Effects of Payday Loan Regulation on Mainstream Credit Use

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Abstract: The payday loan industry is a highly debated provider of alternative financial services (AFS). The varied regulations implemented across states which include finance charge regulation, loan term regulation, loan amount regulation, and bans attempt to shift consumers away from this industry to mainstream credit options that increase consumer welfare in the long-run. Using the Current Population Survey Unbanked/Underbanked Supplement from 2009 and 2011, I analyze the effectiveness of each type of legislation that exists across states in these years. Looking at payday loan use, alternative financial service use to cash checks, and alternative financial service use to take out a money order within the year preceding the survey, I find that finance charge regulations are most effective in shifting consumers away from payday loans and maximum loan term and fee regulations are most effective in shifting consumers away from AFS for money orders. Looking at demand side effects, I find that finance charge regulations are effective because they reduce the probability that a consumer finds payday loans more comfortable, more convenient, or easier to get than bank loans.
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1 Introduction & Industry Background

The payday loan industry has been rapidly growing since its beginnings in the United States in the 1990’s. What started as just a fringe market has become a $40 billion dollar a year industry, with more storefronts in the US than all McDonalds and Starbucks combined (Skiba, 2011). This rapid proliferation of payday lenders has sparked a response from legislators unsure of what the lasting impact of these loans will be.

Often seen as predatory, payday loans provide a high-cost, short-term access to liquidity. Average loan are $300 and have a maturity of 2 weeks. The costs of these loans are between $10 and $20 in fees for every $100 borrowed. This results in an average annual percentage rate (APR) of 260 to 520% (Pew Charitable Trusts, 2012).

Payday loans have been shown by some researchers to be a potentially viable consumption smoothing mechanism. When no close substitutes are available, payday loans have the potential to provide consumers with a way to cope with negative shocks in a short time frame (Caskey, 1994). If this is true, we should expect consumers to increase their use of payday loans as regulation increases, as these regulations would make payday loans even more attractive to the consumer because of increased safety and decreased costs.

However, other researchers have shown that while consumption-smoothing methods seem to be a good use of these products, in practice it is
not always successful. The average client who borrows a payday loan will borrow 5.1 more loans in that same year (Skiba, 2011). Clients are often pulled into a cycle of rolling over their loans as most consumers have a present bias, with which they gain more utility from their money now than their expected utility from this money in the future, preventing them from paying off the full cost of their loan in the present time period. In a recent survey by the Pew Center, 81% of payday loan borrowers said that if these loans were not available they would cut back on total expenses. In addition, they found that 69% report taking out their first loan for recurring expenses rather than an unexpected or emergency expense (Pew Charitable Trusts, 2012).

Therefore, many legislators view payday loans as a guaranteed way to enter into a “debt-spiral” of worsening finances that is nearly impossible to get out of. This has caused a quick response from many regulators determined to combat these lenders. Common reactions from regulators, such as Steven Schlien, a spokesman for the Community Financial Services Association, have been the creation of bills "not designed to help the industry, [but] designed to kill the industry" (Thompson, 2004). Legislators attempt to shift current payday borrowers away from the alternative financial sector to the mainstream financial sector through restrictive legislation designed to decrease profits of payday lenders to an unsustainable level.
Across the US, different regulations have been put into place in an attempt to protect consumers from the potential negative effects of payday loans. These regulations are generally split into the categories of loan amount regulations, loan length regulations, interest rate caps, rollover restrictions, or bans, but there is a great deal of variation across states of how these different restrictions are implemented (NCSL, 2012). While some previous literature has looked at what should be expected to work as the most effective regulation of these loans through theoretical analysis, little research has been conducted to determine the actual effectiveness of these different regulatory practices on consumer behavior.

Using a probit model, I analyze the impact of varying regulations in different states on the probability that a borrower continues his use of payday loans or other forms of alternative financial services, rather than switching to mainstream forms of credit. Using data from the Current Population Survey, I find the impact of regulations across states over two different time periods to see how changing regulations impact a borrower’s decision to use alternative financial services over a traditional source of credit. I measure this with respect to the four categories of legislation that exist across different states: loan amount regulation; loan term regulation; finance charge regulation; and bans. The natural experiment that exists from the variation across states and time allows me to compare how the different regulations impact the decision making of a consumer. I determine if
increased regulation of the payday loan industry shifts people to increase their use of mainstream credit or if payday loans become more attractive to the borrower.

Section 2 follows with a discussion of previous research important to understanding the background of the payday lending market and previous relevant research in this area. Section 3 describes the theoretical predictions for my results. Section 4 provides descriptions of the data and methods I will use in my analysis. Section 5 describes the results of my analysis, and Section 6 provides concluding remarks.

2 LITERATURE REVIEW

When analyzing the impact of the regulations of payday lenders, it is important to first understand the reasons they exist in a given market and the way they are then perceived. Damar (2009) uses a logit regression to determine what factors affect the entry of payday lenders into new markets in Oregon. Entry into new markets demonstrates a change in the structure of the financial industry in a given area. Oregon provides him with a good measure of how payday lenders decide to enter markets because, at the time of the study, it was a state with little regulation of payday lenders, with no maximum rates or loan size, only rollover regulations. Damar finds that payday lenders do not enter low-income areas with no access to traditional sources of credit, but rather they enter markets that are already serviced by banks. This is consistent with the requirement that payday loan borrowers
have checking accounts with which they can repay the lender. Because we see that mainstream credit options exist in the payday lending markets, we should expect to find that payday borrowers could switch to using banks rather than expensive payday loans as a source of credit.

