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Abstract

We define predatory lending as a welfare-reducing provision of credit. Using a textbook model, we show that lenders profit if they can tempt households into "debt traps," that is, overborrowing and delinquency. We then test whether payday lending fits our definition of predatory. We find that in states with higher payday loan limits, less educated households and households with uncertain income *are* less likely to be denied credit, but are *not* more likely to miss a debt payment. Absent higher delinquency, the extra credit from payday lenders does not fit our definition of predatory. Nevertheless, it is expensive. On that point, we find somewhat lower payday prices in cities with more payday stores per capita, consistent with the hypothesis that competition limits payday loan prices.

Key words: predatory, payday, consumer

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"There is no definition of predatory lending. I don't know how we can hope to address the problem before we have decided what it is." (Senator Phil Gramm, *American Banker*, August 24, 2000).

1 Introduction

"Predatory" is how reformers–consumer advocates, journalists, lawyers, legislators and some bank regulators–condemn lending practices in the booming subprime credit market. The alleged predators are sub-prime mortgage and payday lenders. Their prey? The lower income, less educated households on the demand side of these growing consumer credit markets.[1]

Concern about predatory lending is mounting (Figure 1). The term began appearing in *American Banker* in 1994. Appearances were rare until 2000. By 2004, weekly and even daily appearances were common.

Despite growing concerns about predatory lending, and even regulation to curb it, there seems to be no general definition of predatory lending. The usual criticism is of "unaffordable" credit–loans made at such high rates or in such large quantities that borrowers cannot afford to repay the credit without sacrificing their future standard of living, or in the worst case, their home.

To economists, this predator-prey concept of credit seems foreign. If credit is so expensive that lenders are earning abnormal profits (given their risks and costs), why don't new lenders enter the market to compete rates down to fair levels. "Unaffordable" credit also sounds peculiar; how can lenders profit if borrowers cannot repay?

This paper essays predatory lending from an economists' perspective. We define predatory lending as a welfare *reducing* provision of credit. That definition seems general enough to cover some of the specific practices–overlending and overcharging, deception, targeting certain consumer segments –condemned by reformers. We show how households can be made worse of by a voluntary credit transaction if lenders deceive households about some variable that increases households' demand for credit, like their income.

[1]For a critique of the predatory aspects of payday lending, see King, Parrish, and Tanik (2006)

Information asymmetries are common in credit market models, but the usual assumption, at least in commercial lending, is that borrowers are the better informed party and that lenders have to screen and monitor to assess whether firms are creditworthy. The opposite asymmetry, as we assume here, does not seem implausible in the context of consumer lending. "Fringe" borrowers are less educated than mainstream borrowers (Caskey 2003), and many are first-time borrowers (or are rebounding from a failed first foray into credit). Lenders know from experience with large numbers of borrowers, whereas the borrower may only have their own experience to guide them. Credit can also be confusing; after marriage, mortgages are probably the most complicated contract most people ever enter. Given the subtleties involved with credit, and the supposed lack of sophistication of sub-prime borrowers, our assumption that lenders know better seems plausible.

While lenders might deceive households about several variables that influence household loan demand, we focus on income. We suppose that lenders exaggerate household's future income in order boost loan demand. Our borrowers are gullible, in the sense that they can be fooled about their future income, but they borrow rationally given their beliefs. Fooling borrowers is costly to lenders, where the costs could represent conscience, technological costs (of learning the pitch), or risk of prosecution. The upside to exaggerating borrowers' income prospects is obvious–they borrow more. As long as the extra borrowing does not increase default risk too much, and as long as deceiving borrowers is easy enough, income deception and predatory–welfare reducing–lending may occur.

After defining predatory lending, we test whether *payday* lending fits our definition. Payday lenders make small, short-term loans to mostly lower-middle income households. The business is booming, but critics condemn payday lending, especially the high fees and frequent loan rollovers, as predatory. Many states prohibit payday loans outright, or *indirectly*, *via* usury limits.

To test whether payday lending qualifies as predatory, we compared debt and delinquency rates for households in states that allow payday lending to those in states that do not. We focus especially on differences across states households that, according to our model, seem more vulnerable to predation: households with more income uncertainly or less education.

We use smoking as a third, more ambiguous, proxy for households with high, or perhaps

hyperbolic, discount rates. In general, high discounters will pay higher future costs for a given, immediate, gain in welfare. Smokers' seem to fit that description. What makes the smoking proxy ambiguous is that smokers may have hyperbolic, not just high, discount rates. Hyperbolic discount rates decline over time in a way that leads to procrastination and self-control problems (Laibson 1997). The hyperbolic discounter postpones quitting smoking, or repaying credit. Without knowing whether smokers discount rates are merely high, or hyperbolic, we will not be able to say whether any extra debt for smokers in payday states is welfare reducing.[2]

Given those proxies, we use a difference-in-difference approach to test whether payday lending fits our definition of predatory. First we look for differences in household debt and delinquency across payday states and non-payday states, then we test whether those difference are higher for potential prey. To ensure that any such differences are not merely state effects, we difference a third time across time by comparing whether those differences changed after the advent of payday lending circa 1995. That triple difference identifies any difference in debt and delinquency for potential prey in payday states after payday lending was introduced.

Our findings seem mostly inconsistent with the hypothesis that payday lenders prey on, i.e., lower the welfare of, households with uncertain income or households with less education. Those types of households who happen to live in states that allow unlimited payday loans are less likely to report being turned down for credit, but are *not* more likely, by and large, to report higher debt levels, contrary to the overborrowing prediction of our model. Nor are such households more likely to have missed a debt payment in the previous year. On the contrary, households with uncertain income who live in states with unlimited payday loans are *less* likely to have missed a debt payment over the previous year. The latter result is consistent with claims by defenders of payday lending that some households borrow from

[2]Consistent with a high discount rate, Munasinghe and Sicherman (2000) discover that smokers have flatter wage profiles and they are willing to trade more future earnings for a given increase in current earnings. Gruber and Mulainathan (2002) find that high cigarette taxes make smokers "happier," consistent with hypberbolic discount rates (because taxes help smokers commit to quitting). DellaVigna and Malmendier (2004) show how credit card lenders can manipulate hyperbolic discounters by front-loading benefits and back-loading costs.

payday lenders to avoid missing payments on other debt. On the whole, our results seem consistent with the hypothesis that payday lending represents a legitimate increase in the supply of credit, not a contrived increase in credit demand.

We find some interesting differences for smokers, but those differences are harder to interpret in relation to the predatory hypothesis without knowing *apriori* whether smokers are hyperbolic, or merely high, discounters.

We also find, using a small set of data from different sources, that payday loan rates and fees decline significantly as the number of payday lenders and pawnshops increase. Reformers often advocate usury limits to lower payday loan fees but our evidence suggests that competition among payday lenders (and pawnshops) works to lower payday loan prices.

