720 or higher, those

respondents who report a credit score of lower than 620 are also more likely to borrow from pawnshops.

5. Discussion and Implications

Individuals who exhibited higher levels of financial literacy showed significantly lower utilization rates of high-cost alternative financial service providers for all of the different types of lending products. Financial literacy—when controlling for income—current financial position, and past borrowing behavior (i.e., credit score) lower an individual's demand for high-cost lending products. However, larger proportions of lower-income individuals fail to demonstrate basic financial literacy. Financial literacy appeared to reduce demand for pawnshops and auto title loans more than it reduced demand for payday loans.

While financial literacy is an important and powerful factor in mitigating demand for alternative financial services, findings from this study show that other factors have equal or greater impacts on the demand for high-cost alternative financial services. Factors associated with the formation of general human capital, such as age, income, and formal education are substantively associated with the utilization of high-cost alternative financial services. Those individuals with higher stocks of general human capital appear to be much more aloof from the alternative financial marketplace.

Generalizing the findings, it appears that younger, lower-income, less-educated, less financially literate individuals who are struggling to make payments, have a history of poor borrowing behavior, and are divorced with children are the most likely users of high-cost alternative financial services. Less robust factors associated with utilizing high-cost alternative financial services include being male, non-white, unsatisfied with one's current financial situation, and experiencing a sudden drop in income.

Results of this study are consistent with previous studies using different data sets and populations (Hanna, Yuh, & Chatterjee, 2012). However, the richness of this data allowed for greater exploration of how financial literacy, both subjective and objective, mitigates credit-constrained consumers' propensity to utilize high-cost alternative financial service providers. Objective financial literacy does mitigate the use of these services. Programs promoting the development of financial literacy in individuals will likely help consumers choose to avoid the alternative financial marketplace and lead to general improvements in the borrowing choices made by individuals, including lower-income, credit-constrained individuals.

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Table 1: Descriptive Statistics

Variables	All (%)	Payday Loan (%)	Auto title Loan (%)	Pawn shop (%)
	100%	9%	6%	12%
Income				
<=\$5000	13	14	11	24
\$15,000-\$25,000	12	19	16	21
\$25,000-\$35,000	12	18	16	17
\$35,000-\$50,000	16	20	19	17
\$50,000-\$75,000	19	17	19	13
\$75,000-\$100,000	12	7	9	5
\$100,000-\$150,000	10	4	7	3
\$150,000 or more	6	1	3	1
Education				
Less than HS	3%	4%	3%	7%
High School	24%	29%	29%	33%
Some College	35%	43%	38%	40%
College	24%	18%	21%	15%
Graduate	14%	6%	9%	5%
Age				
18-24	12	11	12	21
25-34	18	26	26	25
35-44	19	25	22	24
45-54	21	23	20	19
55-64	15	10	11	8
65 plus	15	4	9	3
Female	53	49	51	52
Marital Status				
Married	56	48	56	41
Single	26	29	25	39
Divorced/Separated	14	20	16	18
Widowed	4	3	3	2
Children	40	58	53	52
Race				
White	75	60	69	62
Non-white	25	40	31	38
Region				
Northeast	18	9	14	12
Midwest	23	22	22	20
South	34	38	38	41
West	25	31	27	28

Table 2: Financial literacy, financial behavior, credits cores and predatory loans

Variable Types	Variables	All (Mean, %)	Payday Loan (Mean, %)	Auto title Loan (Mean, %)	Pawn shop (Mean, %)
Financial Literacy	Self-assessed Knowledge (Scale: Max=7; Min=1)	5	4.7	4.9	4.6
	Measured Knowledge	17%	9%	11%	7%
Financial Behavior and Attitudes	Satisfied with financial situation (Scale: Max=10; Min=1)	4.5	3.1	3.9	3.3
	Difficulty making payments (Scale: Very=3; Not at all=1)	1.79	2.24	2.04	2.2
	Spend more than income	20%	34%	27%	30%
	Perceived Risk tolerance	42%	25%	33%	31%
Credit score	Sudden drop in income	39%	56%	52%	58%
	<620	24%	71%	45%	63%
	620 to <720	30%	24%	31%	26%
	More than 720	46%	5%	24%	11%