A major critique of the payday loan industry is that they are predatory lenders who deliberately mislead their clients in order to sell them high cost loans. If this were the case, increased regulation to move consumers to the mainstream financial sector would be necessary. Elliehausen (2007) studies different forms of high-cost, short-term credit options and consumers’ use of these products within the context of their credit situation and decision-making process. He finds that payday loan clients are generally aware of the finance charges they pay: 96.1% could accurately report this cost. He also found that consumers used payday loans because of an urgent need for credit and lack of a close substitute. The author determines that the “Decision processes for high-price credit products do not appear to be much different from decision processes for mainstream credit products” (35), and that this decision seems to be based on a consumer’s situation, rather than a lack of knowledge or information. As this research was conducted in 2007, it necessitates a further study of how regulations will move clients toward the mainstream financial sector in order to see how regulation changes the decision making process of the consumer.
While some argue that payday loans are a useful consumption smoothing mechanism, others show that it will lead to debt-spirals. Stegman (2003) finds that increased payday lending does lead to increased chronic borrowing. Through a study conducted in North Carolina, Stegman looks at borrower behavior when taking out payday loans, focusing specifically on rollover behavior. Rollover payments are an important aspect of the payday loan industry because many consumers will simply pay off the fee on their loan rather than the entire principle amount at the end of the loan period, and after a few of these payments will end up paying more than they originally borrowed just in fees, vastly increasing profits for the payday lender. A loan intended to be a short-term consumption smoothing mechanism quickly turns into a long-term loan with a median APR of 419%. Stegman concludes that taking out a payday loan increases the chance of taking out more payday loans, and that these rollover payments will significantly increase the revenue for the payday lender.

Skiba and Tobacman (2011) also find in their research evidence of the potential negative effects of payday loans. They find that borrowers who take out a payday loan are twice as likely to file for Chapter 13 bankruptcy within two years of a successful first-time payday loan application, with stronger effects on minorities, women, and home-owners. However, there is a theory that borrowers will strategically accumulate debt in anticipation of bankruptcy because they will not have to repay the full costs of their debt.
Skiba and Tobacman find no effect in the short-run, therefore disproving this theory. They do, however, find significant effects in the medium-run, showing that the high costs of payday loans have a negative effect on the already fragile financial state of the borrower.

Zinman (2010) finds a different impact of payday loans in his analysis of the product. Zinman looks at the impact of an interest rate cap on payday loans in Oregon on consumer behavior and welfare as measured by employment status and subjective assessments of their wellbeing. Zinman compares the impact before and after the placement of this regulation to the changes in this time period for consumers in Washington, where no regulations exist. Through this difference-in-differences analysis, Zinman finds that this regulation hurts the consumer. Due to a lack of close substitutes for credit for the consumers who take out payday loans, Zinman determines that the interest rate cap decreases consumer welfare. Furthering this study by looking at the change in consumer behavior with regards to mainstream financial sector use after increased regulation will show if mainstream credit can act as a substitute for payday loans.

Hogarth and O'Donnell (2000) determine the factors that predict whether low- to moderate-level income families have a bank account, savings account, or other forms of mainstream credit. They show that many of these low- to moderate-income families rely on the alternative financial sector (AFS) to finance their credit needs, but that moving to the mainstream
financial sector is beneficial and more cost effective for them, especially in the long run if they are able to build up a reputable credit history. In this study, the authors use a probit model of the probability of “account ownership,” defined as a checking account, savings account, money market deposit account, or a cash/call account at a brokerage to measure the probability of having a bank account based on the household’s need for financial institutions (measures of net worth), the household’s ability to use the financial services (demographic variables, education), and the household’s access to financial services (employment, region, willingness to shop for financial products). They then studied the probability of using financial products and services across households with and without account ownership. The authors find that moving low- to medium-income families into the financial mainstream increases their use of other financial products and services, and increases their access to mainstream forms of credit.

The rapidly increasing use of payday loans paired with the lack of consensus of the effects of these loans has led to a response by legislators to create regulation to protect consumers. Many previous studies of the regulation of payday loans have not looked at the actual impact of different regulation across states, but rather anticipated effects of what types of regulations should be most useful. This study most closely resembles Li et al (2012), which analyzes the effects of online payday borrowing on consumer level behavior. Using data from a single online payday lender that operates
across all states that allow payday lending, the authors measure the impact of different state regulation on consumer decision-making characteristics such as how much they choose to borrow, how many times they choose to renew the loan, and whether or not they choose to default. This study finds that decreasing the maximum interest rate that may be charged to a consumer increases the time the loan is held and decreases the probability of default. Reducing the maximum amount that an individual may borrow decreases the amount individuals choose to borrow, decreases the length of time the loan is held, and also decreases the probability of default. Requiring borrowers to repay their entire loan on their next payday results in fewer loan renewals on average.

While Li, et al (2012) provides a good framework of the expected effects of payday loan regulation, online payday loans are very different than storefront payday lenders, both in the anonymity they provide their customers and the greater difficulty in regulating them. In this study, I examine the regulation of payday loans and its impact on consumer behavior to provide a better understanding of the impact of state regulations. I also analyze the shift away from alternative financial service (AFS) in general, from which we can assume a shift towards mainstream credit use.

3 Theoretical Predictions

Based on models of supply and demand in credit markets, I expect to find that increased regulations of payday loans will translate into increased
demand for mainstream credit. Below in Graph 1a, I illustrate the market for payday loans and mainstream credit:

**Graph 1a:**

![Diagram of Market for Payday Loans and Mainstream Credit](image)

I expect to find regulations will decrease the amount of loans supplied to the consumer because of higher costs to the lenders, therefore creating an excess demand that will need to be filled elsewhere. I anticipate finding that this demand will be met through use of less expensive mainstream credit.

Interest rate caps (*financecharges*), illustrated in the market for payday loans in Graph 1b, create an artificial ceiling below the equilibrium interest rate in the payday loan market, thus reducing the amount of payday loans supplied and creating excess demand unmet by suppliers. This excess demand for credit shifts the demand for mainstream credit to the right, causing increased use. Fee (*fee*) regulations control the fees that can be charged in addition to interest rates, and are usually used to avoid finance charge regulations. Fee regulations should have a similar effect as interest
rate regulations in creating excess demand for credit due to an artificial ceiling created on charges allowable.

**Graph 1b:**

Below in Graph 1c, the effects of loan amount and loan term regulations are shown. Maximum loan amount, minimum loan term, and maximum loan term regulations all have similar effects on the supply of loans in the payday loan market. Maximum loan amount regulations \((\text{maxloanamt})\) will decrease the amount of loans supplied because lenders will have to give larger loans per consumer. This will lead to increased interest rates and below-equilibrium level supply of loans.