Our paper has several cousins in the academic literature. Ausubel (1991) argues that credit card lenders exploit their superior information about household credit demand in their marketing and pricing of credit cards. The predators in our model profit from their information advantage as well. Our concept of income delusion or deception also has a behavioral flavor, as well, hence our use of smoking as a proxy for self-control problems. Brunnermeier and Parker (2004), for example, imagine that households *choose* what to expect about future income (or other outcomes). High hopes give households' current "felicity," even if it distorts borrowing and other income-dependent decisions. Our households have high hopes for income, and they make bad borrowing decisions, but we do not count the current felicity from high hopes as an offset to the welfare loss from overborrowing.

Our costly falsification (of household income prospects) and costly verification (by counselors) resemble Townsend's (1979) costly state verification and Lacker and Weinbergs' (1989) costly state falsification. The main difference here is that the falsifying and verifying comes before income is realized, not after.

More importantly, we hope our findings inform the current, very real-world debate, around predatory lending. The stakes in that debate are high: millions of lower income households borrow regularly from thousands of payday loan offices around the country. If payday lenders raise household welfare by relaxing credit constraints, anti-predatory legislation may lower it.

2 Payday Lending

Payday lenders make small, short-term loans to households. The typical loan is about $300 for two weeks. The typical fee is $15 per $100 borrowed. Lenders require two recent pay stubs (as proof of employment), and a recent bank account statement. Borrowers secure the loan with a post-dated personal check for the loan amount plus fees. When the loan matures, lenders deposit the check.

Payday lending evolved from check cashing much like bank lending evolved from deposit taking. For a fee, check cashiers turn personal paychecks into cash. After cashing several paychecks for the same customer, lending against *future* paychecks was a natural next step.

High finance charges is the main criticism against payday lenders. The typical fee of $15 per $100 per two weeks implies an annual interest rate of $15x365/14$, or 390 percent. Payday lenders are also criticize for overlending, in the sense that borrowers often refinance their loans repeatedly, and for "targeting" women making the transition from welfare-to-work (Fox and Mierzewski 2001) and soldiers (Graves and Peterson 2004).

Despite their critics, payday lending has boomed. The number of payday advance offices grew from 0 in 1990 to $14,000$ in 2003 (Stegman and Harris 2003). The industry originated $8 to $14 billion in loans in 2000, implying 26-47 million individual loans. Rapid entry suggests the industry is profitable.

Payday lenders present stiff competition for pawnshops, even though the internet, namely E-bay, significantly foreclosure costs for pawnshops (Caskey 2003). The number of pawn shops in the U.S. grew about six percent per year between 1986 and 1996, but growth essentially stalled from 1997 to 2003. Prices of shares in EZCorp, the largest, publicly traded pawn shop holder, were essentially flat or declining between 1994 and 2004, while Ace Cash Express share prices, a retail financial firm selling check cashing and payday loans, rose substantially over that period (Figure 4). EZCorp CEO, Joseph Rotunday, blamed payday lenders for pawnshops' dismal performance:

> The company had been progressing very nicely until the late 1990s.... (when) a new product called payroll advance/payday loans came along and provided our customer base an alternative choice. Many of them elected the payday loan over

the traditional pawn loan. (Quoted by Caskey (2003) p.14).

Payday lending is heavily regulated (Table 1). As of 2001, eighteen states effectively prohibited payday loans *via* usury limits, and most other states prices, loan size, and loan frequency per customer (Fox and Mierzwinski 2001). Note that the payday loan limit ranges from 0 (where payday loans are illegal) to 1250. Nine states allow unlimited payday loans.

Payday lenders have circumvented usury limits by affiliating with national or state chartered banks, but the Comptroller of the Currency–the overseer of nationally chartered banks—recently banned such affiliations. The Federal Deposit Insurance Corporation still permits payday lenders to affiliate with state banks, but recently restricted those partnerships (Graves and Peterson 2005).

Regulatory risk–the threat of costly or disabling legislation in the future–looms large for Payday lenders. The Utah legislature is reconsidering its permissive laws governing payday lending. North Carolina recently drove payday lenders from the state by expressly outlawing the practice.

Heavy regulation increases the cost of payday lending. High regulatory risk increases limits entry into the industry and increases the expected return required by industry investors. Driving up costs and driving away investors may be exactly what regulators intended if they view payday lending as predatory.

3 Defining Predatory Lending

We define predatory lending as a welfare reducing provision of credit. Households can be made worse off by borrowing if lenders can deceive households into borrowing more than is optimal. Excess borrowing reduces household welfare, and may increase default risk.

We illustrate our concept of predatory lending in a standard model of household borrowing. Before we get to predatory lending, we review basic principles about welfare *improving* lending, the type that lets households maintain their consumption despite fluctuations in their income.

The model has two periods: today (period zero) and payday (period one. Household income goes up and down periodically, but not randomly (for now): income equals zero today

and y on payday. If households consume C_t in period t, their utility is $U(C_t)$.Household welfare is the sum of utility over both periods: $U(C_0) + \delta U(C_1)$, where δ equals the household's time rate of discount. Households with high δ value current consumption highly relative to future consumption. In other words, high discounters are impatient.

A digression here on discount rates serves later discussion. In classical economics δ is constant. If δ changes over time, so does household behavior, even if nothing else changes. If $\delta(t)$ is hyperbolic, households will postpone unpleasant tasks until current consumption does not seem so precious relative to future consumption (Laibson 1997). With hyperbolic discounting, that day never arrives, so hyperbolic discounters have behavioral problems: they procrastinate. They may never repay debt, much less begin saving. Hyperbolic discounters who start smoking may never quit.

Returning to the model, if the marginal utility of consumption (U') is diminishing, households will demand credit to reduce fluctuations in their standard of living. Households without credit, however, must fend for themselves (autarky). Welfare under autarky equals $U(0) + \delta U(y)$. The fluctuations in consumption for households without credit make autarky a possible worst case, and hence, a good benchmark for comparing cases *with* credit.

If households borrow B at interest rate r, welfare equals $U(B) + \delta U(y - (1 + r)B)$. Borrowing increases utility in period zero, when the proceeds are consumed, but lowers utility in period one, when households pay for their borrowing. Rational, informed households trade off the good and bad side of borrowing; they borrow until the marginal utility of consuming another unit today just equals the marginal, discounted *dis*utility of repaying the extra debt on payday:

$$U'(B) = \delta(1 + r)U'(y - (1 + r)B). \tag{1}$$

Equation (1) determines household loan demand as a function of their income, their discount rate, and the market interest rate: $B(y, \delta, r)$. For standard utility functions, household loan demand is increasing in income and decreasing in the discount factor and interest rate: $B_y > 0; B_\delta < 0; B_r < 0$. Household welfare with optimal borrowing equals $U(B(y, r, d)) + \delta U(y - (1 + r)B(y, r, \delta))$. As long as households follow (1), their welfare with positive borrowing must be higher than without (autarky).

