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The Increase in Payday Loans and Damaged Credit after the Great Recession

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Abstract   The proportion of US households that used a high-cost credit product, payday loans, almost doubled between 2007 and 2013. In this study, we estimated the effect of credit constraints on the likelihood of using payday loans. Based on a logistic regression of data from the 2007–2013 Survey of Consumer Finances (SCF), we found that households with credit constraints were more likely to use payday loans than were those that did not experience such constraints, and that the effect was greater after the Great Recession. Over the survey years, having an emergency expense was the most important reason given for using a payday loan, but the rate at which other reasons were given varied over time. Paying bills/loans and having no other credit options were both reasons given more frequently following the Great Recession than in 2007.

Keywords   Payday loans · Credit constraints · Great recession · Survey of consumer finances

JEL Classification   D12 · D14

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Introduction

Households often try to avert hardship when they experience financial stress. For example, they might cut living expenses or withdraw available liquid assets. Depending on their credit history, they may be able to obtain financial products through mainstream providers (e.g., banks). Alternatively, they may seek financial support from families, friends, or means-tested public assistance. Those unable to take advantage of such sources of financial support might consider high-cost, non-bank sources of credit (Mills and Monson 2013). Many low-income earners have no formal relationship with a banking institution, and thus are more likely than their higher income counterparts to seek alternative rather than mainstream financial service providers (Belsky and Calder 2004). Typically, payday lenders charge interest rates that far exceed those for conventional forms of credit, often 400% per year or more (Caskey 2001), so the use of payday loans is one signal that households cannot obtain credit by other means (Bricker et al. 2014). Morduch and Schneider (2017) described the way in which income volatility leads some families to use payday lenders to cover expenses.

The amount of consumer credit balances increased from $1.62 trillion to $2.42 trillion between 2000 and 2006 (Board of Governors of the Federal Reserve System 2014), which implies an increasing trend in the US credit market. This increase in consumer credit use, however, has faltered since the recent Great Recession of 2007–2009, when the supply of the credit market was limited (De Nardi et al. 2012; Mian et al. 2013). Given this contraction in the market, total consumer credit declined during and after the Great Recession, decreasing from $2.66 trillion in 2008 to $2.54 trillion in 2010 (Board of Governors of the Federal Reserve System 2014). During this period, an increasing

number of households used high-cost, non-bank credit products. According to Mills and Monson (2013), the percentage of total households that had ever used one or more non-bank credit products, such as payday loans, pawn shop loans, rent-to-own (RTO) agreements, or refund anticipation loans, increased from 11.8% in January 2009 to 14.2% in June 2011. Among possible sources of alternative financial services, this study focuses on payday loans, which have emerged as one of the alternative sources used most often (Lawrence and Elliehausen 2008). In particular, drawing on data from the 2007–2013 Survey of Consumer Finances (SCF), we estimated that the number of payday loan borrowers increased from 2.76 million in 2007 to 4.53 million in 2010, and 5.09 million in 2013.

The main purpose of this study was to estimate the effects of credit constraints on the likelihood of using payday loans in the US. In particular, the study was designed to investigate its role on payday loan use before and after the Great Recession by analyzing households interviewed in the 2007, 2010, and 2013 SCF. Moreover, this study identified the main reasons for payday loan use by survey year. To our knowledge, this study is the first attempt to identify the relation between credit constraints and payday loan use with a nationally representative sample of US households. The results obtained using the 2007–2013 SCF provide important insights into the contributing factors associated with payday loan use before and after the Great Recession.

Literature Review

Background of Credit Constraints and Financial Exclusion

Mainstream financial services provide a variety of products to increase consumers' liquidity (e.g., cashing a check), payment (e.g., bill payments, money wires), savings (e.g., interest-bearing accounts, income tax deductible retirement accounts), and credit (e.g., small loans, credit cards, lines of credit, mortgages (Buckland and Simpson 2008)). Consumers who have limited access to these services may face multiple constraints that prevent them from achieving financial stability. In particular, consumers without bank accounts may have limited access to any of the types of services offered by a mainstream bank (e.g., bank, credit union). Instead, they rely on alternative financial services or "fringe banks"—check-cashing outlets, payday lenders, or pawnshops—and informal financial service providers, such as family members or friends. Such consumers generally pay higher interest rates for virtually all such services. Further, building a credit relationship with alternative financial services does not facilitate access to credit available from mainstream financial institutions.