Minimum loan term regulations \((\text{minloanterm})\) will allow the consumer more time to get the money to the payday lender, thus reducing the payday lender's profits per loan given. The payday lender will therefore
increase interest rates charged per loan to a point above the equilibrium interest rate in an attempt to make up lost profits, creating excess demand for credit.

A maximum loan term regulation (maxloanterm) will also result in decreased supply and increased interest rates because rollover loans are restricted, reducing the amount of loans each consumer will take out.

All of the above regulations increase costs to lenders causing supply to shift up. With the higher interest rates and lower supply, demand for mainstream credit shifts right.

**Graph 1c:**

Finally, a ban (ban), illustrated in Graph 1d, will create a complete reduction in supply of credit in the payday loan market. Therefore an analysis of this variable’s effect on alternative financial service use will show
the effectiveness of regulations in shifting consumers away from the fringe banking market and towards the mainstream credit market.

**Graph 1d:**

![Graph 1d](image)

**4 METHODOLOGY & DATA**

In my analysis, I use data from the 2009 and the 2011 Current Population Surveys (CPS). More specifically, I use the 2009 and the 2011 versions of the Unbanked/Underbanked Supplement to the CPS, conducted by the Federal Deposit Insurance Corporation (FDIC). This dataset consists of results of a survey conducted in January 2009 and then in June 2011 across all 50 states and individuals from approximately 59,000 households. This dataset provides consumer level financial information, including the use of alternative financial services and use of mainstream banking services.
Table 1: Descriptive Statistics of Dependent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th># of Obvs.</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>paydaylastyr</td>
<td>213106</td>
<td>0.0151</td>
<td>0.1220</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>afsmoneyorderyr</td>
<td>213106</td>
<td>0.1413</td>
<td>0.3483</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>afscashcheckyr</td>
<td>213106</td>
<td>0.0590</td>
<td>0.2356</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>bankacct</td>
<td>213106</td>
<td>0.7971</td>
<td>0.4021</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>pdqual</td>
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<td>0.3796</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>pdeasy</td>
<td>3221</td>
<td>0.4412</td>
<td>0.4966</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>pdcomfort</td>
<td>3221</td>
<td>0.0158</td>
<td>0.1249</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>pdconv</td>
<td>3221</td>
<td>0.1798</td>
<td>0.3840</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

As seen in the descriptive statistics provided in the table above, the sample studied in this research consisted of 213,106 subjects. These subjects were the adult civilian workers represented in the CPS. 1.5 percent of the sample studied used payday loans within the last year before the survey was administered. About 14 percent of the sample used alternative financial services in general to take out a money order in the year preceding the survey, and approximately 6 percent used alternative financial services to cash a check within the previous year.

The final four variables listed on the above table are responses to the survey question “What is the main reason for using a payday loan or payday advance services rather than a bank?” from the sample of 3,221 people who had used payday loan services within the year preceding the survey. The respondent chose between the answers “A payday loan service feels more comfortable than using a bank” (=pdcomfort), “It is easier to get a payday loan than qualify for a bank loan” (=pdeasy), “The payday service is more convenient” (=pdconv), or “Don’t qualify for a bank loan” (=pdqual). The
analysis of these variables will show the reason that payday users choose high cost loans with the regulations implemented in different states. The reason for payday loan use chosen the most frequently (44%) is “It is easier to get a payday loan,” whereas only 17.5% of the sample says they do not use mainstream credit because they “Don’t qualify for a bank loan.”

I use these CPS and supplement surveys in conjunction with state level regulation data. The National Conference of State Legislatures provides a list of state regulations as they existed in 2008 and then in 2011, the years to which the survey data correspond. I separate the state laws into distinct categories based on the different regulations that exist. These categories are loan amount regulation; loan term regulation; fee restrictions; finance charge regulation; and bans. I create variables for each year both measuring the magnitude of the regulated amounts as well as dummy variables to control for the presence of regulations.
Table 2: Descriptive Statistics of Explanatory Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th># of State Years</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>minloanamt</td>
<td>6</td>
<td>50</td>
<td>0</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>maxloanamt</td>
<td>68</td>
<td>1235.74</td>
<td>6004.07</td>
<td>260</td>
<td>50000</td>
</tr>
<tr>
<td>minloanterm</td>
<td>29</td>
<td>18.79</td>
<td>32.00266</td>
<td>5</td>
<td>180</td>
</tr>
<tr>
<td>maxloanterm</td>
<td>56</td>
<td>40.23</td>
<td>20.65121</td>
<td>14</td>
<td>120</td>
</tr>
<tr>
<td>financecharges</td>
<td>62</td>
<td>15.9</td>
<td>14.78913</td>
<td>2.08</td>
<td>75</td>
</tr>
<tr>
<td>fee</td>
<td>10</td>
<td>33.3</td>
<td>39.9202</td>
<td>0.5</td>
<td>105</td>
</tr>
<tr>
<td>ban</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>maxamtdum</td>
<td>213106</td>
<td>0.6334923</td>
<td>0.4818515</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>mintermdum</td>
<td>213106</td>
<td>0.3088979</td>
<td>0.46204</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>maxtermdum</td>
<td>213106</td>
<td>0.5294314</td>
<td>0.4991342</td>
<td>0</td>
<td>1</td>
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<tr>
<td>finchrgdum</td>
<td>213106</td>
<td>0.593606</td>
<td>0.4911609</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>feedum</td>
<td>213106</td>
<td>0.0862341</td>
<td>0.2807101</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>bankacct</td>
<td>213106</td>
<td>0.7971432</td>
<td>0.4021277</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

No dummy variables exist for “ban” or “minimum loan amount” because there is no variation in the magnitude of these regulations across states, allowing the continuous variables to act as dummies.

