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Do Payday Lending Bans Harm Consumers? Evidence from the Pawn Market

Karlyn Russell
Macalester College, karlyn.russell@gmail.com

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Macalester College Economics Department
Advisor: J. Peter Ferderer
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1. Introduction

In a speech in Birmingham, Alabama in 2015, President Obama strongly condemned payday lenders, accusing them of "trapping hardworking Americans in a vicious cycle of debt." (Boyer, 2015). He is not the first public figure to come out against payday lending -- many characterize the alternative financial industry as usurious and exploitative based on its high interest rates, aggressive methods, and targeting of poor citizens of color. But is this reputation justified? The industry's nearly $46 billion worth of business per year with 19 million consumers indicates that, at least among certain populations, their services are in high demand. According to the Community Financial Services Association of America (CFSA), an industry group, payday lenders are in danger of being "regulated out of business" by statewide bans, thus restricting the options of payday lending consumers and making them worse off overall. The debate about the overall harm or benefit of payday loans to consumers is far from settled, and states have adopted a wide variety of regulatory regimes ranging from permissive fee ceilings to outright bans.

In this paper, I exploit this heterogeneity in state policies to further clarify the harm or benefit of payday lending bans to consumers. I analyze consumers' use of pawn shops, a substitute for payday lending, in states where payday lending has been banned and compare it to states where payday lending is legal. If payday loans are truly a necessary source of credit for consumers, as lenders claim, then pawn shop use should be higher in states with payday lending bans. If, however, payday lenders coerce consumers into borrowing, then states with payday lending bans should see no increased pawnshop activity. Using the FDIC 2009-2013 Unbanked and Underbanked CPS supplement, I find

little effect of payday lending bans on the use of pawnshops: neither lifetime use of pawnshops nor use of pawn shops in the past year is significantly higher in states where payday lending is illegal. Using the theoretical framework that I develop, this could indicate that payday lenders are not providing a necessary source of credit to disadvantaged families, and that payday lending bans are indeed in the best interest of the consumer.

The following section provides background on the alternative financial sector as a whole. In section 3, I review the relevant literature and in section 4 lay out a theoretical model to understand payday loan and pawn shop use. Section 5 introduces the dataset, Section 6 presents empirical results and section 7 concludes.

2. Background on the Alternative Financial Sector

The alternative financial sector (AFS), which includes check cashers, pawn shops, auto title lenders, payday lenders and rent-to-own services, profits by meeting the short-term cash needs of credit-constrained borrowers. Although AFS products vary in their characteristics, they all share the same origins, serve the same populations, and pose the same risks to clients (Swagler et al. 1996). AFS has existed in one form or another since at least the Middle Ages, when Italian monks would allow poor parishioners to pawn goods to access cheap credit (Caskey, 1994). However, it was not until the Industrial Revolution led to the formalization of labor and the banking sector that AFS really began to flourish. A newly created class of chronically underpaid wage workers fed the burgeoning growth of pawn shops that provided accessible cash loans to tide them over

until payday, thus cementing pawn shops in the American financial landscape (Woloson, 2009). The increased codification of payroll processes at this time also allowed for the emergence of the payday lending industry, beginning with lenders who sought to "buy the paycheck" of wage workers. It was not until the Great Depression and the accompanying credit crunch, though, that consumers truly began to use payday lending as a means of quick credit (Stegman, 2007). Payday lending remained a very small industry, overshadowed by pawning and largely confined to poor, inner-city neighborhoods until the mid-1990s, when banks stopped making unsecured loans to unqualified borrowers and began to withdraw from rundown areas due to high operation and default costs. This in turn expanded demand for short-term credit and payday lenders quickly stepped in to fill the gap, leading to massive growth in the industry. Today, the payday lending industry rivals the pawn industry in size: payday loan outlets have grown from around 500 in the early 1990s to about 20,600 stores today, with a business volume of $46 billion in 2015 (CFSA, 2016).

A payday loan is a small cash loan, typically around $300, made for just a few weeks. To secure the loan, the borrower presents the lender with a post-dated check for the entire loan amount and walks out the door with the cash value of the check minus a fee of usually $15-$20 per $100 lent. It is important to note that the lender does not check a borrower's credit score, which allows consumers with poor or nonexistent credit histories to borrow, but also heightens default risk. Because payday loans are essentially uncollateralized and default cannot harm a credit score, default rates in the payday

lending industry tend to be very high[1] and are a significant source of costs for lenders (Stango, 2012).

Pawn shops, on the other hand, issue loans secured by temporary collateral, usually household possessions such as jewelry or laptops. A borrower exchanges an item, called a pawn, for a pawn ticket and a cash loan, with generally few other fees involved, and at the end of the loan's term (usually a few months) must return the ticket with principal and interest paid to reclaim the pawn. If a borrower should default, they generally have a month grace period before the pawn is sold. Although there are only around 10,000 pawn shops in the United States, pawn use remains more common than payday lending, with about 3% of the population reported using a pawnshop in the past year compared to about 2.5% using payday lending (FDIC, 2013).

Much research has been done on the demographics and capabilities of AFS consumers. They tend to be less educated, younger, and have lower incomes than the general population. (Stegman 2007, Lusardi and de Bassa Scheresberg 2013, Damar 2009). Lusardi and de Bassa Scheresberg (2013) also find that AFS customers are less financially literate than average, lacking basic skills like calculating an interest rate. Graves (2003) finds that payday lenders tend to locate in urban areas that larger bank branches have abandoned. Damar (2009) also finds that payday lenders are more likely to locate in areas with large Hispanic populations. Because a checking account is necessary to receive a payday loan, consumers of payday lending tend to have steady jobs and bank accounts. Pawn customers, however, tend to be less banked than average, and are more

[1] Generally, payday lenders experience default rates around 15% of revenue (Stango, 2012).

likely to be unemployed (Stegman, 2007). Both pawnshops and payday lenders tend to target households with low to moderate incomes, especially the bracket between $20,000 and $50,000 per year (Stegman 2007, Damar 2009).