The welfare gain from borrowing depends on the cost of credit production. Suppose the

cost of lending $\$B$ to a particular household equals $(1+\rho)B + f$, where ρ represents the opportunity cost per unit loaned and f is the fixed cost per loan. Think of f as the cost of record-keeping and credit check required for each loan, however large or small the loan may be. If the going price for loans is $(1+r)$ per unit borrowed, the lenders' profits equal $(r-\rho)B - f$.

With perfect competition among lenders, the loan interest rate is competed down until it just covers the costs of the loan: $r = \rho + f/B$. Equilibrium r and B are determined where that credit supply curve equals demand (1).

Equilibrium in the payday credit market is illustrated in Figure (3). If fixed costs per loan are prohibitively high, the market may not exist. Perhaps the payday lending technology lowered the fixed cost per loan enough to make the business viable.[3] Before the advent of payday lending, households who applied to banks for a very small, short-term loan may have been denied.

Fixed costs per loan imply that smaller loans will cost more per dollar borrowed than larger loans. That means households with low credit demand will pay higher rates than households with high loan demand. Loan demand is increasing in income, so high income households who demand larger quantities of credit will enjoy a "quantity" discount, while lower income households will pay a "small lot" premium, or penalty. That price "discrimination" is not invidious, however; the higher cost of smaller loans reflects the fixed costs of lending. The high price of payday loans may partly reflect the combination of fixed costs and small loan amounts (Flannery and Samolyk 2005).

A usury limit lowers household welfare. Suppose the maximum legal interest rate is $\overline{r}$. At that maximum rate, the minimum loan that lenders' cost is $f/(\overline{r} - \rho) = \underline{B}$. Low income households with loan demand less than $\underline{B}$ face a beggar's choice: borrow $\underline{B}$ at $\overline{r}$ or do not borrow at all. Such households would be willing to pay more to to avoid going without credit, so raising the usury limit would raise welfare for those households.

Competition is another key determinant of how much households gains from borrowing.

[3] Alternatively, or additionaly, the demand for small, short term loans may have increased in the mid 1990s. The welfare reform then almost certainly increased demand for such credit as households who once "worked" at home for the government were forced to go to work in the market.

Even with no competition – monopoly–households cannot be worse off than under autarky. The monopolist raises interest rates until the marginal revenue from higher rates equals the marginal cost from lower loan demand:

$$B(y,r) = -(r-\rho)B_r(y,r). \tag{2}$$

At that monopoly interest rate, r^m, household loan demand equals $B(y,r^m)$.Household welfare under monopoly equals $U(B_r(y,r^m))+\delta U(y-(1+r^m)B_r(y,r^m))$. Welfare is lower under monopoly because credit costs more and their standard of living fluctuates more (because costly credit reduces their demand for credit) If households borrow from the monopolist, however, they must better off than without credit.

In sum, welfare for rational households is highest if credit is available at competitive prices. If households choose to borrow, they must be at least as well off as they were without credit. Limiting loan rates cannot raise household welfare and may reduce it. Monopoly lenders lower household welfare, but even with a monopolist, households cannot be worse off than without credit.

The high cost of payday lending may partly reflect fixed costs *per* loan. Before payday lending, those fixed costs may have been prohibitive; very small, short-term loans may not have been worthwhile for banks. The payday lending technology may have lowered those fixed costs, thus increasing the supply of credit to low income households demanding small loans. That version of the genesis of payday lending suggests the innovation was welfare improving, not predatory.

3.1 Predation by Income Deception

In the textbook model household welfare cannot be lower than under autarky because households are fully informed and rational. Here we show households how can be made worse off than without credit if predatory lenders can delude households about their (households') future income.

Suppose that by spending $C(\tau)$, lenders can convince a prospective borrower that her income on payday will be $y+\tau$. The cost C can be interpreted variously as the cost of a guilty

conscience, the risk of prosecution, or the resources spent conning households into believe τ. Households are increasingly skeptical as deception increases: $C'(\cdot) > 0$ and $C''(\cdot) > 0$. $C(\tau)$ might be lower for more gullible households and higher for the more skeptical ones. For the fully rational borrower, the costs of deception are infinite: $C(0) = \infty$.

Our model of costly income deception takes us far from, and in some ways behind, current techniques for modelling information asymmetries. Borrowers here not fully informed, as they operate under the assumption that next period equals $y + \tau$, and that is plainly wrong.[4]

Our income deception story is closer to the facts than it is to theory. In a study of households' choice of credit cards plans, Agarwal, Chomsisenghat, Liu, Souleles (2005) find that about 40 percent of households choose sub-optimal plans. Ausubel (1991, 1999) and Shui and Ausubel (2004) find evidence that credit card holders systematically *underestimate* how much they owe or how long they (will) owe it. Underestimating borrowing is not much different from *overestimating* future income.[5]

Though gullible, households borrow optimally given their perceived income. That means they are on their demand curve for credit, where their demand reflects their deluded income expectations. Thus, profits for a predatory lender are $(r-\rho)B(y+\tau, r)-C(\tau)-f$. Optimal τ is determined by the first-order condition

$$(r - \rho)B_y(y + \tau, r) = C'(\tau), \tag{3}$$

The predator exaggerates income to the point where the marginal revenue from exaggerating household income (due to increased loan demand) equals the marginal cost of exaggeration.

[4]The models in Townsend (1979) and Lacker and Weinberg (1989) feature costly income verification and falsification (respectively), but we reverse the timing and roles. Here it is the financiers who falsify, not the borrowers, and the deception occurs before deals are done. Alternatively, one could model the information asymmetry here as an adverse selection problem where households know that some creditors misrepresent households' creditworthiness, but the mis-representers are hard to distinguish from the honest creditors. While that might be an interesting problem, if subprime borrowers can solve that subtle inference problem, why worry about them?

[5]Income deception is also a common charge against another class of lenders accused of predatory lending: subprime mortgage lenders. In a survey by Stock (2001) of households with foreclosed subprime mortgages in Dayton, Ohio, 42 percent reported that mortgage lender encouraged them to borrow more than they initially intended.

Note that the incentive to exaggerate income is increasing with the interest spread on loans. In a perfectly competitive loan market spreads are zero so lenders would have no incentive to falsify. Indeed, they could not *afford* to falsify; the costs of falsification would require higher spreads to compensate, so borrowers would switch to cheaper, honest lenders. Costly predation can occur only if imperfect competition enables predators to charge higher than competitive spreads.

A predatory-*monopolist* gets to set the loan rate as well. The first- order condition for r is:

$$B(y+\tau, r) = -(r-\rho)B_r(y+\tau, r). \tag{4}$$

The predatory-monopolist raises interest rates until the marginal revenue from higher rates equals the marginal cost in terms of lower loan demand.