As seen in the table of descriptive statistics above, maximum loan amount, maximum loan term, and finance charge regulations are the most prevalent regulations across states in the US. All variables created from regulation regarding a gross monthly income (i.e. maximum loan amount restrictions based on a percentage of the consumer’s gross monthly income) are based off the minimum wage rate in the particular state for the year being measured, assuming the worker earned this wage and worked 40 hours per week.\(^1\)

Maximum loan amount regulation varies from $260 up to $50,000, an extremely high limit set in Oregon. Minimum loan amount does not vary at

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\(^1\) Maximum loan amount regulation equal to 25% of gross monthly income for: Nevada 2008 ($6.85 wage rate = $274 maximum loan) and 2011 ($8.25 wage rate = $330 maximum loan); New Mexico in 2008 ($6.50 wage rate = $260 maximum loan) and 2011 ($7.50 wage rate = $300 maximum loan); and 30% of gross monthly income Washington in 2011 ($8.67 wage rate = $416.16 maximum loan)
all across states, as we see $50 for all 4 states that implement this type of regulation. This regulation is observed 6 times in the sample because two states (Washington DC and Arizona) switched to a “ban” by 2011, therefore not using the minimum loan amount restriction in the second period. Finance charges that were based on APRs rather than a given percentage for the loan length period are translated into two-week interest rates. This is seen in the low finance charge restrictions, such as the 2.08 minimum in Ohio whose regulation was an APR of 28 percent. Finance charge regulations that were tiered (i.e. higher charges allowable for larger loan amounts) were averaged across all values listed and translated into an interest rate percentage. The maximum finance charge regulation is the very high 75 percent in Missouri, much higher than the average 15.9 percent across all states. Loan term restrictions range from the minimum term length regulation of between 5 days to 180 days, and the maximum term length regulation of between 14 days in Alaska and up to 120 days in Illinois. Fee regulation also ranges drastically, from just $0.50 in New Mexico up to $105 in Virginia, a state with a strict APR restriction of finance charges. This wide range demonstrates the lack of consensus as to what regulations are most effective in changing consumer behavior.

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2 States with APR regulation in 2008 = New Hampshire (36 APR = 2.59% finance charge); Ohio (28 APR = 2.08% finance charge); states with APR regulation in 2011 = Colorado (45 APR=3.14% finance charge); New Hampshire, Virginia, Montana, and Oregon (36 APR = 2.59% finance charge); Ohio (28 APR = 2.08% finance charge)
I analyze the effects of regulation on the dependent variables using the probit regression:

\[ Y = \beta_0 + \sum \beta_1 (\text{Loan Amount Reg})_{it} + \sum \beta_2 (\text{Loan Term Reg})_{it} + \]

\[ \sum \beta_3 (\text{Finance Charge Reg})_{it} + \sum \beta_4 (\text{Fee Reg})_{it} + \beta_5 (\text{Ban Reg})_{it} + \]

\[ \beta_5 (\text{Bank Account Ownership})_{it} + \sum \beta_n (\text{Controls})_{it} + u_{it} \]

The results allow me to calculate the marginal effects of state regulation on the probability of using the alternative financial services in three separate regressions, where Y is equal to: “paydaylastyr,” a 0-1 variable measuring if the respondent took out a payday loan within the last year; “afsmoneyorderyr,” a 0-1 variable measuring if the respondent used any type of alternative financial service within the last year to take out a money order; and finally “afscashcheckyr,” a 0-1 variable measuring if the respondent used any type of alternative financial service within the last year to cash a check.

The summation of state regulation variables includes variables that measure the magnitude of minimum and maximum regulations as well as dummies measuring the presence of the specific regulation on the state.³

In the next part of my analysis, I use the four responses to the survey question analyzing why payday loan consumers chose this type of loan over a bank loan. I create 0-1 variables for each of the response variables that state comfort, ease, convenience, and ability to qualify for bank loans as the main

³ The regulations included are: maximum loan amount, minimum loan amount, maximum loan term, minimum loan term, finance charges, fee, and ban.
reason the respondent chose to use a payday loan rather than mainstream credit. The regressions measuring the effectiveness of state regulations on these four dependent variables show demand side effects, and why consumers change their behavior as payday loan regulations change.

I will use state and income level\(^4\) fixed effects to compare across states and across time to analyze the effectiveness of the different types of regulations. I control for factors that have been shown in previous literature to increase the likelihood of taking out a payday loan such as age, race/ethnicity, gender, employment status, marital status, having children, and education. I drop all borrowers who are in the armed forces, as more restrictive federal legislation exists for these borrowers and could potentially skew my results.

5 Results

The following table shows the results of the first set of regressions mentioned in my methodology. Table 3 shows the effectiveness of state regulations on payday loan use in the last year, alternative financial services (AFS) use for cash checking in the last year, and AFS use of money orders in the last year.

\(^4\) Income is measured as a categorical variable in this survey. Ranging from 1-16, the respondents chose from income categories as low as “Less than $5,000” up to “$150,000 or more.”
Table 3: Effects of Regulation on Payday Loan and AFS Use