Consumers are often pushed into the use of payday loans or pawn shops by sudden shocks, such as medical expenses or unexpected vehicle repairs (FDIC, 2013). However, since the 2008 financial crisis, that pattern of use has changed slightly -- instead of using AFS to cover incidental expenses, a small segment of consumers are now relying on AFS to cover their routine expenses each month. According to the Consumer Financial Protection Bureau (2013), 82% of payday loans are renewed or rolled over within fourteen days of the first loan expiring, and "15% of new loans are followed by a loan sequence at least 10 loans long" (CFPB, 2013). The CFPB finds that a small subset of borrowers is responsible for the vast majority of payday lending: 50% of new loans are made in a loan sequence of 10 or more. This indicates that this group of chronic borrowers have made AFS, originally intended as a resource of last resort, a normal part of their personal finances.

Despite the historic roots of AFS in the church, its rapid growth and increasing importance to the personal finances of everyday Americans has raised alarm bells for many concerned with consumer welfare. Although they remain legal in all states, pawn shops remain dogged by shady reputations, strict record-keeping and police compliance regulations and community suspicion. Similarly, critics of the payday lending industry cite its high fees and uninformed customers as motivation to outlaw the product, and

thirteen states as well as Washington, D.C.[2] have now banned the practice. However, to determine the true impact of payday lending on consumer welfare, it is necessary to explore the consumer's decision to borrow and understand the differences between AFS and traditional credit.

3. Review of the Literature

Several authors have already begun to explore the question of the harm or benefit of payday lending and made several interesting findings about the nature of the payday lending market. Stango (2012) explores the entry of other types of institutions, such as traditional banks and credit unions, into the payday lending market and concludes that there is little opportunity for them to make a profit. Banks specifically face problems in the payday lending market due to usury regulations that prohibit charging the rates of interest necessary to cover losses due to default. Further, banks need to credit-score payday lending consumers to avoid large losses, thus eliminating a major feature that attracts many payday lending customers in the first place. Stango offers up credit unions as a more feasible alternative, although he notes that credit unions are restricted to charging a maximum of 18% in interest per year, much lower than the fees ordinarily charged by payday lenders. This restriction prompts the few credit unions currently offering payday loan products to pool default risk with other credit unions and to offer higher loan amounts for longer terms. Although this is good sense for the credit unions, it

[2] These states, and their respective years of banning, are: Arizona (2010), Arkansas (2008), Connecticut, Georgia (2004), Maine (1973), Maryland, Massachusetts, New Jersey, New York, North Carolina (2006), Pennsylvania (1998), Vermont (2001), Washington, D.C.(2008) and West Virginia. In Connecticut, Maryland, Massachusetts, New Jersey, New York and West Virginia, payday loans are banned by default, as there is no law legalizing them.

does not appeal to borrowers looking to borrow only a small amount for a short time without forming a relationship with a financial institution. Because of this, as well as the difficulty credit unions have in breaking even in this market, Stango concludes that banks and credit unions are still not feasible alternatives to payday lending.

Edmiston (2010) reaches the same conclusion, finding that payday lending and traditional credit are not substitutes. In a study of consumer borrowing, she found that consumers in counties where payday lending is banned have significantly fewer bank accounts and bank cards than consumers in counties where payday lending is legal. This implies that when payday lending is banned, consumers do not turn to traditional banks to meet their credit needs. Edmiston offers several possible alternatives that consumers may use instead, including loans from family and friends, defaulting on bill payments, or bouncing checks. As support, she reports that after a ban on payday lending in Georgia, the number of bounced checks increased by 13% compared to areas that had not banned payday lending. Additionally, Edmiston finds that consumers had significantly lower credit scores in counties where payday lending was banned, indicating that these consumers may have defaulted on other loans or fallen behind on bills in the absence of payday lending. Edmiston's work, as well as Stango's, indicates that traditional bank credit should not be viewed as a substitute for payday lending, and offers several alternative sources of liquidity for consideration.

McKernan et al. (2013) contribute to the literature by fully exploring the role of other AFS products as substitutes for payday lending. Using individual-level survey data, the authors investigate use of payday loans, pawn shops, auto title loans, refund

anticipation loans, and rent-to-own. They find that price caps and prohibitions on individual AFS products do decrease the use of those products, but banning one type of AFS does not significantly increase the use of other types of AFS. I plan to test this result with a larger, more precise dataset to update the literature on the relationships between AFS products.

My work will include three major differences from that of McKernan et al. (2013). First, I will utilize "use of [product] in the past 12 months" as a response variable. In their analysis, McKernan et al. use as their response variable "use of [product] in the past 5 years," which can introduce noise when respondents take out a payday loan in one state, then move to another state where payday lending is banned, which I will be able to control for more precisely. Secondly, my data is a pooled set of cross sections taken every other year from 2009 - 2013. This will allow me to include both year and state fixed effects and to better identify relationships in AFS use. Third, my dataset is much larger than that of McKernan et al. -- it includes 111,010 households versus their 27,069. Given that AFS use in general is confined to a very small segment of the population, a large dataset is an invaluable asset. Beyond these differences, I will replicate and update the work of McKernan et al. to contribute a clearer picture of the relationships between use of different AFS products, and offer some insight on the welfare implications of different regulatory regimes. To do so, however, it is first necessary to consider the theoretical underpinnings of a consumer's decision to use a pawn shop or payday loan.

4. Theoretical Structure

To begin developing a theoretical structure to understand the behavior of consumers in the AFS market, it is necessary to compare the relative prices of both payday loans and those from pawn shops. To start, the price of both payday and pawn shop loans must include a constant, *A*, a term denoting fixed transportation and search costs (i.e. the availability of storefronts), which is the same for both products. Further, both products carry interest-like charges represented by *r*. For a pawn shop, *r* is simply the interest accrued over the life of the loan. For a payday loan, *r* represents the charges and flat fees that accompany a loan and vary from state to state. Because fee size increases as the loan amount increases, it is appropriate to conceptualize these fees as an interest rate, even if, strictly speaking, they do not accrue over the life of a loan. Due to the collateralized nature of a pawn shop loan, wherein a consumer must forfeit their pawn upon default, the price formula must take into account a consumer's innate default risk, γ. As γ increases, expected price increases as well (holding constant the value of the pawn) because the consumer is more likely to lose the pawn due to default. Thus, the price faced by pawn consumers is given by

$$P_{Pawn} = A + rY_{pawn} + \gamma Y \tag{1}$$

where Y_{pawn} is the value of the pawn and thus the size of the loan.