The predatory-monopolist does *not* always charge a higher loan rate than an ordinary monopolist. To see this, express (4) in elasticity terms:

$$\frac{r-\rho}{r} = -\frac{B(y+\tau, r)}{r}\frac{1}{B_r(y+\tau, r)} = \frac{1}{\varepsilon_r\left(y+\tau, r\right)}$$

where $\varepsilon_r\left(y+\tau, r\right)$ is the elasticity of loan demand with respect to r. Let r_{pm} and r_m denote the optimal r charged by a predatory-monopolist and ordinary monopolist, respectively. Then $r_{pm} > r_m$ if and only if

$$\frac{r_{pm}-\rho}{r_{pm}} > \frac{r_m-\rho}{r_m},$$

or equivalently,

$$\varepsilon_r\left(y+\tau, r_{pm}\right) < \varepsilon_r\left(y, r_m\right).$$

For households with CRRA utility, the elasticity of loan demand with respect to r does not vary with income, i.e., $\varepsilon_r\left(y+\tau, r\right) = \varepsilon_r\left(y, r\right)$.[6] CRRA households with higher income are no less averse to high interest than those with lower income, so when dealing with CRRA households, a predatory-monopolist *lends* more than an ordinary monopolist but charges the same interest rate.

For other utility functions, exponential for example, the predatory-monopolist lends more *and* charges higher interest rates than an ordinary monopolist. The exception for CRRA

[6] If $U\left(c\right) = (c^{1-\gamma}-1)/(1-\gamma)$, (1)implies $B\left(y, r\right) = y \cdot b\left(r\right)$.

utility is important, nonetheless, as it implies predators are better detected by how much they lend, rather than how much they charge. We use that result later when we test whether payday lending is predatory.

3.1.1 Uncertain Income

When household income is uncertain, predators have another angle: they can exaggerate the probability the household income will be high, thus boosting household loan demand. Uncertain income also means default is possible. If predators accentuate the positive enough, they may push borrowers to the brink of default.

Suppose future income is high (Y) or low (y) with odds π and $1-\pi$. Expected utility on payday depends on the risk of default, and hence, π. It turns out that households with π below some threshold limit their borrowing to avoid that risk. In deriving household's loan demand below, we impose the no-default constraint that $B \leq y/(1+r)$, but then show that the constraint will not bind for households with π below some threshold. Low π households limit their borrowing to avoid owing all their income on when their pay is low. We then show how predators, by exaggerating π, can push households to the brink of default.

Household's choose B to maximize the Lagrangian function:

$$U(B) + \delta[\pi U(Y-(1+r)B) + (1-\pi)U(y-(1+r)B)] + \lambda[y/(1+r) - B],$$

The FOC for B is

$$U'(B) - \delta(1+r)[\pi U'(Y-(1+r)B) + (1-\pi)U'(y-(1+r)B)] = \lambda. \tag{5}$$

The no-default constraint is slack ($\lambda = 0$) if and only if

$$\pi < \overline{\pi} \equiv \frac{U'(y/(1+r))/\delta(1+r) - U'(0)}{U'(Y-y) - U'(0)}. \tag{6}$$

Granting that, household loan demand increases with π: $B_\pi(Y, y, \pi, r) > 0$. The higher odds of a high paycheck decreases the expected marginal disutility of owing money when pay is low, so households borrow more today.

Suppose predatory lenders can exaggerate π by τ at cost $C(\tau)$. Predators' exaggeration cannot exceed $\overline{\pi} - \pi$, or else households would borrow to the hilt ($B = y/(1 + r)$) and default would be possible. Default is not necessarily bad for the lender if they raise rates to compensate, but once default is possible, household loan demand *decreases* with π. It seems implausible to imagine predators that exaggerate π to increase loan demand, then attenuate π to increase loan demand even further. "Jerking" borrowers around would surely tip them off.

The predator maximizes the Lagrangian function

$$(r - \rho)B(Y, y, \pi + \tau, r) - C(\tau) - f \quad + \mu(\overline{\pi} - \pi - \tau). \tag{7}$$

The FOC for τ is

$$(r - \rho)B_\tau(Y, y, \pi + \tau, r) - C'(\tau) - \mu = 0. \tag{8}$$

Optimal $\tau = \overline{\pi} - \pi$ if and only if the marginal revenue from exaggerating π exceeds the marginal cost at that point: $(r - \rho)B_\tau(Y, y, \overline{\pi}, r) > C'(\overline{\pi} - \pi)$. In that case, predators exaggerate π until households borrow $y/(1 + r)$, putting them at the brink of default whenever their pay is low. Absent predation, low π households would never default. Thus, when household income is uncertain, the overborrowing elicited by predators increases the probability of default. We test that prediction later.

3.1.2 Does Risk Deter Predation?

If the probability of default is increasing in the amount households owe (unlike in the model above), lenders incentive to exaggerate income is diminished. Risk may not deter that incentive altogether, however. Suppose household income is distributed $f(y)$, with cumulative distribution $F(y)$. If a household owes $(1 + r)B$, they default with probability $F[(1 + r)B]$. At the margin, the incentive to exaggerate income depends on the *hazard rate* of default: $f[(1+r)B]/\{1-F[(1+r)B]\}$. If that hazard rate is sufficiently flat at the household's optimal

debt level (given the true distribution of income), predators still profit from exaggerating household's income prospects.

3.1.3 Equity Stripping

If lending is secured by an asset, home equity for example, the incentive to prey increases. Lending another $ to a household with home equity of $E does not increase risk to lenders' at all, even if the extra unit of borrowing puts household debt service costs beyond current income or cash flow. As the borrower misses a payments, home equity lenders can charge penalties and raise interest rates until the household owes $E - ϵ, where ϵ represents foreclosure costs. If a predatory lender can con households into borrowing more than their current income affords, predators can eventually strip homeowners' equity.

3.1.4 Can Credit Counselors Deter Predators?

We have also considered a credit *counselor* can *correct* borrowers' income beliefs, at some cost, and thereby raise borrower welfare by reducing their borrowing to the optimal level. Credit counseling may deter predation, but it does not necessarily eliminate it. Credit counseling may not be profitable because it entails lending smaller amounts at a higher rate (because counseling is costly). Predation can occur in equilibrium if the welfare loss from predation is less than the cost (to a credit counselor) from eliminating the loss.

4 Is Payday Lending Predatory?

Critics condemn payday lending as predatory partly because of the high finance charges. However, the high price of payday credit could reflect high fixed costs per loan, and/or, monopoly power. Nor does a predator-monopolist always charge higher prices than ordinary monopolists. Thus, higher prices are neither necessary or sufficient to conclude that a certain class of credit is predatory.

The other criticism of payday lenders is the frequent rollover of loans. Instead of repaying their loan after two weeks, a substantial fraction of households rollover their loans for many weeks. Those frequent rollovers come closer to our concept of predation *ala* overborrowing.

If payday lending tempts certain households into over-borrowing, that should be detectable as differences in debt and delinquency rates in states with more liberal payday lending laws.

4.1 Empirical Strategy and Data

Using data from the SCF (Survey of Consumer Finance), we compare credit access, debt, and delinquency rates for households in states with more liberal payday laws. We focus on differences for those particular households who, according to our model, are more most vulnerable to manipulation by predatory payday lenders, i.e. "prey." To identify differences that are more likely associated with payday lending, we compare the differences for prey in payday states before and after payday lending arrived on the consumer credit market.