Previous Studies of Payday Loan Use

The payday loan industry has grown substantially, and reflects both extensive economic vulnerability and traditional financial services' neglect of fringe markets (Gallmeyer and Roberts 2009). As of 2013, there were approximately 18,000 payday lending stores in the US, and the total volume associated with this industry was approximately $45.9 billion (Hecht 2014). Previous studies that examined the profiles of borrowers in this growing market obtained mixed findings. Logan and Weller (2009) used the 2007 SCF to analyze the demographic and financial characteristics of payday loan users. Those who took out a payday loan within the last year were found to have lower incomes, net worth, and assets than those who had not taken out a payday loan. Further, payday loan borrowers were less likely to be homeowners or savers, while they were more likely to have been delinquent previously and to have been rejected by a lender. Those who took out payday loans were more likely to be younger, single women, and minorities than were their counterparts who did not borrow payday loans. The authors suggested that policymakers should scrutinize payday lending practices and regulations closely, given the considerable increase in the volume of such transactions. Caskey (2001) presented the key features of payday loan contracts and a profile of payday loan customers, and analyzed why people use these high-cost loans. The author found that most payday loan customers had moderate incomes, but poor credit histories that excluded them from mainstream lines of credit. Payday loan customers believed that these lenders were their best short-term option, and they valued the speed and ease of the loan transaction in particular. Lee (2013) analyzed the profiles of payday loan borrowers and their demand for such loans, and found that payday loan borrowers were likely to belong to financially at-risk populations (e.g., Black households and non-homeowners). In addition, payday loan borrowers tended not to shop at all or engage in even a moderate amount of shopping for credit, which was not the case for those who did not take out payday loans.

Several previous studies have examined the payday lending industry. To obtain a better understanding of the areas in which they operate, Gallmeyer and Roberts (2009) examined payday lending in the Front Range communities of Colorado using statistical analyses associated with a Geographic Information System (GIS). They found that payday lenders were more likely to be located in areas that had neighborhoods with lower income levels, moderate poverty levels, higher percentages of foreign-born individuals, the elderly, active-duty members of the military, and those employed in non-professional occupations. Barth et al. (2015) examined the extent to which the concentration of payday lenders in counties was related to various financial and demographic factors, as well as the regulatory environment, and found

that payday lenders tended to be located in states with more lenient regulatory regimes. Using data from the 2005 Home Mortgage Disclosure Act, Collins (2011) examined problematic mortgage application behaviors, including taking loans with high interest rates, defined as those with percentage points of annual interest rates at least 3 times greater than a 10-year Treasury note. The authors also found that college completion rates, the respondent's age, race/ethnicity, and income were related to taking out a high interest rate loan.

Previous Studies of Credit Constraints

Financial innovation has relaxed US households' credit constraints by providing many of them with affordable and easy access to the credit market (Greenspan 1997). Consequently, it has become much easier, even for households constrained by the traditional credit market, to accumulate debt (Lyons 2003). Various sociodemographic and economic factors were found to influence access to, and use of, credit (Vandone 2009). For example, households had better access to credit if they were older, had a higher level of education, were married, and included more family members (Crook 2006; Cox and Jappelli 1993), even after controlling for various factors related to the households' creditworthiness. Those with higher incomes and net worth were less likely to have credit constraints, while the self-employed were more likely to experience constraints (Fabbri and Padula 2004; Ferri and Simon 2002).

Several previous studies have examined household credit constraints using the SCF dataset. Jappelli (1990) found that approximately one-fifth of households had constrained credit. Cox and Jappelli (1993) estimated that debt holdings increased by 9% when credit constraints were removed from the model, and that borrowing on the part of households with credit constraints would increase by 75% if those constraints were removed. Lyons (2003) estimated that the proportion of households that experienced credit constraints was 17% in 1983 and 19% in 1998. She estimated that actual debt levels increased faster than desired levels, so that households overall experienced lower borrowing gaps over time. Kim et al. (2016) identified the relation between US households' credit constraints and credit use following the Great Recession, and found that approximately 23% of households had credit constraints in 2010 and 2013.