For a payday loan, a constant term *C* needs to be added for the cost, spread out over every transaction a consumer makes, of opening and maintaining a bank account. This term is necessary because payday loans are not available to the unbanked, and will become very important in the decision to use a payday loan. Since *A* and *C* are constant

and the same across all consumers, we can combine them into one constant term, A' such that $A' = A + C > A$ always. Lastly, it is once again essential to measure default risk, γ -- if a consumer were to default on a payday loan by writing a bad check, they would face an overdraft charge from their bank of around $20-$30, represented by another constant, D (Stango, 2007). Thus, the cost of obtaining a payday loan is given by

(2) $$P_{pawyday} = A' + rX_{payday} + \gamma D$$

with X_{payday} representing the payday loan amount.

Because the relative price of each product is the key determinant of the consumer's allocation between the two, we must set the two price functions equal to each other to find the regions where a consumer will consume each product. Using the price functions derived above, we can set $A + rY + \gamma Y = A' + rX + \gamma D$ and simplify, assuming r is the same for each product, to get:

(3) $$\gamma Y = C + \gamma D$$

This allows us to form a consumption schedule:

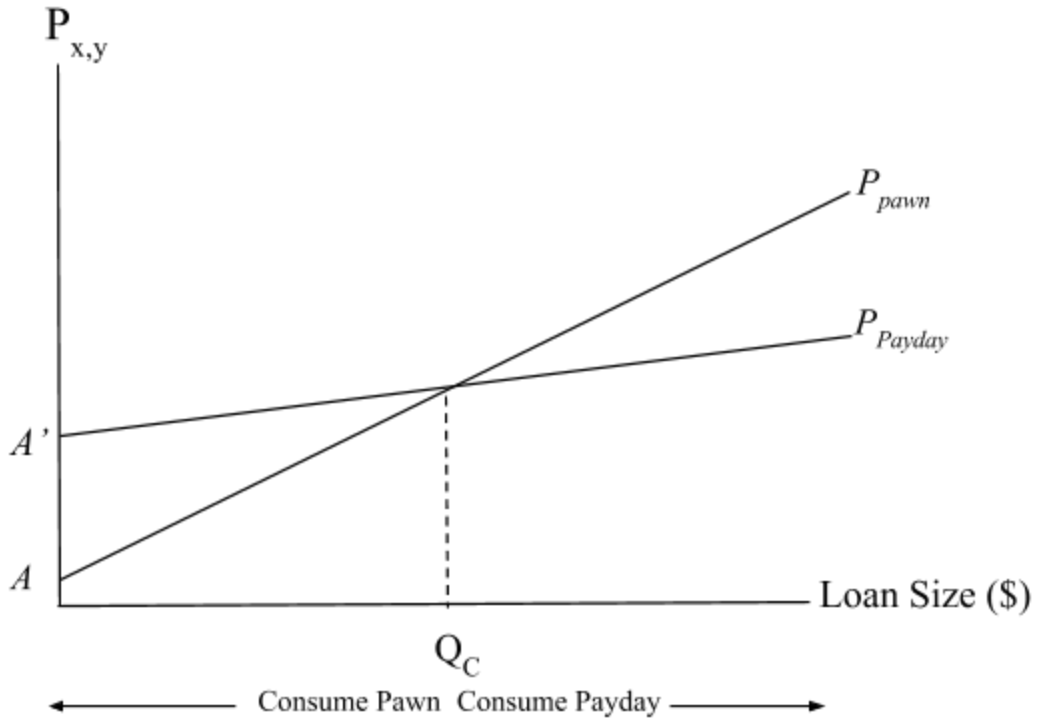
(4)
If $C + \gamma D > \gamma Y$, consume such that $Y = I$ and $X = 0$
If $C + \gamma D = \gamma Y$, consume such that $Y + X = 0$
If $C + \gamma D < \gamma Y$, consume such that $Y = 0$ and $X = 1$

We can see from this consumption schedule, as well as figure 1, that if the expected cost to the consumer of a default on a pawnshop loan (γY) is less than the expected cost of an overdraft (γD) plus the cost of maintaining a bank account (C), he will choose to pawn. Because C and D remain fixed as loan size increases, whereas γY increases with loan size, it follows that pawn shops are the better choice for smaller loans and customers with

low default risk, while payday loans are the better choice for large amounts and high-risk customers. Further, for a consumer with fixed γ_i the price P_y of a pawn shop loan increases more quickly than the price of a payday loan, even though payday loans have higher fixed costs. At the point where $C + \gamma D = \gamma Y$, which I will call Q_c, the consumer is indifferent between a pawnshop loan and a payday loan, and at any loan size larger than Q_c the payday loan is the cheaper, and thus utility-maximizing, option.

Figure 1 illustrates the price functions of both pawnshop and payday loans derived above, as well as the regions where a consumer would select each. From the figure, it is clear that a pawn may initially be the cheaper option, but that the lower marginal costs of payday lending with a given γ_i make payday lending the better option for loan sizes larger than Q_c. Overall, this analysis suggests that consumers will view both payday loans and those from pawnshops as viable options - they are substitutes - and that heterogenous consumers will sort themselves into these two parts of the credit market based on the amount they need to borrow, their probability of default γ and fixed costs C and D. Although this analysis provides a useful guideline to understanding consumer behavior, it has several limitations. To begin with, most states impose varying loan term limits and fee caps on both payday lending and pawn shops, limiting consumers options and distorting their choice between the two (National Council of State Legislatures, 2015). For example, many states ban payday loans larger than $500 even though I have shown that as loan size increases payday loans become the smarter choice for consumers. This analysis also presumes that consumers may only choose between payday loans and pawn shop loans - the model does not take into account the decision to exit the market