We want to control for a host of other variables that might affect credit supply or demand, so we compute the differences using multi-variate regression analysis. Using SCF data on household h in state s, we estimate regressions of the form:

$$D_{hs} = f(PREY_{hs} \cdot PAYDAY\ LIMIT_s \cdot 2001, CONTROLS_{hs}) + \epsilon_{hs}. \tag{9}$$

D equals one of three dependent variables: DENIED, DEBT_NM, and DELINQUENT. DENIED equals one for households who reported being denied credit over the year before the survey (0 for other households).[7] DEBT_NM equals non-mortgage debt owed by households. DELINQUENT equals one of households that reported missing any debt payments over the year before the survey (zero for other households).

DENIED and DELINQUENT are discrete variables so we estimate those regressions *via* Probit. DEBT_NM, though continuous, is truncated zero, so that regression is estimated *via* Tobit.

The key independent variables are the interactions: PREY$_{hs}$·PAYDAY LIMIT$_s$·2001 PREY$_{hs}$ is one of three indicators of potential marks for predators, discussed momentarily. PAYDAY LIMIT$_s$ equals the limit on payday loans in state s. We include another dummy, UNLIMITED, equal to one for states that allow unlimited payday loans (zero for

[7]More precisely, DENIED =1 for housholds reporting that they were turned down for credit previous year, given less credit than they demanded, or did not apply for credit because they expected to be denied. DENIED = 0 otherwise.

other states). The dummy variable 2001 equals one for households surveyed in 2001 or zero for households surveyed in 1995.[8] Thus, the coefficients on PREY_{hs}·PAYDAY LIMIT$_s \cdot 2001$ indicate whether any difference in dependent variable D for prey in states with higher payday loan limits changed between 1995 and 2001.[9]

PREY_{hs} is one of three indicators of potential marks, i.e., households must vulnerable to predatory lending. UNCERTAIN INCOME equals one for households who reported being uncertain about their future income (0 for other households). NO COLLEGE DEGREE equals one for households without a college degree (0 for households with a degree). Less educated households and households with uncertain income may be easier to fool, so those two prey proxies follow more or less from our model.

Our third proxy is more *ad hoc*. SMOKER equals one if the head of the household reported being a smoker (0 if not). If smoking implies hyperbolic discounting, then smokers may be vulnerable to predatory lending. However, if smoking implies high, but not hyperbolic discounting, then payday lenders cannot prey on smokers, even though they may help smokers satisfy their high demand for credit.

CONTROLS is a long list of financial variables (income, squared, assets), demographic variables (age, marital status, family size, race, gender, urban, job tenure), economic variables (county unemployment), attitudinal variables ("thinks credit is a bad idea") bank concentration (local market bank herfindahl), bank regulatory history (years since branching and interstate banking were permitted), and lastly, household bankruptcy exemptions. Our control set is essentially as in Gropp et al. (1997) except we use bankruptcy exemptions as of 1999 from Lehnert and Maki's (2002).

[8] Caskey (2002) figures there were fewer than 200 payday lenders at the at the beginning of the 1990s. Rotunday, the CEO of EZ Corp (a pawnbroker) did not notice competition from payday lenders until the late 1990s (see above). Based on those observations, we compare household debt and delinquency from the SCF in 1995 ("before payday lending") and 2001 ("after payday lending").

[9] In econometric terms, we are conducting difference-in-difference-in-difference analyses. First we estimate differences in dependent variable D for households that are potential prey, dD. Then we estimate the difference in dD for prey living in states that allow higher payday loans, ddD. That second difference might be significant all the time, just by coincidence, so we estimate the difference in ddD between 1995 and 2001, $dddD$. That third difference indicates whether differences in dD for prey *changed* after Payday lending arrived on the market.

Table 2 reports provides summary statistics for all the regression variables.[10] Twenty-one percent of households were denied credit in the year before the survey. Sixteen percent of households missed a payment. Mean debt (non- mortgage) was $11,500, but median debt was only $2300.[11] Note the prevalence of potential prey: 68 percent of households lacked a college degree, 31 percent were uncertain about their income, and 29 percent smoked. Fifty-six percent of households lived in states with payday lending, but just three percent of households lived in states with unlimited payday loans.

4.1.1 Identification

Our strategy is to compare debt and delinquency for certain subsets of households that *a priori* seem more susceptible to predation. But what if Payday lending represents an increase in the supply of credit? How can we distinguish predatory, i.e., artificial, increases in loan demand from legitimate increases in loan supply?

Our key identifying assumption is that if indeed Payday lenders increase credit supply, they increase supply to all households, not just potential prey (see Appendix). That is not a strong assumption. It merely means payday lenders do not discriminate one way or another against $non - prey$. Granting that, we can identify any excess debt or delinquency among

[10]The SCF in 1995 and 2001 covered 2,780 and 2,917 households, or 5,697 households in total. We study the area-probability sample that excludes the "list sample" of wealthy housholds (as wealthy households seem less subject to predatory lending). Household's state of residence are not publically available, so all our statistics and regressions were calculated by authorized analysts in the SCF Group at the Federal Reserve Board of Governors. Note that this confidential dataset contains 4,449 households whereas the public version only includes 4,442 households. This is due to the exclusion of 7 extremely wealthy households from the public dataset for disclosure reasons. The SCF actually comprises 5 separate datasets or "implicates" wherein missing data are multiply imputed. All our estimates and standard errors are computed using the Repeat Imputation Inference (RII) techniques. See Montalto and Sung (1996) for an accessible introduction to RII.

[11]We also ran our regressions for low (below median) income. Non-mortgage debt for that sample averaged $6700, so a $300 difference associated with payday lending might be detectable. We did not find any such difference, however. The SCF does not ask households about payday loans specifically. We experimented with debt from "finance and loan companies," a category that should comprise payday lenders, but because the subset of households with debt from such institutions was so small, the Tobit estimates did not converge.

prey as evidence that payday lenders artificially boost credit demand.

4.2 Regression Results (Table 3)

Column 1 reports *dprobit*(DENIED) regression coefficients. *Dprobit* calculates the change in probability(DENIED = 1) as the indicator variables switch on or off. Risky households (with uncertain income) and less educated households (without a college degree were) surveyed in 1995 were 5.4 percent and 6.6 percent more likely to have been denied credit than their safer, more educated counterparts. Given all the other controls, those differences suggest that riskier, less educated households were more credit constrained in 1995. Those constraints were certainly no looser in states that would (eventually) allow unlimited payday loans. On the contrary, risky households in unlimited payday loan states surveyed in 1995 were more likely to be denied credit than their counterparts in other states. By 2001, however, risky households and less educated households living in states with unlimited payday loans were 14.1 percent and 15.0 percent *less* likely to have been denied credit. That pattern of differences and the change over time suggests that payday lending, at least in unlimited quantities, has increased credit access for riskier, less educated households.