<table>
<thead>
<tr>
<th></th>
<th>Payday Use in the Last Year</th>
<th>AFS Use for Cash Checking in the Last Year</th>
<th>AFS Use for Money Orders in the Last Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2008</td>
<td>0.0007** (0.0003)</td>
<td>-0.0006 (0.001)</td>
<td>0.0068*** (0.0016)</td>
</tr>
<tr>
<td>Min Loan Amount</td>
<td>-0.0002 (0.0001)</td>
<td>0.0004 (0.0004)</td>
<td>-1.94e-06 (0.0007)</td>
</tr>
<tr>
<td>Max Loan Amount</td>
<td>-1.91e-07 (1.56e-07)</td>
<td>5.98e-08 (5.16e-07)</td>
<td>5.35e-07 (8.52e-07)</td>
</tr>
<tr>
<td>Min Loan Term</td>
<td>0.0001 (0.0001)</td>
<td>-0.0003 (0.0005)</td>
<td>-0.0002 (0.0008)</td>
</tr>
<tr>
<td>Max Loan Term</td>
<td>-0.0001 (0.0001)</td>
<td>0.0005 (0.0006)</td>
<td>-0.0017* (0.0009)</td>
</tr>
<tr>
<td>Finance Charge</td>
<td>0.0003*** (0.0001)</td>
<td>7.08e-06 (0.0003)</td>
<td>-0.0003 (0.0006)</td>
</tr>
<tr>
<td>Fee</td>
<td>-0.0005 (0.0007)</td>
<td>0.0016 (0.0024)</td>
<td>0.0025 (0.0038)</td>
</tr>
<tr>
<td>Ban</td>
<td>-0.0025* (0.0013)</td>
<td>0.004 (0.0043)</td>
<td>-0.0039 (0.0064)</td>
</tr>
<tr>
<td>Max Loan Amount (Dummy)</td>
<td>0.0075 (0.0062)</td>
<td>-0.0172 (0.0266)</td>
<td>-0.0399 (0.0429)</td>
</tr>
<tr>
<td>Min Loan Term (Dummy)</td>
<td>0.0032 (0.003)</td>
<td>-0.005 (0.0077)</td>
<td>-0.0115 (0.0127)</td>
</tr>
<tr>
<td>Max Loan Term (Dummy)</td>
<td>0.0024 (0.006)</td>
<td>-0.0047 (0.0226)</td>
<td>0.0895** (0.0371)</td>
</tr>
<tr>
<td>Finance Charge (Dummy)</td>
<td>-0.004** (0.002)</td>
<td>0.0019 (0.0055)</td>
<td>0.0033 (0.0094)</td>
</tr>
<tr>
<td>Fee (Dummy)</td>
<td>-0.0001 (0.0026)</td>
<td>-0.0068 (0.0082)</td>
<td>-0.0346** (0.0121)</td>
</tr>
<tr>
<td>Bank Account</td>
<td>0.007*** (0.0003)</td>
<td>-0.0127*** (0.0012)</td>
<td>0.0625*** (0.0015)</td>
</tr>
</tbody>
</table>

Reported values give the change in the probability of the dependent variable equal to one given a one unit change in the independent variable. Standard errors are in parenthesis, and significance levels marked are as follows: *** =.01 significance level ** =.05 significance level * =.1 significance level Controls include age, gender, education, race, ethnicity, marital status, children, and employment status. Includes state and income level fixed effects.
5.1 Payday Loan Use in the Last Year:

In my analysis of the variable “paydaylastyr,” as seen in the first column of Table 3, I look at the effects of payday regulations across states on the probability of taking out a payday loan in the last year. According to my hypothesis, I expect to find that more restrictive regulations will decrease the probability of taking out a payday loan within the last year in 2011 as compared to 2008. The dummy variable measuring year of 2008 is positive and significant, showing that the year 2008 will increase the probability of taking out a payday loan when compared to 2011. This is consistent with my hypothesis that as regulations have gotten more restrictive over time, overall use of payday loans has decreased.

Of the regulatory variables included in my analysis, regulation on finance charges has the most significant effect on the probability of taking out a payday loan within the last year. Coefficients on both the variable measuring the magnitude of the regulation on interest rates payday lenders can charge (financecharge) and the variable measuring the impact of the presence of any finance charge regulation (finchargedum) are highly significant. The continuous variable, however, is positively significant while the dummy variable is negative. The presence of a finance charge regulation will decrease the probability of payday loan use, however if the magnitude of the finance charge regulation becomes too high, the regulation will not be restrictive enough to decrease use.
I therefore looked at the different values of finance charge regulations that exist across different states to measure their effectiveness. Provided is a graph of the effects of finance charge regulations on the marginal probability of taking out a payday loan in the last year:

The points on the above graph are: (2.08, -0.003), (13.3, 0), (15.9, 0.0008) representing the effects of the minimum finance charge regulation, point of regulation effectiveness in decreasing use, and the mean finance charge regulation in the sample, respectively.

As evident in the graph above, the magnitude of the regulated finance charge increases the marginal probability of using a payday loan in the last year increases as well.

To analyze specifically the effectiveness of existing regulations, I first look at the maximum finance charge regulation that exists (not pictured in graph), 75% in Missouri, and study the effect on payday loan use of this very high interest rate cap. Taking into account the negative effects of the presence of finance charge regulation and the positive effects of the
continuous variable, I find that this regulation leads to a 1.85 percentage point increased marginal probability of taking out a payday loan within the last year.\(^5\) Because the finance charge allowable in this state is much higher than the equilibrium interest rate payday lenders charge to make a profit, the presence of the regulation has a positive effect on the use the service because of the increase of supply.

For the mean finance charge regulation that is set across all states, 15.9\% (point highlighted in orange on the graph),\(^6\) I find that there is a 0.08 percentage point increased marginal probability that consumers will take out a payday loan within the last year. This result is consistent with loans that exist in the unregulated payday services industry because average interest rates that lenders charge without restrictions are between 15 and 20 percent. An interest rate cap of 15.9 percent is high enough that payday lenders will remain profitable, thus having no decreased effect on the amount they will supply, but is close enough to the average interest rates already charged so as to have little effect on the marginal change in probability.

The minimum interest rate cap, 2.08 percent, will result in a -0.34 percentage point decreased marginal probability of taking out a payday loan in the last year. The value 2.08 is a low enough interest rate that it becomes

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\(^5\) The equation used to calculate these figures is as follows, using specific interest rate regulation values: 
\[ \text{probability(paydaylastyr)} = \text{financecharge(interest rate)} + \text{finchargedum}(1) \]

\(^6\) This mean is calculated from the average of states with finance charge regulations in place, 62 states over two time periods, 2008 and 2011.
restrictive and forces payday lenders to decrease the amount of loans supplied.

The final figure I calculate using these regulations is the point at which the interest rate is low enough to decrease the amount of payday loans taken out in the last year. This point is at an interest rate cap of 13.3 percent and highlighted in green on the graph above. Below this point, the probability of having taken out a payday loan in the last year decreases. Conversely, above this point the interest rates lenders are allowed to charge are high enough that the presence of regulation does not have a negative effect on usage.