Figure 1: Prices and Consumption Regions of Pawnshop and Payday Loans



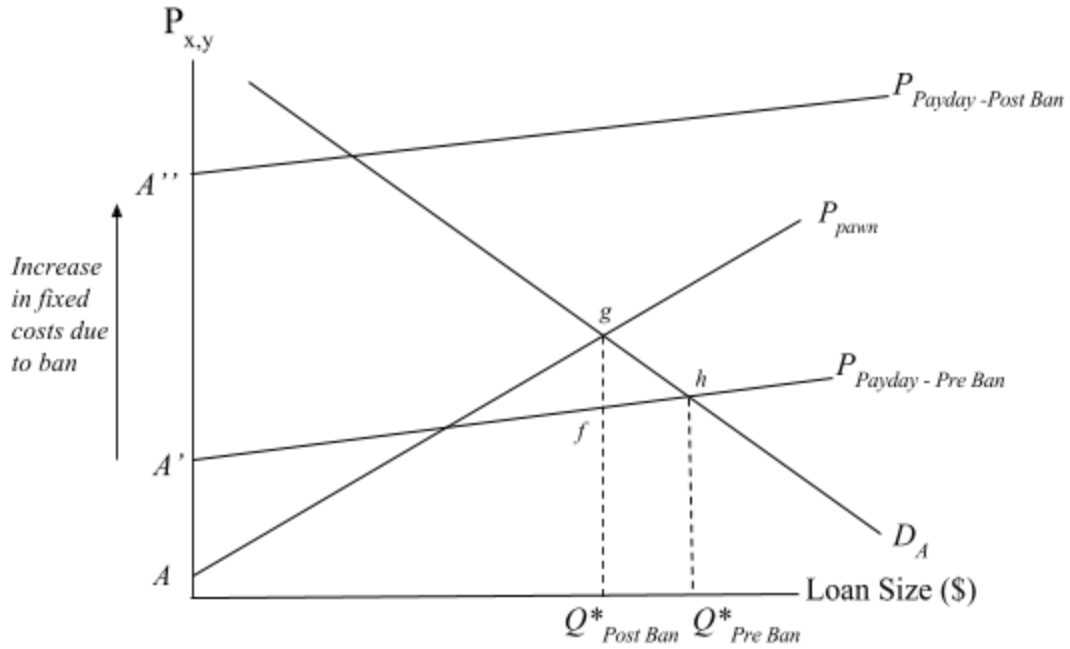
and take out a loan from family or friends, use a credit card, or default on a payment. Although there is little empirical work on informal loans such as these, it is safe to assume that they do satisfy at least some of the demand for short-term, low-value lending. I further discuss this type of lending, and the possible consequences of its exclusion, in my results.

I now complicate the model with the introduction of a ban on payday lending. To assess the theoretical impact and implications of such a ban, let us consider two possible scenarios, Case A and Case B. Under Case A, all payday and pawn consumers are well-informed. They have a full grasp of the cost of the product they are using and have not been coerced into its use in any way by the promises or lies of payday lenders. In this

scenario, the demand curve D_A represents the *true* willingness to pay for payday and pawn shop loans and will not change when the influence of payday lenders is removed by a ban. When such a ban is introduced, the fixed cost *A'* of a payday loan increases to *A''* to reflect the higher costs due to illegality, such as leaving the state to get a payday loan or doing business with an illegal lender. The marginal costs, however, do not change in the event of a ban.

The result of this ban, given Case A, is shown in Figure 2. Due to the increase in *A''*, payday lending is now never the cheaper option. Customers who consumed $Q^*_{Pre\ Ban}$ of payday loans without a ban will, in the event of a ban, consume $Q^*_{Post\ Ban}$ of pawnshop loans at higher price. Thus, if Case A is true, and all pawn and payday consumers are rational and fully-informed, we should see greater use of pawnshops in states where

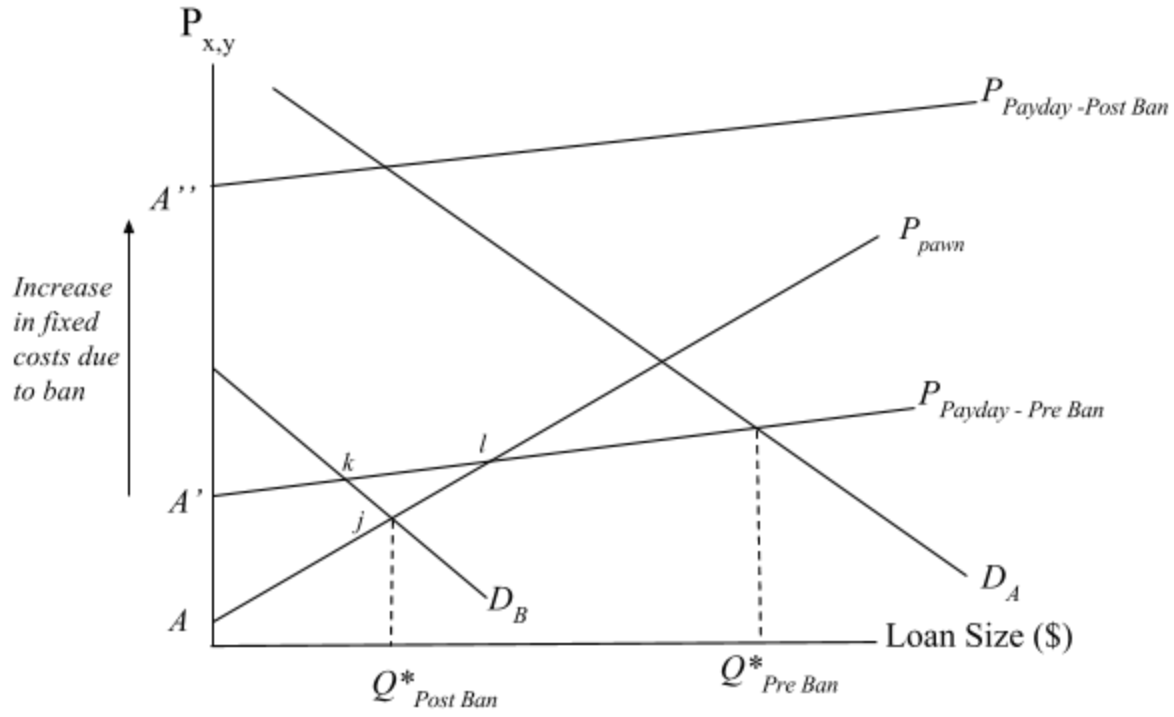
Figure 2: The Impact of a Ban on Payday Lending, Assuming Perfect Information