When we conceptualize credit constraints, it is salient to consider that obtaining credit or being constrained by credit is the joint outcome of supply and demand for household debt. Lenders use financial factors, such as credit history or debt-to-income ratio, in making their decision to extend credit. On the other hand, credit constraints may be a product of a consumer's past use of credit and the type and the amount of debt that s/he carries currently. Zhao et al. (2006) concluded that households had constrained credit because of their past borrowing behaviors. Results from the 1998 SCF showed that such households were more likely to have a high debt burden than were those that were unconstrained. Similarly, Smith et al. (2012) found that constrained households were more likely to carry high housing leverage, which implies that households with liquidity constraints were less inclined to pay down mortgage debt, and thus had fewer borrowing options.

With respect to other issues related to credit constraints, Sorokina (2013) used the National Longitudinal Survey of Youth 1979 to analyze the proportion of college-age adults in families with constrained credit, and identified a relation between parental credit constraints and children's educational decisions. College-age adults from families constrained by credit were less likely to attend college. Using data from the Panel Study of Income Dynamics, Chang et al. (2014) investigated whether a households' ability to borrow and save provided a buffer against food insecurity. They analyzed whether liquidity constraints, asset inadequacy, and insolvency risk could predict household food insecurity. The authors found that a household's liquidity constraints and asset inadequacy were correlated with an increased risk of food insecurity across various income levels and this correlation was strongest among low-income households.

Summary of Literature Review

In summary, mainstream financial services provide consumers with a variety of financial products for multiple purposes. However, some consumers are constrained in their ability to access these financial products/services, and rely instead on alternative products/services with higher direct fees or interest rates. As a result, the payday lending industry has grown dramatically in recent years.

Several empirical studies also have confirmed the link between the likelihood of using alternative financial products/services and consumer's socioeconomic characteristics, such as racial/ethnic and job status, educational and income level, age, and credit history. Nonetheless, the role of credit constraints in the use of alternative financial products/services has received limited attention in the literature. Further, few studies have examined the way in which the experience of the Great Recession has affected consumers' likelihood to use alternative financial products/services. This study was motivated by previous research, e.g., Kim et al. (2016), and analyzed the relation between constraints and credit use on the part of US households after the Great Recession. This study contributes to the literature by shedding light on the relation between consumers' credit constraints and borrowing behavior with respect to payday loans during the Great Recession and the subsequent recovery.

Conceptual Framework

Perraudin and Sorensen (1992) discussed supply and demand in loan markets. They contended that consumers consider two factors before they decide whether or not to apply for a loan. One consideration involves anticipation of being rejected by lenders, and the probability of being turned down for a loan is a function of the applicant's demographics, financial characteristics (including income and net worth), and past credit record. The other is the direct disutility from the process of making the credit decision. Such loss of utility can be inferred from observing households that wanted credit, but did not apply for credit. As Chang and Hanna (1992) observed, shopping for credit is costly, both in time and cognitive burden, and they found that the likelihood of searching for credit was strongly related to respondents' education when income and other characteristics were controlled.

In the literature on consumers' borrowing decisions, Juster and Shay (1964) discussed why they may be willing to take unsecured loans at relatively high interest rates, and found that rationed borrowers were more likely to use credit products with high interest rates. Informed consumers, however, chose loans with the lowest effective interest rates, so presumably, they will assume a payday loan only if no other loans or other resources are available to meet pressing needs, such as having a car repaired or paying a utility bill. Therefore, consumers with constrained credit should be more likely to use payday loans, their use should be related to the level of assets, and controlling for credit constraint, consumers' financial sophistication as well. The supply of credit generally is influenced by government regulations and overall economic factors, and during the period of 2008–2009, there was a substantial decrease in lenders' supply of credit (Brown et al. 2013).