A ban of payday loans also has a significantly negative effect, consistent with the expectation that banning payday loan use will prevent their purchase. This figure does not represent a total prevention of payday loan use because the dependent variable I measure is a value of payday loan use in the preceding year, and while this is on average a good measure of the effectiveness of policy changes between 2008 and 2011, there is the potential that a ban was implemented after a consumer had already taken out a payday loan. There is also the potential that a consumer purchased a payday loan from a different state. Especially in 2008, regulations on internet payday loans were not as restrictive and gave consumers the opportunity to purchase payday loans even if they were banned in their state.
The variable measuring bank account ownership is positive and highly significant. This is due to the fact that bank accounts are required in order to take out a payday loan. A payday loan consumer must provide the lender with a postdated check at the time of loan purchase and this is usually done through the use of a checking account.

5.2 Alternative Financial Service Use in the Last Year:

I next look at general use of alternative financial services to cash checks and take out a money order. Again, these variables are measured on a 0-1 scale if the respondent has used any form of alternative financial service within the last year to perform either of these two services. These variables will show how more restrictive regulation of a certain type of alternative financial service, payday loans, translates to overall use of alternative financial services. Assuming that the credit needs of the respondents did not change significantly over the two years that the survey was administered, these variables provide a good proxy for the use of fringe banking services rather than mainstream credit. A decrease in use of general alternative financial services for money orders or cash checking with increased regulation of payday loan will suggest that people shift away from fringe banking with restrictive regulation and towards mainstream banking services.

As seen in Column 2 of Table 3, the variable measuring use of alternative financial services to cash checks, I find significant effects only on
the variable measuring the effect of possessing a bank account. Having a bank account significantly reduces the probability of using AFS to cash a check. This shows consumer rationality when using AFS, as cash checking is a free service provided to those who have a bank account.

I next look at the use of alternative financial services to place a money order, shown in Column 3 of Table 3. The dummy variable for year=2008 is highly significant and positive, revealing that in 2011 the probability of using alternative financial services to take out a money order decreased. The regulatory variables that are significant are the continuous variable for maximum loan term, the maximum loan term dummy variable, and the fee dummy variable.

Similar to the effects of finance charge regulation on payday loan services use, the variables measuring the presence of a maximum loan term regulation and the magnitude of maximum loan term regulation have opposite effects. The continuous variable for maximum loan term regulation (maxloanterm) significantly decreases the marginal probability of using alternative financial services to take out a money order by -0.0017. The variable measuring the effectiveness of the presence of maximum loan term regulation (maxtermdum) leads to an increase in the marginal probability of using alternative financial services to take out a money order by 0.0895.
The points on the above graph are: (14, 0.0656), (40.23, 0.0211), (52.65, 0), (120, -0.12) representing the effects of the lowest maximum loan term regulation, the mean maximum loan term regulation in the sample, point of regulation effectiveness in decreasing use, and the highest maximum loan term regulation, respectively.

As seen on the graph above, an increase in the maximum loan term allowable will lead to a decrease in the marginal probability of using alternative financial services to take out a money order in the last year.

I look at the different values of maximum loan term regulations that exist across different states to measure their effectiveness. The lowest maximum loan term regulation across states, 14 days, will result in a 6.6 percentage point increased marginal probability of taking out a money order in the last year. This is consistent with the unregulated payday loan industry, as many lenders prefer a loan period of 14 days. This allows them to generate greater revenue from consumers through rollover payments.

\[ \text{probability(paydaylastyr)} = \text{maxlaonterm(loan term)} + \text{maxtermdum(1)} \]

---

7 The equation used to calculate these figures is as follows, using specific interest rate regulation values: probability(paydaylastyr) = maxlaonterm(loan term) + maxtermdum(1)
maximum loan term at this low of a time period will create a greater supply of payday loans and is therefore an ineffective level of regulation.

For the mean maximum loan term regulation that is set across all states, 40.23 days and highlighted in orange on the above graph, I find that there is a 2.1 percentage point increase in marginal probability that consumers will use AFS to take out a money order in the last year.

Next, looking at the highest maximum loan term regulation across states of 120 days, I analyze the impact of maximum loan term regulation. Taking into account the negative effects of the presence of the regulation and the positive effects of the continuous variable, I find that this regulation leads to a -12 percentage point decrease in marginal probability of using AFS for a money order in the last year.

The final figure I calculate using these regulations is the point at which the maximum loan term regulation is high enough to decrease the amount of payday loans taken out in the last year. This point is 52.65 days and marked in green on the above graph. Above this point, the marginal probability of using alternative financial services to take out a money order in the last year decreases. Conversely, below this point the marginal probability of using alternative financial services to take out a money order in the last year increases.

A shorter loan period allows the lender to extract more payments from the consumer, as the consumer will likely pay a fee at the end of the loan
period in order have the loan roll over into another loan period. This is consistent with the finding that a shorter maximum loan period of 14 days will increase marginal probability of using payday loans, as supply of loans will increase. The result showing the decrease in use for greater values of maximum loan term regulation, however, seems counterintuitive as a maximum loan term should not be a binding regulation if it decreases profits for the supplier, and should therefore not lead to a decrease in supply. The point at which marginal probability will begin to decrease with an increased maximum term, 52.65 days, represents the point at which payday lenders will no longer be able to increase profitability by the amount of roll over payments they can extract from consumers.

Looking at the distribution of maximum loan term regulations, there is an outlier of 120 days in Illinois that is much higher than the mean maximum loan term regulation of 40.23 days or the median regulation of 31 days. I test the effect of dropping this outlier from my regression, but the results showing the effectiveness of maximum loan term regulations on using AFS for a money order in the last year before and after I drop this value are not significantly different from each other. This could suggest that although maximum loan term regulations should not be binding, payday lenders are encouraged to have loan terms closer to these maximum amounts, perhaps due to demand-side effects, thereby causing an increase in interest rates because of reduced profitability, resulting in an overall decrease in the
amount supplied. I discuss the potential effects of this regulation further in the next section in which demand-side effects are analyzed.