loans at higher price. Thus, if Case A is true, and all pawn and payday consumers are rational and fully-informed, we should see greater use of pawnshops in states where payday lending is illegal. Further, a payday lending ban, *given Case A*, will make consumers worse off by the area of the triangle *fgh*, as shown in Figure 2, implying that payday lending bans are bad policy. This set of conclusions leads to the dictum that if pawnshop use is higher in states with payday lending bans, I can conclude that payday lending bans harm consumer welfare.

Case B, on the other hand, supposes that not all consumers of payday lending are well-informed. This could occur for a variety of reasons -- the literature finds that AFS consumers tend to be less educated than their peers, and many report not fully understanding the financial details of their payday loan transactions (Lusardi and De Bassa Scheresberg, 2013; Stango, 2012; Elliehausen, 2009). Further, the presence of payday lenders and accompanying advertising or coercion may sway consumers to take out a payday loan who would not have otherwise. In this case, the demand curve D_A does not represent the "true" willingness to pay of consumers. Demand for short-term credit has been altered by misinformation by payday lenders, and will decrease once a payday lending ban removes that distortionary influence. As shown in Figure 3, the consumers' "true" preferences are revealed with the post-ban demand curve D_B, which is to the left of Q_c.. After a ban, consumers under Case B who formerly consumed $Q_{Pre\ Ban}$ now consume $Q_{Post\ Ban}$ a quantity less than before the ban and less than consumers in Case A, at a lower price than before the ban. The benefit to consumers of the ban, under Case B, is given by the triangle *jkl*. It is important to note that, under Case B, customers consume less overall

Figure 3: The Impact of a Ban on Payday Lending, Assuming Imperfect Information



after a ban than they did before due to the curve being to the left of Q_c. Thus, if we do not see a significantly higher use of both payday lenders and pawnshops in states where payday lending has been banned, we can conclude that Case B is true and consumers are being misled by payday lenders, justifying the existence of payday lending bans. In case B, the ban pushes some payday borrows to the pawn market because it increases A to A' (what we saw in Case A). However, this effect is offset to some extent by the fact that overall demand falls as the distortionary information disappears and this reduces the movement of people to the pawn market.

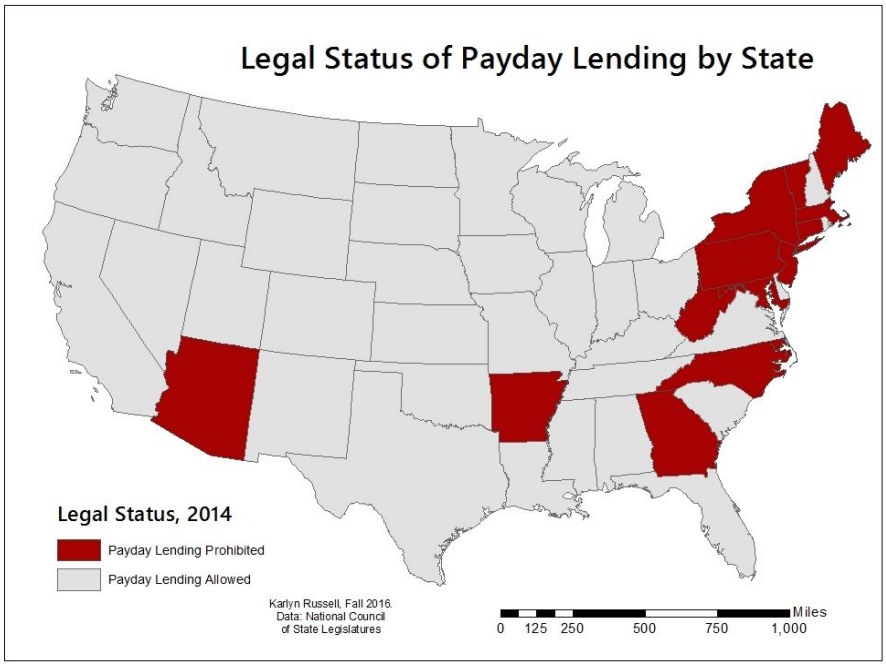
This question of consumer information lies at the heart of the debate over the consumer harm or benefit of payday lending bans. Although we cannot directly assess the decision-making processes of consumers (although there is much empirical work that

proxies it), we can make educated guesses about the rationality of consumers based on their behavior under different regulatory regimes. As shown above, if we observe large increases in pawnshop use in states where payday lending is banned, we can conclude that consumers truly demand AFS credit and have been harmed by the imposition of a ban. Conversely, if we do not observe this spike in pawn activity, or even observe a decrease, we can conclude that payday lenders are artificially inflating consumers' demand for AFS credit in states where payday lending is legal. With this in mind, I turn now to the data and empirical results.

5. Data and Methods

To assess consumer pawnshop use, I use pooled data from the FDIC National Survey of Unbanked and Underbanked Households, which includes cross-sectional data for 2009, 2011 and 2013. The survey, which is a supplement of the Current Population Survey, includes around 55,000 households each year, creating a pool of over 150,000 total observations. Around a quarter of the households in each sample responded "do not know" to the questions: "Have you ever used a payday loan" or "Have you ever used a pawnshop?" Following McKernan et al. (2013), these observations have been eliminated from the sample to allow a more accurate picture of respondents. The resulting pooled sample contains 111,010 observations. Although the questions differ somewhat from year to year, each cross-section includes information on banking status, race, age, education, income and location, all of which are shown in the literature to be important factors in AFS use (Caskey 1994, Stegman 2007, Damar 2009).