The credit market that households face is difficult to model because of their heterogeneity with respect to credit needs, but taking into account the ideas discussed, the model we tested was:

credit overall, which was sharply restricted after 2008 (Brown et al. 2013).

Methods

Dataset and Sample Selection

We used a pooled dataset drawn from the 2007, 2010, and 2013 SCF, which has been released every 3 years since 1983. The SCF provides a detailed view of household financial information, including assets and liabilities. The SCF also collects various measures of respondents' experiences with credit markets, such as information on whether they had taken out a payday loan in the past year, and whether they had credit constraints (Bricker et al. 2014). Notably, with respect to the main interest of this study, a question on payday loan use has been a part of the SCF since 2007. This study included all households from the 2007–2013 SCF, with a total sample size of 16,915[1].

Measurement of Variables

Dependent Variable

The SCF defines payday loans as those that are meant to be repaid in full from the respondent's next paycheck; they are also generally small, short-term, and charge above-average interest rates (Bricker et al. 2014). To measure whether a respondent used a payday loan, this study used a question from the SCF that asks, "During the past year, have you (or anyone in your family living here) taken out a payday loan, that is, borrowed money that was supposed to be repaid in full out of your next paycheck?" The dichotomous dependent variable was coded as 1 if the respondent used a payday loan during one year prior to the survey and as 0 otherwise.


Likelihood of using a payday loans $=$ f (credit constraint, need for credit, other financial resources, financial sophistication, survey year)

Credit constraints were based on variables used by previous researchers (e.g., Lyons 2003), and indicated whether a household was turned down for credit, obtained less than desired, or was discouraged from applying. The need for credit was proxied by household characteristics, such as age, household composition, and whether the household's expenses exceeded their incomes. Other financial resources included income, net worth, homeownership, and employment status. Financial sophistication was proxied by the level of education and the intensity of shopping for credit. The year of the survey also was related to the supply of

Independent Variables

The focal independent variable, having constrained credit, was measured using a method similar to that of Lyons (2003). The variable was constructed by incorporating the results of three questions: (1) whether or not the household had been turned down for credit in the last 5 years; (2) whether the household had not received as much credit as

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[1] Sample sizes by survey year were as follows: 2007 (N=4,418), 2010 (N=6,482), and 2013 (N=6,015).

Fig. 1 Time trend in pay-
day loan usage, 2007–2013
SCF Weighted proportions.
N = 16,915. Three pair-wise
comparisons (2007 vs. 2010,
2007 vs. 2013, & 2010 vs.
2013) are statistically significant
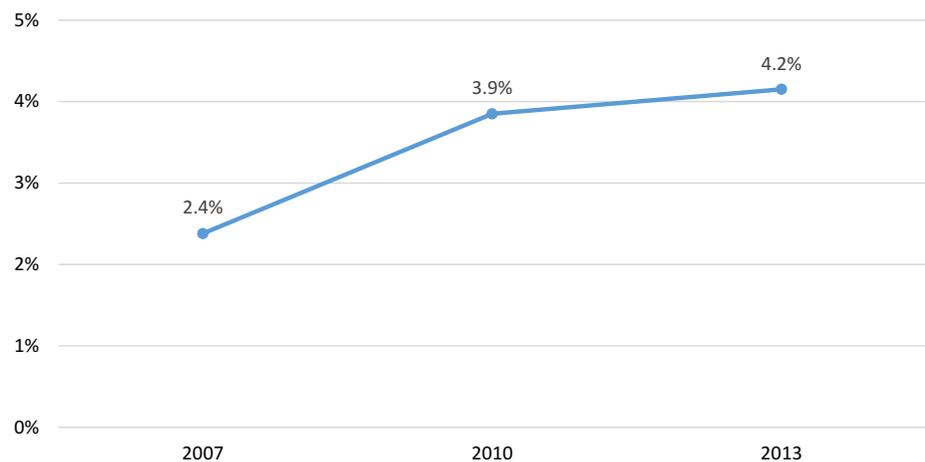
requested, and (3) whether the household had not applied
for credit because they thought they would be turned down.
If an individual responded "yes" to at least one of the three
questions above, s/he was considered to have experienced
credit constraint, and was coded as 1 and as 0 otherwise.