Another significant value in this regression is the fee dummy variable. This variable is highly significant and negative. This shows that the presence of fee regulation will decrease the probability of using alternative financial services to take out a money order, consistent with the hypothesis that making alternative financial services more expensive will lead to decreased use of this form of credit.
### 5.3 Choosing Payday Loan Services over Bank Loans:

Table 4: Effect of Regulations on Payday Loan Demand

Dependent variables are categorical responses to: “What was the main reason for using a payday loan over a bank loan in the last year?”

<table>
<thead>
<tr>
<th></th>
<th>More Comfortable</th>
<th>Easier to Get</th>
<th>More Convenient</th>
<th>Don’t Qualify for Bank Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2008</td>
<td>0.0057 (0.0039)</td>
<td>0.0414* (0.0213)</td>
<td>0.1228*** (0.0171)</td>
<td>0.0294* (0.0159)</td>
</tr>
<tr>
<td>Min Loan Amount</td>
<td>0.0036*** (0.0011)</td>
<td>0.009 (0.0095)</td>
<td>-0.0133 (0.0146)</td>
<td>0.0065 (0.0083)</td>
</tr>
<tr>
<td>Max Loan Amount</td>
<td>0.00004 (0.00006)</td>
<td>6.02e-06 (0.00001)</td>
<td>-0.00002 (0.00002)</td>
<td>6.13e-06 (0.00001)</td>
</tr>
<tr>
<td>Min Loan Term</td>
<td>-0.005** (0.0025)</td>
<td>0.12 (0.011)</td>
<td>-0.0018 (0.0068)</td>
<td>-0.0165 (0.013)</td>
</tr>
<tr>
<td>Max Loan Term</td>
<td>0.0084*** (0.0024)</td>
<td>-0.0107 (0.0103)</td>
<td>0.0093 (0.009)</td>
<td>0.0053 (0.0075)</td>
</tr>
<tr>
<td>Finance Charge</td>
<td>-0.0049*** (0.0016)</td>
<td>0.0393*** (0.0100)</td>
<td>-0.02*** (0.0053)</td>
<td>-0.0034 (0.0056)</td>
</tr>
<tr>
<td>Fee</td>
<td>-0.0018*** (0.0005)</td>
<td>-0.022 (0.0477)</td>
<td>-0.0083 (0.0322)</td>
<td>0.072 (0.067)</td>
</tr>
<tr>
<td>Ban</td>
<td>.</td>
<td>-0.3402** (0.082)</td>
<td>-0.0409 (0.093)</td>
<td>0.0915 (0.1934)</td>
</tr>
<tr>
<td>Max Loan Amt (Dummy)</td>
<td>.</td>
<td>-0.2918 (0.4911)</td>
<td>0.3217 (0.2358)</td>
<td>-0.6937 (0.5543)</td>
</tr>
<tr>
<td>Min Loan Term (Dummy)</td>
<td>.</td>
<td>-0.4827** (0.1853)</td>
<td>-0.1241 (0.1164)</td>
<td>0.402** (0.1866)</td>
</tr>
<tr>
<td>Max Loan Term (Dummy)</td>
<td>.</td>
<td>0.565 (0.3269)</td>
<td>-0.3068 (0.4618)</td>
<td>-0.463 (0.3693)</td>
</tr>
<tr>
<td>Finance Charge (Dummy)</td>
<td>-0.5276*** (0.0475)</td>
<td>-0.303** (0.1311)</td>
<td>0.1378** (0.0578)</td>
<td>0.0247 (0.0793)</td>
</tr>
<tr>
<td>Fee (Dummy)</td>
<td>0.9977*** (0.0007)</td>
<td>0.0586 (0.1811)</td>
<td>-0.0433 (0.0949)</td>
<td>-0.1696** (0.07)</td>
</tr>
<tr>
<td>Bank Account</td>
<td>-0.029*** (0.0183)</td>
<td>0.084** (0.0335)</td>
<td>0.0092 (0.0237)</td>
<td>-0.0665** (0.0288)</td>
</tr>
</tbody>
</table>

Reported values give the change in the probability of the dependent variable equal to one given a one unit change in the independent variable. Standard errors are in parenthesis, and significance levels marked are as follows: ***=.01 significance level  ***=.05 significance level  *=.1 significance level Controls include age, gender, education, race, ethnicity, marital status, children, and employment status. Includes state and income level fixed effects.
Finally, I analyze the changes in the reasons for which those who decide to take out payday loans rather than use mainstream credit do so. These regressions shows the demand side effects of payday loan regulations.

The variable measuring the effect of the year is positive across all four regressions and significant for the dependent variables showing that payday loans are easier to get, are more convenient, or the respondent does not qualify for bank loans in 2008. This shows that as the study moved from the first to the second time period, subjects were less likely to choose any of the options, consistent with the previous finding that payday loan usage went down over time.

The regulation “minimum loan amount” was significant only for the option that “A payday loan service feels more comfortable than using a bank.” The positive value on the marginal probability of a payday loan being more comfortable than a bank suggests that a minimum loan amount regulation makes a consumer believe that payday loans are safer than they had been before the regulation was put into place. Maximum loan amount, however, does not significantly impact the reason why payday loan consumers choose to purchase this type of credit over mainstream credit.

Loan term regulation also had strong effects on the levels of comfort consumers have when taking out a payday loan compared to taking out a bank loan. Minimum loan term regulation had significant effects on both the options measuring the comfort of payday loans as well as the option “It is
easier to get a payday loan than qualify for a bank loan.” The continuous variable for comfort is significant and the continuous variable for “ease” is jointly significant with its highly significant dummy variable. A minimum loan term regulation had a negative effect on the variable measuring comfort, while it had a positive effect on the relative ease of taking out a payday loan compared to a bank loan.