Figure 4: Legal Status of Payday Lending by State



As shown above, as of 2014 payday lending was banned in 13 states and Washington, D.C. These states are clustered primarily in the Northeast and South, with the exception of Arizona, which banned payday lending in 2010. Arizona is the only such state where the legal status of payday lending changed between 2009 and 2013. In the 2011-2013 samples, 73% of the observations are located in states where payday lending is legal and 27% are in states where payday lending is banned. For the 2009 sample, when payday lending was legal in Arizona, the sample size was not sufficiently different to alter the distribution of observations.

The 2011-2013 data include information on all 5 types of AFS: auto title lending, check cashing, pawn shops, payday loans and refund-anticipation loans, and 2009 includes only payday lending and pawn shops. Because of the low usage of most types of

AFS[3], I have decided to focus only on pawnshops as a substitute for payday lending. Additionally, as found in the literature, consumers view pawnshops as the next best alternative when payday lending is banned. Thus, it makes sense to focus on pawnshop use ever and use in the past twelve months as response variables. I will be analyzing both to best focus on differences in state legislative regimes; however, the results for use in the past twelve months are more indicative of actual trends in use because respondents may have moved from a state with one legal status to another during the course of their lifetimes.

Following McKernan et al. (2013), I argue that there is unlikely to be reverse causality between state-level policies and AFS use. I feel comfortable making this assumption because, with the exception of Arizona[4], all state-level policies in my sample have been in place for a number of years before the survey, indicating that consumer behavior at this point in time has not influenced legislative decisions. Moreover, in 6 states (Connecticut, Maryland, Massachusetts, New Jersey, New York and West Virginia) payday loans are *de facto* banned - that is, they are illegal not through a specific action of the legislature but rather the absence of a law legalizing them. This legal structure further strengthens my argument against reverse causality.

However, to fully mitigate the effect of endogeneity and improve on McKernan et al, I follow Avery and Samolyk (2011), who simulate a two-stage process to combat unobserved state-level determinants of pawn shop use. Following Avery and Samolyk, I

[3] In 2011, for example, only 3.75% of my sample had ever used a payday loan and 6.05% had ever used a pawn shop.
[4] The change of law in Arizona was due to the expiration of an existing statute allowing payday lending and thus was exogenous from consumer behavior.

began by grouping household-year observations by state and estimating a separate probit regression for each state on demographics alone. The predicted values of these regressions for each household-year reflect the probability that household has used a pawnshop ever (in the past year) based on demographic factors alone.

I next aggregate these predicted values to the state level by calculating the mean predicted use for each state. The mean predicted use for each state is the average probability a citizen of that state has of using a pawn shop ever (in the past year) based on demographics. More importantly, I also calculate the mean residual for each state. These estimates, summarized in Appendix 1, vary from -0.089 in Washington D.C. to 0.021 in Montana. The mean residual is the portion of pawn shop use in each state that is unexplained by demographic factors -- in other words, the state-specific influence of culture, history or other unobserved variance on pawnshop use. These residuals are lowest in states such as New York or Louisiana, whose poorer, more urban, and higher minority populations result in high predicted pawn shop use. Montana and Wyoming have the largest positive residuals, due to their relatively high pawn shop use and predominantly white, rural populations.

I use these state mean residuals to form a new variable, state effects, and employed this variable in my final probit regressions of pawn shop use ever (in the past year). In this way, each state's unique geographic proclivity for use of pawnshops is accounted for by more than just state-level fixed effects, used by McKernan et al. (2013).

6. Results and Analysis

To estimate probit results, I used the following specification:

$$Pawn\ Use = \alpha + \beta_1(Payday\ Ban) + \beta_2(demographics) + \beta_3(year) + \beta_4\ (state\ effects) + \varepsilon$$

Use of pawn is measured as use in the past 12 months, a time period over which respondents are unlikely to have moved from a state with one regulatory regime to another, or use ever. The constant term is α, and Payday Ban is a dummy that takes 1 in the 13 states, plus Washington, D.C, where payday lending is illegal. This is the variable of interest to this paper: if β_1 is positive, and a payday lending ban is found to increase the probability of pawnshop use, I can conclude that consumers are not coerced into consuming payday loans and are harmed by payday lending bans. Conversely, if β_1 is negative and pawn shop use decreases significantly in states where payday lending is banned, I can conclude that consumers' true demand for short-term credit has been distorted by payday lenders and that payday bans are justified.

The coefficient β_2 represents the impact of a vector of demographic characteristics found to be important to AFS use: race (black/nonblack), employment status (employed/unemployed), banking status, where unbanked is defined as having no household access to a checking or savings account, all found to be co-variate with pawnshop use (Caskey, 1994; Stegman, 2007; Lusardi, 2013). The demographic vector also includes education (high school, some college, college degree), age (five groups between 25-65+) and income (five groups between $15,000 and $75,000) that are regressed relative to an omitted category (some high school, under 25 and under $15,000, respectively). Thus, results in these categories should be interpreted as the change in the

probability of using a pawn shop given a change from the lowest class to a different class. The year variable is a dummy that can take 1 for 2011 or 2013, meant to control for both nation- and state-level trends over time, such as the Great Recession. Lastly, the state-level residuals are included as the "state effects" variable. The coefficient on this variable can be interpreted as the percentage point increase in the likelihood of pawn shop use for every 1-point increase in the mean residual for a state. However, because the residuals are all much lower than 1, this coefficient is relevant not in its interpretation but in its stated function of correcting for endogeneity.