In addition, our research model included the independent
variables of respondents' age, age squared, the highest level of
education attained (less than high school, high school, some
college, bachelor's degree, or post-bachelor degree), mari-
tal status (married, single male, single female, or partnered),
employment status (salaried workers, self-employed, retired,
or not working), race/ethnicity (White, Black, Hispanic, or
Asian/other), presence of one or more children under 18 (yes/
no), log of household income, log of net worth, overspending
(yes/no), homeownership (yes/no), shopping for credit (inten-
sive shopping, moderate shopping, or no shopping), and a
dummy variable for survey year (2007, 2010, or 2013).

Analysis

This study used a logistic regression model to analyze empir-
ically the various factors, including credit constraint, on the
likelihood of using a payday loan; to compare the coefficient
having credit constraints across survey years, we tested the
equality of regression coefficients as suggested by Clogg
et al. (1995). Following Lindamood et al.'s (2007) methodo-
logical consideration, the Repeated Imputation Inference
(RII) technique was applied in our multivariate analyses.

Results

Descriptive Results

Figure 1 presents the recent trend in payday loan use found
in the 2007–2013 SCF. The proportion of payday loan bor-
rowers increased from 2.4% of the total sample (N = 4,418)

in 2007 to 4.2% of the total sample (N = 6,015) in 2013,
implying that increasing numbers of individuals used pay-
day loans during and after the Great Recession[2]. Results
estimated from the SCF population weight indicated that the
number of payday loan borrowers increased from 13.8 mil-
lion in 2007 to 22.7 million in 2010, and 25.4 million in
2013.

As Table 1 shows, approximately 22% of all households
reported that they had been turned down for credit in the
past five years, had not received as much credit as requested,
or had been discouraged from applying for credit. Specifi-
cally, Fig. 2 provides the recent trend in credit constraints
by survey year, and indicates that the proportion increased
from 18.1% in 2007 to 23.5% in 2010, and then decreased
slightly to 22.4% in 2013[3]. Table 1 shows other descriptive
statistics for the sample.

Multivariate Results

Logistic Regression on Payday Loan Use

Results from the logistic regression on the likelihood of pay-
day loan use are shown in Table 2. The size of the effect of
each variable is discussed using odds ratios. The effects of
having constrained credit were significant, even after other
factors were controlled. The odds of using a payday loan
on the part of those who had credit constraints were almost
2.8 times higher than for those who were not. This find-
ing reflects that having other credit alternatives can have an
effect on borrowing payday loans.

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[2] The authors conducted a Chi-squared test for three pair-wise
comparisons across the survey years, and all three were significant
($p < .0001$).

[3] The authors conducted a chi-squared test for three pair-wise com-
parisons across the survey years, two of which (2007 vs. 2010, 2007
vs. 2013) were significant ($p < .0001$).

Table 1 Characteristics of sample households, 2007–2013 SCF

Variables	Percentage
Credit constraint (%)	21.7
Mean age of a respondent (Median)	50.6 (50.0)
Education of household respondent (%)	
Less than high school	12.0
High school	32.0
Some college	25.0
Bachelor degree	19.2
Post-bachelor degree	11.8
Marital status (%)	
Married	49.2
Single male	15.3
Single female	27.5
Partnered	8.0
Employment status (%)	
Salary worker	57.8
Self-employed	10.5
Retired	25.6
Not working	6.1
Racial/ethnic status (%)	
White	71.3
Black	13.8
Hispanic	10.4
Asian/others	4.5
Presence of a child under age 18 (%)	43.3
Mean income (median) ($)	87,639 (49,022)
Mean net worth (median) ($)	554,052 (94,000)
Spending habit (%)	
Overspending	15.9
Same/less spending	84.1
Homeowner (%)	66.9
Shop for credit (%)	
No shopping	26.9
Moderate shopping	32.4
Intensive shopping	40.7