Roughly the same differences and changes over time are apparent for smokers. Smokers surveyed in 1995 were 4.3 percent more likely to be turned down for credit, regardless of their state. Smokers surveyed in 2001 were significantly less likely to be turned down, the higher the limit on payday loans in their state. A one standard deviation increase in the PAYDAY LIMIT ($234) reduces the probability(DENIED) by 6.3 percent.

Column 2 reports *Tobit*(DEBT_NM) regression coefficients. Less educated households in states unlimited payday loan states were were surveyed in 2001 had higher debt than their counterparts in states with limited payday loans. That difference, though only marginally significant, is consistent with the predatory hypothesis.

Column 3 reports dprobit(DELINQUENT) regression coefficients. In general, delinquency rates were not higher for *prey* surveyed in 2001, even those living in states with higher or unlimited payday limits. On the contrary, risky households (with uncertain income) surveyed in 2001 were nine percent *less* likely to have missed a payment if their state

allowed unlimited payday loans. [12]

In sum, our findings suggest that riskier, less educated households, and smokers, were less likely to be turned down for credit if their state allowed unlimited or larger payday loans. That might indicate that payday lenders relax credit constraints, or, that the limits on payday loans do in fact bind. Debt is significantly higher for households with uncertain income in payday states in 200. That difference, though only marginally significant, seems consistent with the predatory hypothesis.[13] However, higher payday loan limits are *not* associated with higher delinquency rates for less educated households, riskier households, or smokers. If anything, we find the opposite: risky households surveyed in 2001 in states with unlimited payday loans were marginally *less* likely to have missed a debt payment.

5 Does Competition Work in Payday Lending?

The main complaint against payday lenders are their high fees. The 390 percent annual rate implied by a $15 fee per $100 per two week loan strikes critics as usurious or unconscionable, hence the many states with usury limits on payday loan prices. Economists might expect competition among payday lenders and pawnshops to drive prices down to the level that just covered the costs of producing the loans. This section presents evidence consistent with the hypothesis that competition works ; using a small data set of "found" data, we find lower payday prices in cities with more payday lenders and pawnshops per capita.

The data on payday loan prices are from 2001 survey conducted by the U.S. Public Interest Research Group (PIRG) and the Consumer Federation of American of 235 payday lenders located in 62 cities and twenty states (and D.C.)[14] In their analysis of the data,

[12]Regressions estimated over the set of households with low (below median) income yielded qualitatively similar differences (same signs and magnitudes) to those noted in Table 3 and 4, though in some cases the differences were less significant, particularly the differences associated with unlimited payday loans. The fraction of households live in states with unlimited payday loans was small, and the fraction of low income households in those states was even smaller, so the loss of significance mostly refects higher standard errors in the estimates, not smaller coefficients.

[13]Payday loans are very small so it is not necessarily inconsistent to find looser credit constraints in payday states without finding higher debt.

[14]Most surveys were conducted by employee or volunteer visits to payday offices, although some were

Fox and Mierzwinski (2001, p. 14) observed that about half the lenders charged fees at or above the usury limit set by the states. "If competition were really working..., " they conclude, "we would expect many more firms to offer and advertise lower rates." The PIRG survey lacked a measure of competition, however, so they did not test their conclusion that competition fails in payday lending.

Our data on the number of payday stores in various cities are from Graves and Peterson (2005). Their study pinpoints the location of payday stores by zip code in twenty states with military bases to see if payday lenders "target" soldiers. They demonstrate conclusively that payday lenders do cluster around bases; for example, the 92054 zip code comprising Camp Pendelton had 22 payday outlets, 17 more than expected given the population in that zip.

To see if competition works in the payday credit market, we matched Graves and Petersons' (2005) data on the number of payday lenders with PIRGs' (2001) data on payday loan prices and fees. The number of cities that overlapped in the two studies was 37 (Table 4A).[15]

These "found" data are biased against the competition hypothesis for at least two reasons. First, the number of payday *stores* tabulated by Graves and Peterson (2005) will overstate competition if some stores have the same owner. Second, more stores per capita might also signal higher *demand* for payday loans (and hence, higher prices) rather than higher supply.[16]

The regressions in Table 4B (and Figure 3) indicate that payday prices decline as the number of payday stores per capita increases. An extra 50 payday stores/10000 (about

conducted by phone. The surveyors did not borrow from the payday lenders; they simply looked for signs posting fees or asked store clerks to quote fees.

[15]PIRG's (2001) survey covered multiple payday lenders per city. We use the average loan rate and fee for payday lenders in the same city. We obtain similar results using medians instead of means.

[16]That second bias is distinctly possible here, because Graves and Petersons' (2004) study covered states with military bases, and soldiers may have high demand for payday loans. A third possible source of bias: payday prices are from 2001, but the numbers on stores are from 2004-5. Stores in 2004 should be correlated stores in 2001, but the cities where payday stores grew fastest in the interim may be those with the highest prices in 2001 (hence inviting new entry).

one standard deviation) is associated with a $0.50 drop in the loan price (column 1).[17] Payday store prices also decline as the number of *pawnshops* per capita increases (column 2), consistent with other evidence that payday lenders pawnshops are in competition. In fact, we cannot reject the hypothesis that the more pawnshops per capita has the same effect on payday prices and more payday stores.

6 Conclusion

"Predatory" is an inflammatory term used to condemn high prices, excessive lending, and other allegedly dubious practices by payday lenders and subprime mortgage lenders. However, even reformers admit that "predatory" is hard to define, so that is where our paper starts. We define predatory lending as a welfare *reducing* provision of credit, and we show how a voluntary transaction can make borrowers worse off if lenders contrive to increase loan demand by exaggerating households' income prospects. Predation in our model resembles advertising; advertisers accentuate how much pleasure their product brings, while predators attenuate how much a loan will cost (in terms of future well-being). We show that lenders will prey as long as the extra revenue from larger loans exceeds the cost of fooling households into overborrowing and any associated increase in default risk.

Our concept of predatory lending may not correspond to the specific practices of payday lenders and subprime mortgage lenders that reformers condemn, but it comes close. Both lenders are accused of entrapping borrowers in a cycle of refinancings and delinquency by lending more than households can afford. The predators in our model lend excessively, and the extra debt leads to higher risk of delinquency. Reformers also condemn payday lenders for "targeting vulnerable consumers" (PIRG 2001) that are less sophisticated. The predators in our model naturally prey on households that are easier to fool.

Our model helps distinguish *predatory* lending from the other kind of lending, the kind that helps households maintain consumption even as their income fluctuates. While reformers tend to focus on the interest rates charged by alleged predators, our model shows that

[17] Without the extreme (fee = $30) observation, the coefficient on P*ayday lenders/100,000* equals .0074. (p = 0.091).

predators do not always charge more than ordinary lenders. Predators always lend more, however, and the extra debt may push borrowers to the brink of default. If payday lenders were exploiting gullible households, we would expect to find higher debt and delinquency rates among easier- to-fool-households (prey) in states with higher payday loan limits. While we do find higher debt for one such set of households, we do *not* find higher delinquency. On the contrary, delinquency rates were marginally lower for risky households in states with unlimited payday loans. Risky households and less educated households were also less likely to report being turned down for credit if their state allowed unlimited payday loans.