Using this approach, I find results in line with the literature, reported in Table 1. Consistent with previous findings, pawnshop use was significantly higher than the constant of 7.36% for pawn use ever and 2.98% for use in the past year for unbanked, unemployed, black, younger and low-income populations. Unbanked populations showed the strongest effect -- being unbanked increased the likelihood of pawnshop use ever by 5.11 percentage points and use in the past year by 1.77 percentage points. This strong effect is due to the accessibility of pawn shops to unbanked consumers and merits further study. Keeping in mind that the coefficients on the categories of age, income and education are given relative to the lowest, omitted category, we see further nuance in the results suggested by the literature. For example, the positive coefficient of 0.563 percentage points on "some college" indicates that the working poor, or those with higher connection to the job market, are the most likely to use pawnshops. However, the negative coefficient of -0.315 percentage points on use in the past year for this group

Table 1: Probit Estimates for the Likelihood of using a Pawn Shop - Avery

VARIABLES	(1) Pawn Use Ever	(2) Pawn Use in Past 12 Months
=1if Ban	-0.00227	0.000359
	(0.00159)	(0.000993)
State Effects	0.760***	0.259***
	(0.0296)	(0.0184)
=1 if Employed	-0.0162***	-0.00711***
	(0.00169)	(0.00104)
=1 if Black	0.0187***	0.00639***
	(0.00242)	(0.00146)
=1 if Unbanked	0.0511***	0.0177***
	(0.00420)	(0.00219)
High School	-0.00286	-0.00379***
	(0.00214)	(0.00111)
Some College	0.00563**	-0.00315***
	(0.00228)	(0.00116)
College Degree	-0.0271***	-0.0143***
	(0.00217)	(0.00122)
Age 25-34	0.0159***	0.00421**
	(0.00347)	(0.00197)
Age 35-44	0.0205***	0.00464**
	(0.00358)	(0.00200)
Age 45-54	0.0121***	0.00325*
	(0.00330)	(0.00188)
Age 55-64	-0.0124***	-0.00764***
	(0.00275)	(0.00136)
Over 65	-0.0529***	-0.0216***
	(0.00192)	(0.00104)
Yearly Income		
$15,000 - $30,000	-0.00842***	-0.00208*
	(0.00188)	(0.00106)
$30,000 - $50,000	-0.0267***	-0.00867***
	(0.00166)	(0.000937)
$50,000 - $75,000	-0.0383***	-0.0138***
	(0.00156)	(0.000882)
Over $75,000	-0.0593***	-0.0235***
	(0.00168)	(0.00107)
=1 if 2011	0.00830***	-0.000642
	(0.00170)	(0.000813)
=1 if 2013	0.0107***	
	(0.00178)	
Observations	111,010	72,186
State FE	NO	NO
Year FE	YES	YES

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

suggests that other methods may have supplanted pawn shop use for the working poor, which I will discuss more later.

Neither pawn shop use in the past year or pawn shop use ever showed any significance. Compared to a constant term of 7.36% for pawn shop use ever and 2.98% for pawn shop use in the past year, a ban on payday lending decreases the likelihood of pawn shop use ever insignificantly by .22 percentage points, and does not change the likelihood of use of a pawnshop in the past year. As these initial results clearly show, banning payday lending does *not* cause a significant increase in the use of pawnshops, which indicates, as discussed above, that payday lenders artificially create demand for their products. Instead of rushing to pawn shops in the event of a payday lending ban, we see instead less consumption of AFS credit overall, consistent with Case B discussed above. This result provides support for the notion that payday loans are harmful to customers and indicates that payday lending bans may be justified.

However, it is also important to consider the "double counting" of demographic features in the state residuals model: the residual calculated for each state captures all of the unobserved conditions that may be affecting pawn shop use in that state, including the presence of a payday lending ban. Thus, the non-results generated by this approach may be misleading and underestimate the actual impact of a payday lending ban. To explore these results further, I next use a basic state fixed-effects model, reported in table 3.

The results from this fixed effects regression are very similar to the first state residuals model, with similar increases in likelihood of use reported for black, unbanked and unemployed consumers. Also present were the decreasing usage over age 55 and for

Table 3: Probit Estimates for the Likelihood of Using a Pawn Shop - FE

VARIABLES	(1) Pawn Use Ever FE	(2) Pawn Use in Past 12 Months FE
=1 if Ban	0.00949	0.0133**
	(0.0130)	(0.00607)
=1 if Employed	-0.0159***	-0.00677***
	(0.00168)	(0.00103)
=1 if Black	0.0135***	0.00452***
	(0.00239)	(0.00141)
=1 if Unbanked	0.0493***	0.0166***
	(0.00415)	(0.00212)
High School	-0.00166	-0.00327***
	(0.00215)	(0.00111)
Some College	0.00687***	-0.00249**
	(0.00229)	(0.00116)
College Degree	-0.0258***	-0.0136***
	(0.00218)	(0.00122)
Age 25-34	0.0158***	0.00417**
	(0.00345)	(0.00194)
Age 35-44	0.0204***	0.00457**
	(0.00356)	(0.00198)
Age 45-54	0.0124***	0.00326*
	(0.00329)	(0.00186)
Age 55-64	-0.0120***	-0.00743***
	(0.00274)	(0.00134)
Over 65	-0.0522***	-0.0211***
	(0.00191)	(0.00103)
$15,000 – $30,000	-0.00854***	-0.00213**
	(0.00186)	(0.00105)
$30,000 – $50,000	-0.0264***	-0.00847***
	(0.00165)	(0.000925)
$50,000 – $75,000	-0.0378***	-0.0134***
	(0.00156)	(0.000874)
Over $75,000	-0.0585***	-0.0229***
	(0.00169)	(0.00107)
=1 if 2011	0.00815***	-0.000559
	(0.00170)	(0.000800)
=1 if 2013	0.0104***	
	(0.00177)	
Observations	111,010	72,186
State FE	YES	YES
Year FE	YES	YES

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

college graduates seen in the first model. Indeed, the only substantial difference between the models is the coefficient on payday lending bans for pawn shop use in the past year, shown in table 4. Whereas payday lending bans were shown to have no effect on the use of pawn shop using the state residuals approach, using fixed effects generates a significant 1.33 percentage point increase in the likelihood of using a pawn shop in the past year.