Weighted proportion

Age and age squared of respondents were significant, and their combined effect indicated that the likelihood of payday loan use increased with age up to age 41, then decreased above 41. Respondents' educational level was associated with the likelihood of having a payday loan, in that having a bachelor's degree or post-bachelor degree was related negatively with the probability of using a payday loan. Households with post-bachelor degrees had 72.2% lower odds of using a payday loan compared to those with less than a high school degree. Single male, partnered households, households with a Black respondent, and households with a dependent child under age 18 had a higher likelihood of using payday loans than did their reference groups, while self-employed households were less likely to use payday loans than were salaried workers. Overspending increased the odds of payday loan use by 88%, while homeownership decreased the odds by 48.8%. Analysis of the dummy variables for survey year showed that, compared to 2007, 2010 and 2013 were associated with 79.7 and 91.1% increased odds of using a payday loan, respectively.

The Effect of Credit Constraints by Survey Year

To isolate the effect of credit constraints on payday loan use by survey year, we conducted separate logistic regression models by survey year (2007, 2010, and 2013), as shown in Table 3. The results showed that, across all survey years, households that experienced credit constraints had a higher likelihood of using payday loans than did those that were not constrained. In addition, the results of tests for the equality of regression coefficients (i.e., three pair-wise comparisons) indicated that the effect of credit constraints was greater in 2010 and 2013 compared to the effect in 2007.

Reasons for Using a Payday Loan

Table 4 shows the results of the analysis of the main reasons for using a payday loan by survey year. The SCF asked respondents who used a payday loan: "Why did you choose this type of loan?" Respondents could provide various reasons that the SCF categorized as 12 different types. Based on their characteristics, we categorized them as five primary reasons: (1) basic expenses; (2) other bills/loans; (3) temporary emergency; (4) convenience, and (5) no other option. Payday loans have been marketed as a convenient and lower-cost alternative to cover individuals' emergency expenses (Logan and Weller 2009). As expected, the Chi-squared test results indicated that having an emergency expense was the most important reason to use a payday loan over the survey years, and the rates changed only slightly, ranging from 33.9% in 2007 to 28.9% in 2013. Before the recession (in 2007), reasons for using a payday loan for basic expenses ranked second highest (26.6%), but that rate decreased significantly after the Great Recession (13.1% in 2010 and 16.4% in 2013). In contrast, the rate of using a payday loan for other bills/loans increased steadily in 2010 and 2013 compared to that in 2007. Lastly, the proportion of borrowers who used a payday loan because they assumed that it was the only available option was significantly higher in 2010 (11.6%) and 2013 (11.8%) than in 2007 (7.6%).

Fig. 2 Time trend in rate of being credit constrained, 2007–2013 SCF. Weighted proportions. N = 16,915. Two pair-wise comparisons (2007 vs. 2010, & 2007 vs. 2013) are statistically significant
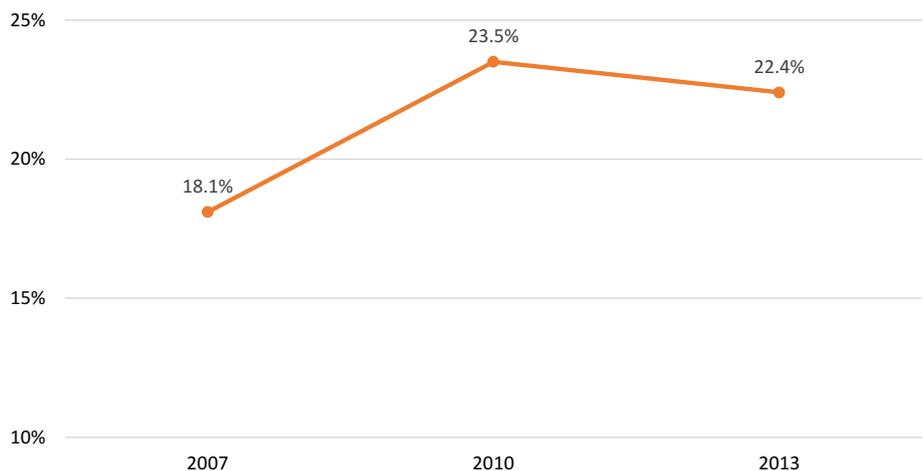
Table 2 Logistic regression on payday loan use, 2007–2013 SCF