A maximum loan term regulation had a positive effect on only the comfort variable. This, again, suggests that a regulation on maximum loan term makes a consumer believe that payday loans are safer than they had been before the regulation was put into place, making him more comfortable when using this service. This, in conjunction with my previous finding that as maximum loan term regulation increases, supply of money orders decreases, suggests that loan lengths will move towards the maximum allowable term. Consumers will be more comfortable with higher allowable terms as they are provided with a longer time frame in which they can repay their loan, however this becomes less profitable for the lender thereby decreasing supply due to the need to increase interest rates to remain profitable.

Finance charge regulations have significant effects across three of the regressions: comfort, ease, and convenience. Finance charges have a negative and highly significant effect on comfort and convenience, but positive and highly significant effects on the variable measuring the relative ease of taking out a payday loan compared to a bank loan. This suggests that
increasing a finance charge will increase the ease of taking out a payday loan when compared to a bank loan. This is consistent with my earlier findings that higher finance charges allowed by regulations will lead to increased payday loan usage within the last year. As with this finding though, we see that the dummy variable for the effect of finance charge regulation on “ease” has a negative and significant value. The presence of a finance charge regulation decreases the ease of using a payday loan because it will decrease the supply of loans, however if the finance charge is high enough it will overcome this effect. When the finance charge regulation is too high, it will increase the ease of payday loan use compared to bank loans as the supply will be much higher than it previously had been due to the increased potential for profitability per loan for the lender.

Looking at specific values of finance charges, I find that the minimum finance charge that exists across states (2.08%) reduces the probability that the respondent cites the ease of taking out a payday loan by -22 percentage points, whereas the maximum interest rate cap (75%) corresponds to an increase of 2.65. The point at which it is no longer easier to take out a payday loan than go to a bank is at a finance charge rate of 7.7%, a value lower than the average finance charge cap of 15.9% that exists across states.

Both the continuous variable and the dummy variable measuring the effect of finance charge regulation on the probability the respondent lists “convenience” as the main reason for using a payday loan are highly
significant. The dummy variable is negative and significant, while the continuous variable is positive and significant, meaning that the presence of a financial charge regulation will decrease the probability that payday loans were used because they were more convenient, but as finance charges regulations become higher and less restrictive, they have the opposite effect. This is due to the effect of higher finance charges on the consumer. As finance charges are allowed by the state to be higher than average, the use of a payday loan will reach a point where it is no longer more convenient than a bank loan. Payday loans may have previously been more convenient than a bank loan up until a certain price, but at this high price the increased cost of a payday loan makes it less convenient than applying for and waiting for a bank loan.

Looking at the different values of interest rates that exist across different states, I find that the minimum cap that exists (2.08%) corresponds with a 9.6 percentage point increase in the probability that payday loans were used because they were more convenient, whereas the maximum cap that exists (75%) corresponds with a -1.36 decrease in the probability that convenience is the main reason for payday loan use. The point at which payday loans become less convenient than bank loans is when finance charges are above 6.89%, a point below the average finance charge regulation which is 15.9%.
The presence of a finance charge at any magnitude will decrease the comfort of using payday loans.

Regulations on the fees that can be charged in addition to interest rates have a significant and negative effect for the regression measuring comfort of taking out a payday loan relative to a bank loan. The presence of a fee regulation will increase comfort as measured by the dummy variable, but increasing fee regulation makes consumers less comfortable taking out payday loans.

The “ban” regulation has a negative and highly significant effect on the ease of taking out a payday loan compared to a bank loan. This result is consistent with my hypothesis because payday loans are more difficult to obtain when they are not available for purchase in the state.

When analyzing the variable measuring that the respondent took out a payday loan because they could not qualify for a bank loan, I find little significance in the regulation variables. This is because the changing regulations should not impact the ability for those who would normally take out a payday loan because they do not qualify for a bank loan, to be eligible for bank credit. This variable shows that the change in the usage of payday loans comes only from those who have the ability to take out a bank loan but choose the higher cost credit option for other reasons. This variable suggests that payday loan regulation is welfare enhancing, as it shifts people who can
qualify for a bank loan away from higher cost credit options and towards mainstream credit.

6 CONCLUSIONS

The results of my analysis suggest that finance charge regulations are most effective in decreasing payday loan use when the interest rate cap is below the market equilibrium rate due to the decrease in payday loans supplied. Finance charge regulations are effective in decreasing payday loan use because they reduce the probability that a consumer finds them more comfortable, more convenient, or easier to get than bank loans at certain rates. In order to decrease all of these factors, and reduce overall use of payday loans, the interest rate cap should be between 7.7 and 6.89 percent, well below the 13.3 percent needed to decrease overall consumption of payday loans.

I find that bans of payday loans, while effective in decreasing use of payday loans themselves because of a significant decrease in the relative ease of getting a payday loan rather than a bank loan, are not as effective in decreasing alternative financial services use in general. There is suggestive evidence that bans decrease alternative financial service use for money orders but the results are not significant for this sample.

While in this study I attempted to control for all possible variables, there are potential caveats that can be improved upon in further research. The change in the credit market over this period of financial crisis may
impact my results and has not been controlled for. The crisis may have both increased the overall demand for credit between the 2008 and 2011 period being studied, as well as decreased the availability of mainstream credit access to the higher risk (lower income) subjects studied in this analysis. I assume for this study that credit needs do not change; however, in further research it may be necessary to relax this assumption.

Another factor I was unable to control for was the differences that exist in online payday lending regulation and storefront payday loan regulation. While now online payday lenders face stricter regulations, in 2008 and even 2011 regulation was not as restrictive, and consumers were able to purchase loans across states. This could be the reason the variable “ban” does not decrease use of payday loans by 100 percent.

My findings do suggest that payday loan regulations, if restrictive enough, can be effective in shifting people towards mainstream credit options through a restriction of supply because of decreased profitability for the lender. If regulation is not restrictive enough, however, it can lose its effectiveness in shifting consumer behavior and increase fringe banking use because these loans appear to be less risky to the consumer, making them more comfortable using alternative financial services.
7 References


http://www.icpsr.umich.edu/icpsrweb/RCMD/series/24/studies/29649?keyWord%5B0%5D=economic+conditions&paging.startRow=1


http://www.bepress.com/bejeap/topics/