In interpreting these fixed effect results, it is important to recall that the only variation comes from Arizona, which was the only state where payday lending changed status between 2009 and 2013. Thus, these coefficients should be interpreted as the increased likelihood of pawn shop use in Arizona after payday lending became legal in 2010. The positive 1.33 percentage point increase in the likelihood of use in the past year offers support to the Case A, that payday lending consumers are fully informed and, especially in the years immediately following a ban, do demand more credit from pawn

Figure 4: Comparison of Fixed Effects and State Residuals Models

MODELS	Payday Status	Use Ever	Use in Past Year
(State Residuals, Year FE)	Legal	0.0736***	0.0298***
		(0.00088)	(0.0007)
	Banned	0.0710	0.0304
		(0.00157)	(0.0013)
(State FE, Year FE)	Legal	0.0707***	0.0267***
		(0.00299)	(0.0012)
	Banned	0.0815	0.0468***
		(0.0119)	(0.0082)

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

shops than they would have otherwise. However, this effect needs to be examined more fully before any solid conclusions can be drawn - only after a longer period of time can we make any definitive statements about the impact of a payday lending ban in Arizona. To summarize, pawn shop use was found to be unchanged in states with payday lending bans, although initial results from Arizona suggest that pawn shop use has increased after payday lending was banned there in 2010. Before reaching any further conclusions about the meaning of this result, it important to address possible sources of error in this analysis, such as the problem of co-location and other, undiscussed alternatives to pawn shops and payday loans.

Although I attempted to control for most possible determinants of pawn shop use as found in the literature, it is impossible to perfectly isolate the impact of a payday lending ban on consumer behavior. For example, a factor overlooked in my analysis is the tendency of pawnshops and payday lenders to operate together. When the two stores co-locate, they can take advantage of each other's customer base and increase the number of loans made at both establishments. If one of these stores closes, the other could suffer a loss of business and overall volume of pawnshop business could decline, affecting the observed declines in the use of pawnshops in states where payday lending has been banned. In this manner, co-location of payday lenders and pawn shops could affect the results despite the inclusion of state fixed effects or residuals.

It is also essential to discuss the possibility that consumers in states with bans may opt out of the AFS market altogether by seeking loans from family or friends instead of turning to pawn shops. If the marginal cost of such a loan is lower than that of a pawn

shop loan - which it almost certainly would be - then a loan from a friend or family member is actually the utility-maximizing option. However, given that AFS customers tend to be poorer than average, a major drawback for consumers of turning to family or friends would be the likely limited amount of money available to borrow, if any, and a possible straining of relationships. This exit of consumers from the AFS market could also explain a significant portion of the observed differences in pawn shop use rates, and certainly merits further exploration and research.

Acknowledging the possible limitations of this study, the result remains that use of pawn shops ever and in the past year is unchanged in states where payday lending is illegal. The implications of this result are profound: if pawnshop use is lower or unchanged in states where payday lending is illegal, then Case B holds: demand for payday credit does not represent the true preferences of consumers, but instead is the product of distortion and coercion by payday lenders. In other words, instead of taking away a valuable choice that consumers demand, as payday lenders claim, it seems that payday lending bans do protect consumers from the manipulation of their preferences. Thus, regulations may save consumers from the foolish decision to take out a payday loan or use a pawnshop and protect them from harm. If supported by further rigorous empirical work, this result would be a huge victory for proponents of aggressive regulations on payday lending and would justify expanding bans into more states, as well as finally providing a clear look into the complex AFS use decisions.

7. Conclusion

Clearly, the debate on the impacts of payday lending bans on consumers is far from settled. On one hand, theory predicts that, under conditions of perfect information, a ban on payday lending can indeed limit consumer choice and reduce consumer welfare. On the other hand, the literature suggests that these conditions of perfect information do not exist - instead, payday lending consumers are ill-informed, undereducated and often intimidated into making irrational choices. I develop theory that suggests that, under conditions of coercion and imperfect information, consumers should consume less AFS credit overall in the event of a ban.

The observed lack of an increase in pawn shop use ever and in the past year indicates that consumers are not operating with perfect information in the payday lending market. Instead, demand for payday lending is distorted in states where payday lending is legal, and that bans may be in consumers' best interest as it prevents them from making choices that harm their welfare. However, preliminary results from Arizona suggest that, in the years following a payday lending ban, consumers may indeed turn to pawn shops to fill their need for short-term credit.

Further research should investigate more fully the decision to borrow, a choice which has been heavily studied in the payday lending industry but never fully examined for pawnshops. This could shed more light on the relationship between these two products, as well as the possibly exploitive nature of both. Furthermore, data need to be collected to assess with precision the true number of pawnshops and payday lenders, as well as the behavior of consumers with regard to possible outside options such as a loan

from a family member. Through rigorous study and analysis, I hope to abandon the propaganda that currently dominates the conversation on the payday lending industry and instead employ a full, nuanced understanding of the subject to truly protect the welfare of all AFS consumers.

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Appendix 1: State Residuals

STATES	AVERAGE RESIDUAL	STATES	AVERAGE RESIDUALS
AL	-0.0498591	MT	0.0220771
AK	0.0055802	NE	-0.0278872
AZ	-0.0392596	NV	-0.0174707
AR	-0.0086126	NH	-0.0442458
CA	-0.0652358	NJ	-0.0658705
CO	-0.0156718	NM	-0.0464399
CT	-0.0473997	NY	-0.0764227
DC	-0.0894833	NC	-0.0425657
DE	-0.0772693	ND	-0.0325839
FL	-0.0475172	OH	-0.0581623
GA	-0.0521951	OK	-0.0101459
HI	-0.0426925	OR	-0.0111481
ID	-0.0184674	PA	-0.0589582
IL	-0.0588004	RI	-0.055236
IN	-0.0519284	SC	-0.0332733
IA	-0.0339753	SD	-0.0100422
KS	-0.024586	TN	-0.041353
KY	-0.0404903	TX	-0.0141966
LA	-0.0805042	UT	-0.0322486
ME	-0.0186184	VT	-0.0699154
MD	-0.0518429	VA	-0.0504055
MA	-0.0569941	WA	-0.0082081
MI	-0.0545277	WV	-0.0567856
MN	-0.0350839	WI	-0.0612003
MS	-0.0823817	WY	0.0000648
MO	-0.0455266		

Note: A positive aggregated residual indicates pawn shop use higher than what would be expected based on demographics alone. A negative aggregated residual indicates lower pawn shop use than would have been expected based on demographics.