	Coefficient	Chi square	p value	Odds ratio
Credit constraint	1.0394	110.6327	<.0001	2.8274
Age of respondent	0.0602	9.4516	0.0021	1.0621
Age squared/10,000	−7.3433	11.9385	0.0005	0.0006
Education of respondent (reference: Less than high school)				
High school	0.2056	1.7604	0.1846	1.2282
Some college	0.4293	7.3289	0.0068	1.5361
Bachelor degree	−0.5284	6.3095	0.0120	0.5895
Post-bachelor degree	−1.2813	15.8660	0.0001	0.2777
Marital status (reference: married)				
Single male	0.2735	4.7675	0.0290	1.3145
Single female	0.2390	2.3583	0.1246	1.2699
Partnered	0.4935	10.6610	0.0011	1.6380
Employment status of respondent (reference: Salary worker)				
Self-employed	−0.7705	18.1956	<.0001	0.4628
Retired	−0.0389	0.0599	0.8066	0.9618
Not working	−0.5668	8.2230	0.0041	0.5673
Racial-ethnicity (reference: White)				
Black	0.3853	11.8470	0.0006	1.4700
Hispanic	−0.1374	0.8349	0.3609	0.8716
Asian/others	−0.0620	0.0616	0.8041	0.9399
Presence of a child under age 18 (reference: No)	0.2980	7.7455	0.0054	1.3471
Log of income	0.0295	0.5577	0.4552	1.0299
Log of net worth	−0.0223	7.9667	0.0048	0.9779
Overspending (reference: No)	0.6306	37.6016	<.0001	1.8787
Homeowner (reference: No)	−0.6696	31.1434	<.0001	0.5119
Shop for credit (reference: No Shopping)				
Moderate shopping	0.1345	1.4007	0.2366	1.1439
Intensive shopping	−0.1616	1.8482	0.1740	0.8508
Survey year (reference: 2007)				
Year of 2010	0.5861	17.8352	<.0001	1.7969
Year of 2013	0.6476	21.3666	<.0001	1.9109
Intercept	−5.5338	82.4730		
Concordance rate	84.2%			

Unweighted RII analysis. Total sample size is 16,915

Table 3 Logistic regression on payday loan use by survey year, 2007–2013 SCF

Variable	2007 SCF		2010 SCF		2013 SCF	
	Coefficient	Odds ratio	Coefficient	Odds ratio	Coefficient	Odds ratio
Credit constraint	0.6260*	1.8702	1.2018***	3.3260	1.0036***	2.7281
Control variables[a]	Yes	–	Yes	–	Yes	–
Concordance rate	87.1%		83.8%		84.4%	
Comparing the coefficient of credit constraint across survey years						

Variable	2007 vs. 2010		2007 vs. 2013		2010 vs. 2013	
	Chi square	p value	Chi square	p value	Chi square	p value
Credit constraint	14.99	< .001	6.50	.0108	3.70	.0543
Control variables[a]	Yes	–	Yes	–	Yes	–

Unweighted RII analysis

[a]Control variables are the same as Table 2

Significance level: *$p < .05$, **$p < .01$, ***$p < .001$

Table 4 Reasons for payday loan usage, 2007–2013 SCF

Reasons for payday loan usage	Overall sample	2007 SCF	2010 SCF	2013 SCF
Basic expense	16.8	26.6	13.1***	16.4***
Other bills/loans	16.4	10.9	17.4**	17.8**
Emergency expense	31.8	33.9	33.7	28.9
Convenience	24.0	21.1	24.2	25.1
No other option	11.0	7.6	11.6*	11.8*

Two pairwise comparisons (2007 vs. 2010, & 2007 vs. 2013) were conducted

Weighted proportion. Reference category is 2007. Significance level: *$p < .05$, **$p < .01$, ***$p < .001$

Discussion and Implications

This study investigated the effects of credit constraints and household characteristics on the likelihood of using payday loans. Drawing on the 2007–2013 SCF datasets, our results indicated that the rate of payday loan borrowing increased steadily and was significantly higher in 2010 and 2013 than in 2007. Households with constrained credit were more likely to use payday loans than were those that were not. Further, the logistic results from the separate analyses by survey years showed that the relation between having credit constraints and using payday loans was significant both before the Great Recession, but the effect was greater in the aftermath of the recession.