Those findings of lower delinquency and looser credit constraints applies for only to the very small subset of households in are sample, but they are still tantalizing; despite its high cost, perhaps payday loans help risky households better manage their finances? It will take more data to confirm that particular conjecture, however. In general, we caution that our data are very indirect since we cannot specifically identify households who borrowed from a payday lender.

The differences we find for smokers are interesting, but harder to interpret in terms of predatory lending. Smokers in states with higher payday limits are less likely to be turned down for credit. The looser credit constraints could mean that smokers have high loan demand (because they have discount rates) and that payday lenders help satisfy that urge, or it could mean that smokers have *hyperbolic* discount rates (that make them procrastinators) and that payday lenders exploit that (we do not find higher delinquency rates for smokers in payday states, however). We cannot distinguish those interpretations without further tests.[18]

While reformers often advocate usury limits on payday lending, we find some evidence that competition among payday lenders (and pawnshops) may obviate usury limits. Using a small set of data, we find that payday loan rates and fees decline significantly as the number of payday lenders and pawnshops increase. Despite their alleged naiveté, payday borrowers appear sophisticated enough to shop for lower prices. The problem of high prices may reflect too few payday lenders, rather than too many. If scrutiny and prosecution risk

[18]Smoking might also simply be a better way to identify the socieconomic class that borrows from payday lenders.

limit entry into payday lending, the lack of competition may drive rates higher. In the end, the simple fact that payday lenders have triumphed over pawnshops suggests that payday lending raises household welfare by providing a preferable alternative.[19]

[19]The extra (or more convenient) credit can be welfare reducing only for households with behavioral problems that make them borrow too much to begin with.

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6.1 Appendix: Identification Algebra

Suppose loan demand and supply for household h in state s equals

$$B^d_{hs} = -ar_{hs} + bP_s + cp_{hs} + \tau P_s p_{hs} + z_{hs} \tag{10}$$

$$B^s_{hs} = +dr_{hs} + eP_s + fp_{hs} + \tau' P_s p_{hs} + \eta_{hs}, \tag{11}$$

where P_s equals one if state s allow payday lending and p_{hs} equals one if household h in state j is potential prey, e.g., a household with uncertain income. The coefficients a and d measure the interest sensitivity of loan demand and supply, respectively. We assume $a \geq 0$ and $d \geq 0$. The coefficients c and f allows for any inherent and legitimate differences in loan demand and supply for prey. The coefficients b and e allows for any general, legitimate differences in loan demand and supply in states with payday lending. We make no assumption about c, f, b, and e.

The equilibrium quantity of debt for household h in state s equals

$$B_{hs} = \frac{(db - ae)P_{hs} + (dc - af)p_{hs} + (d\tau - a\tau')P_h p_{hs} + dz_{hs} - a\eta_{hs}}{d - a}. \tag{12}$$

The difference in debt for prey in payday states for prey equals

$$\frac{\delta^2 B_{hs}}{\delta P_s \delta p_{hs}} = \frac{d\tau + a\tau'}{d + a} \tag{13}$$

The predatory hypothesis implies $\tau > 0$. We can identify whether $\tau > 0$ by comparing debt levels for prey across payday and non-payday states as long as $\tau' = 0$, i.e.,as long as payday lenders are equally willing to supply credit to prey and non-prey alike.