Table 3

Variable Types	Variables Names	Pay-day Loans						Auto title Loan						Pawn shop												
		St. error		Odds	Sig	St. error		Odds	Sig	St. error		Odds	Sig	St. error		Odds	Sig									
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4									
Demographic Factors	Financial Literacy	-0.342	0.078	0.710	***	-0.422	0.083	0.655	***	-0.495	0.076	0.609	***	0.864	0.139	2.372	***	0.585	0.127	1.757	***	1.629	0.225	5.101	***	
	Age (Ref: 65 or older)																									
	18-24																									
	25-34	1.273	0.127	3.570	***	0.677	0.111	1.935	***	2.117	0.213	8.310	***	1.211	0.126	3.357	***	0.376	0.112	1.423	***	1.967	0.213	7.149	***	
	35-44	1.133	0.122	3.105	***	0.262	0.108	1.273	**	1.287	0.215	3.621	***	1.211	0.126	3.357	***	0.262	0.108	1.273	**	1.287	0.215	3.621	***	
	45-54	0.733	0.128	2.081	***	0.086	0.114	1.083		0.603	0.234	1.827	**	0.733	0.128	2.081	***	0.086	0.114	1.083		0.603	0.234	1.827	**	
	55-64																									
	Education (Ref: Grad school)																									
	Less than high school	0.438	0.149	1.540	***	0.363	0.168	1.440	**	1.022	0.135	2.781	***	0.438	0.149	1.540	***	0.363	0.168	1.440	**	1.022	0.135	2.781	***	
	High school	0.339	0.101	1.410	***	0.353	0.104	1.420	***	0.668	0.102	1.951	***	0.339	0.101	1.410	***	0.353	0.104	1.420	***	0.668	0.102	1.951	***	
	Some college	0.332	0.095	1.390	***	0.238	0.099	1.368	**	0.531	0.098	1.700	***	0.332	0.095	1.390	***	0.238	0.099	1.368	**	0.531	0.098	1.700	***	
	College	0.049	0.100	1.050		0.104	0.102	1.109		0.211	0.183	1.235		0.049	0.100	1.050		0.104	0.102	1.109		0.211	0.183	1.235		
	Female (Ref: Male)	-0.078	0.049	0.924		-0.319	0.053	0.748	***	-0.229	0.062	0.803	***	-0.078	0.049	0.924		-0.319	0.053	0.748	***	-0.229	0.062	0.803	***	
	Non-white (Ref: White)	0.470	0.050	1.600	***	0.083	0.058	1.077		0.236	0.063	1.266	***	0.470	0.050	1.600	***	0.083	0.058	1.077		0.236	0.063	1.266	***	
	Marital Status (Ref: Single)																									
Married	-0.148	0.064	0.863	**	0.222	0.074	1.234	***	0.096	0.080	1.100		-0.148	0.064	0.863	**	0.222	0.074	1.234	***	0.096	0.080	1.100			
Divorced or separated	0.185	0.076	1.204	**	0.334	0.090	1.361	***	0.230	0.099	1.259	**	0.185	0.076	1.204	**	0.334	0.090	1.361	***	0.230	0.099	1.259	**		
Widowed	0.347	0.140	1.414	**	0.175	0.165	1.177		0.310	0.218	1.364		0.347	0.140	1.414	**	0.175	0.165	1.177		0.310	0.218	1.364			
Number of children	0.159	0.021	1.172	***	0.127	0.023	1.141	***	0.342	0.024	1.408	***	0.159	0.021	1.172	***	0.127	0.023	1.141	***	0.342	0.024	1.408	***		
Income (Ref: >\$150,000)																										
<\$15,000	0.958	0.234	2.608	***	0.096	0.178	1.152		0.727	0.237	2.070	***	0.958	0.234	2.608	***	0.096	0.178	1.152		0.727	0.237	2.070	***		
\$15,000 to <\$25,000	1.441	0.230	4.226	***	0.541	0.169	1.816	***	1.373	0.229	3.946	***	1.441	0.230	4.226	***	0.541	0.169	1.816	***	1.373	0.229	3.946	***		
\$25,000 to <\$35,000	1.479	0.229	4.389	***	0.612	0.166	1.912	***	1.270	0.227	3.560	***	1.479	0.229	4.389	***	0.612	0.166	1.912	***	1.270	0.227	3.560	***		
\$35,000 to <\$50,000	1.336	0.227	3.803	***	0.518	0.162	1.730	***	1.061	0.224	2.888	***	1.336	0.227	3.803	***	0.518	0.162	1.730	***	1.061	0.224	2.888	***		

Financial Attitude and Behavior	\$50,000 to <\$75,000	1.170	0.226	3.221	***	0.407	0.160	1.559	**	0.642	0.224	1.901	***	
	\$75,000 to <\$100,000	0.913	0.233	2.491	***	0.230	0.169	1.291		0.282	0.237	1.326		
	\$100,000 to \$150,000	0.570	0.244	1.768	**	0.166	0.175	1.219		-0.058	0.256	0.944		
	Region (Ref: North east)													
	Mid-west	0.750	0.087	2.118	***	0.190	0.085	1.205	**	0.143	0.100	1.153		
	South	0.762	0.082	2.143	***	0.288	0.079	1.319	***	0.446	0.090	1.563	***	
	West	0.950	0.084	2.587	***	0.236	0.083	1.242	***	-0.017	0.100	0.983		
	Perceived financial knowledge	-0.004	0.002	0.996	*	-0.001	0.002	1.000		-0.004	0.003	0.996		
	Satisfied with financial situation	-0.074	0.011	0.929	***	-0.005	0.012	0.992		0.010	0.014	1.010		
	Difficulty making payments	0.496	0.042	1.643	***	0.252	0.047	1.291	***	0.402	0.053	1.494	***	
	Spend more than income	0.059	0.056	1.061		0.005	0.066	0.999		-0.111	0.074	0.895		
	Sudden drop in income	0.058	0.050	1.060		0.230	0.055	1.257	***	0.368	0.064	1.445	***	
	Risk tolerance	0.013	0.009	1.012		0.011	0.016	1.011		0.048	0.051	1.049		
	Credit Score (More than 720)													
	<620	1.117	0.055	3.056	***	0.595	0.068	1.821	***	0.533	0.073	1.705	***	
	620 to <720	0.075	0.074	1.078		0.268	0.075	1.291	***	0.042	0.093	1.043		
	Intercept	-5.891	0.297		***	-3.816	0.240		***	-6.525	0.355		***	
	N	26416				26223								
	R-squared	0.176				0.155								

* $p < .10$; ** $p < .05$; *** $p < .01$