We also identified the reasons to use a payday loan and categorized them into five major groups, as shown in Table 4. Although the primary reason over the survey years was the need to cover emergency expenses, we found somewhat different patterns of payday loan use by year. After the recession (2010 and 2013), more households used payday loans to pay other bills/loans. Further, more households reported that a payday loan was the only option available to them, which implies that, when credit from mainstream financial institutions is not readily available, consumers might resort to this alternative financial service. An understanding of the motivations that induce consumers to use payday loans can inform individual and community-level social work interventions that reduce borrowers' financial vulnerability and help them make beneficial educated and appropriate decisions.

The findings of this study also suggested the need to make institutional efforts to help rationed consumers who are more likely to use payday loans. When individuals make decisions to borrow from payday lenders, they may not be rational because they have imperfect information. Bertrand and Morse (2011) described the effect of payday lending information disclosures, and found that increased payday lending information disclosures influenced borrowers' payment rates and indebtedness. Specifically, increased disclosure statements allowed borrowers to reduce the indebtedness levels of payday loans and understand the possible consequences if they failed to repay the loans. We cannot test this effect in this research, but it might be a policy alternative in states unwilling to prohibit the loans.

Although the study has some limitations, it opens important avenues for future research. First, the SCF does not provide any information on the dollar amount of payday loans, or other information that indicates whether the respondent

was a regular patron of payday loan establishments, or if s/he used payday loans only occasionally. Further, more detailed information on payday loan use is needed to provide more insights into why some borrowers might be trapped in a vicious cycle of high cost debt that forces them to assume such debt repeatedly. Second, there is no geographic information in the public version of the SCF dataset. The supply of, and demand for payday loans may be quite sensitive to their legal status. For example, a number of states has regulated the payday lending industry in various ways; 13 states have made payday lending illegal, and an additional 5 states have imposed severe restrictions on high-cost payday lending (Agarwal et al. 2016). On the other hand, 32 states authorize high-cost payday lending with limited regulations. With datasets that include the state of residence, consideration of payday loan authorization laws could allow more sophisticated analyses of payday loan use.

The main contribution of this study is that it fills a gap in the existing literature on consumer credit because relatively little research has been conducted on the relation between credit constraints and payday loan use. Further, the relation has never been conducted using data from the period of the Great Recession and in its aftermath with a nationally representative sample of US households. This study will help researchers identify and understand contributing factors related to alternative financial services of US households, especially for payday loan. As the economic model for credit decisions and our conceptual framework suggested, we found evidence that rationed consumers may obtain some benefits from the relaxation of credit constraints. Our results imply that credit constraints affected the likelihood of using a payday loan, especially the magnitude of the effect increased strongly with the recent Great Recession. Despite the stock market and housing markets' recovery, many US households remained in financially difficult circumstances because of damaged credit, as indicated by their credit constraints. Having constrained credit may reduce consumers' ability to borrow from mainstream financial institutions, including banks, and can lead households to seek non-bank loans. It is because payday loans are less restrictive than traditional loans, so payday loan lenders may be willing to extend credit to households with a poor credit history.

This study includes some meaningful implications for future researchers. First, we found that those unable to obtain financial products through a mainstream provider might consider high-cost, non-bank credit, such as payday, pawnshop, refund anticipation loans, or rent-to-own agreements. This study used the SCF dataset, which does not identify alternative financing/fringe banking options other than payday loans because of data limitations. Therefore, considering all other alternative financing, rather than just payday loans, will help us achieve a better understanding of households' access to credit. Second, we analyzed the effect of credit

constraints on payday loan use based on a cross-sectional dataset. At present, no other national survey dataset is available that contains the full range of information needed for ideal analyses of the research questions addressed in this article. The use of a longitudinal dataset in future research would allow examination of the time at which people enter the payday loan cycle by following the same respondents across survey years.

Compliance with Ethical Standards

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