Figure 1
Growing Predatory Concerns

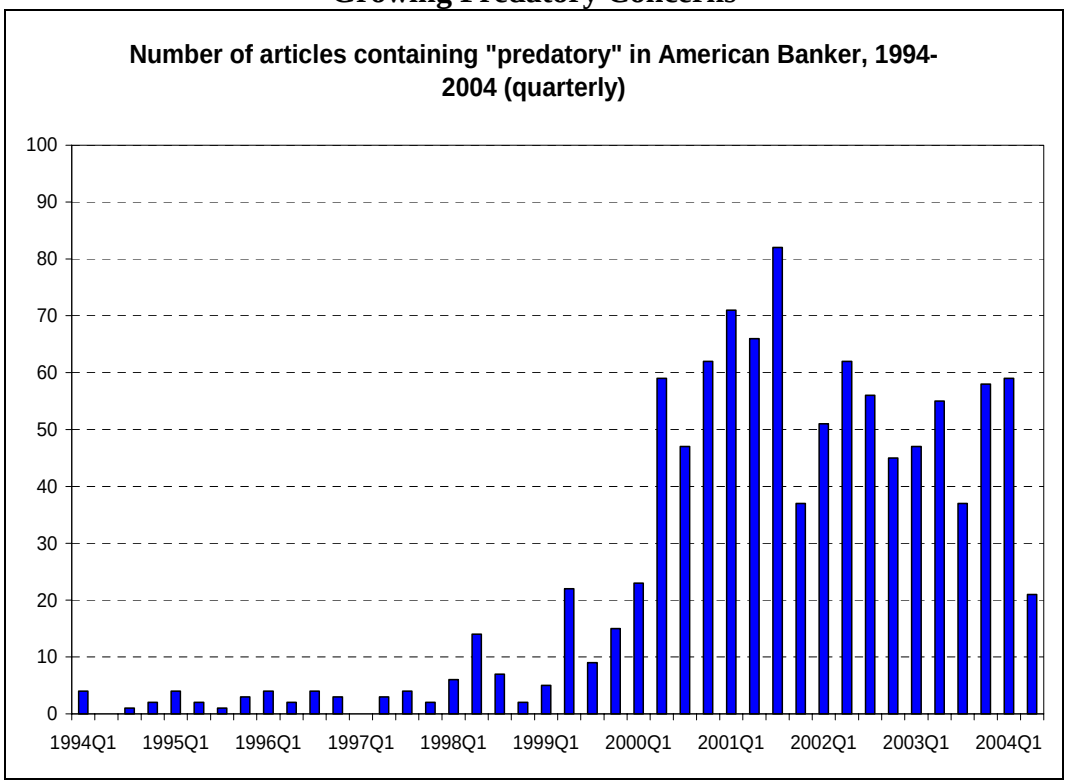

Figure 2
Payday share prices (AACE) have risen. Pawnshops (EXPW) have fallen

Figure 3

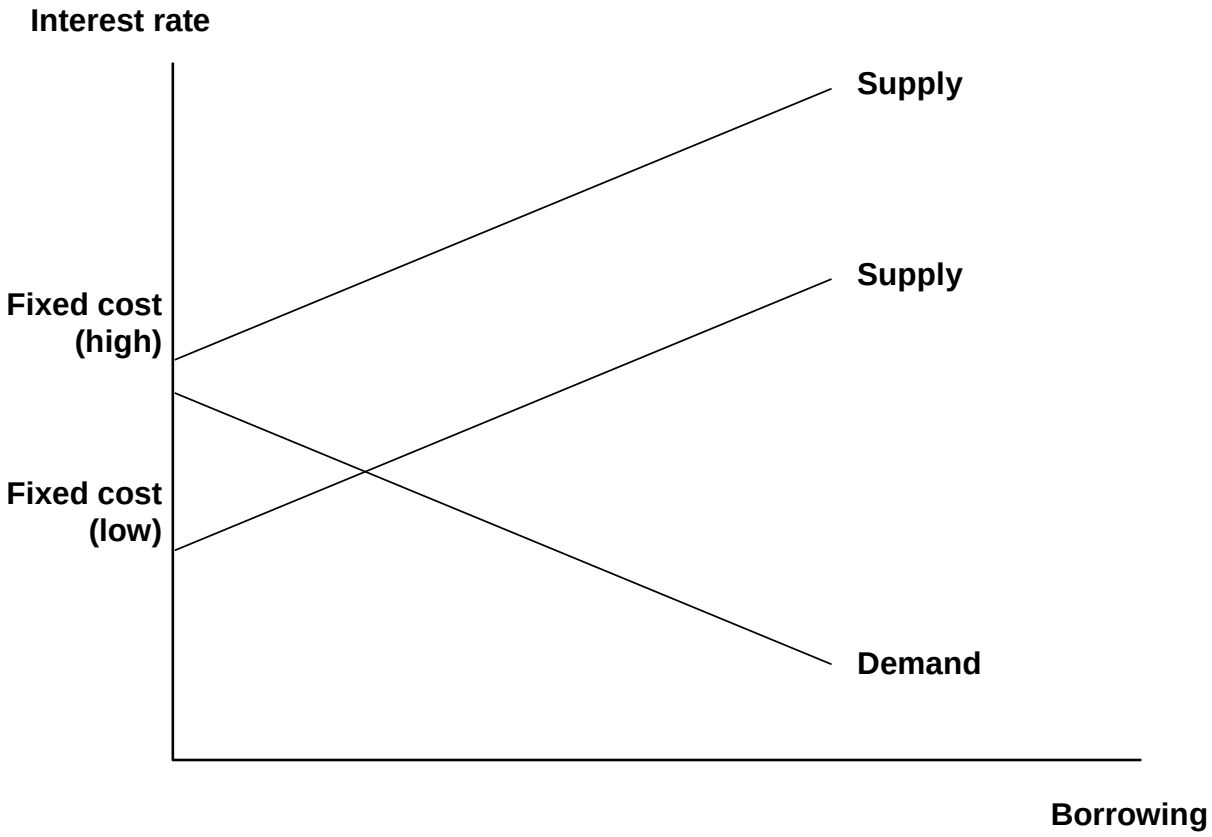
Interest rate
Supply
Supply
Fixed cost (high)
Fixed cost (low)
Demand
Borrowing

Figure 4
More Payday Stores--Lower Payday Prices

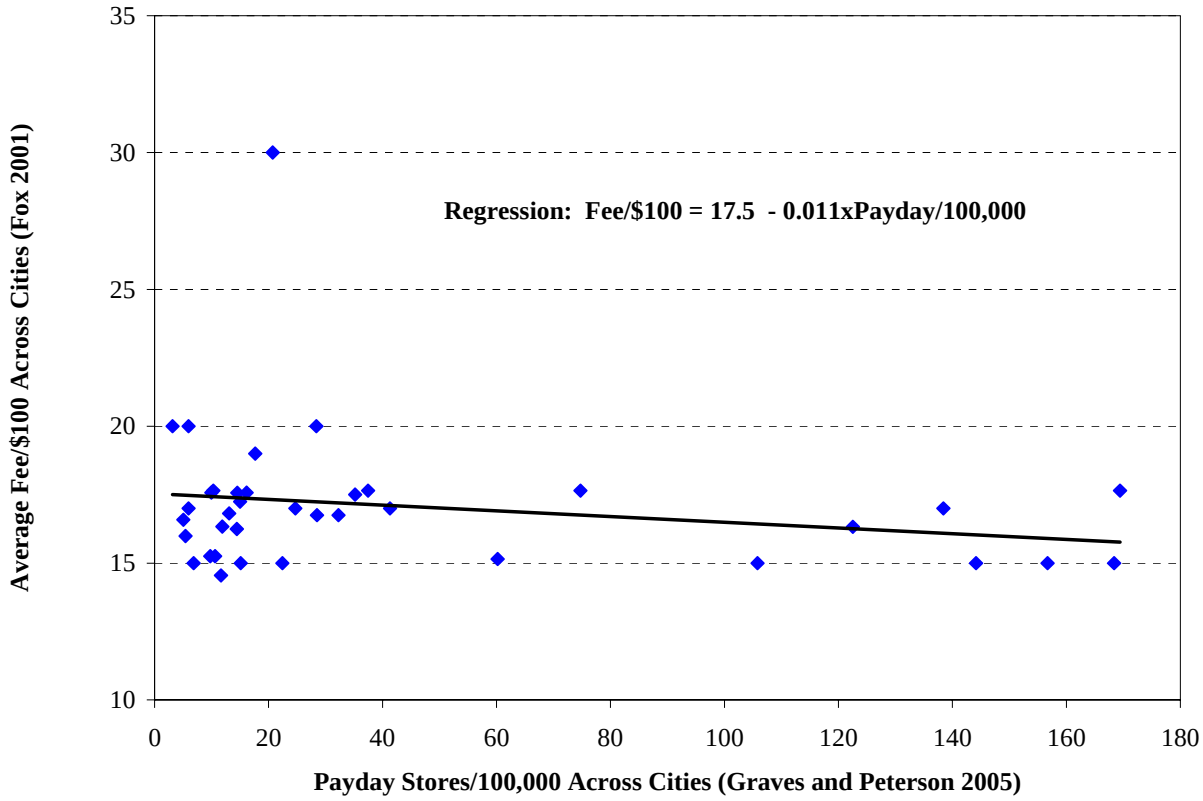

Table 1: State Limits on Payday Lending in 2001

State	Allows Payday?	Payday Loan Limit
Alabama	No	0
Alaska	No	0
Arkansas	No	0
Connecticut	No	0
Georgia	No	0
Indiana	No	0
Maine	No	0
Maryland	No	0
Massachusetts	No	0
Michigan	No	0
New Jersey	No	0
New York	No	0
North Carolina	No	0
Pennsylvania	No	0
Rhode Island	No	0
Vermont	No	0
Virginia	No	0
West Virginia	No	0
California	Yes	300
Hawaii	Yes	300
Montana	Yes	300
South Carolina	Yes	300
Louisiana	Yes	350
Minnesota	Yes	350
Texas	Yes	350
Illinois	Yes	400
Mississippi	Yes	400
Arizona	Yes	500
Colorado	Yes	500
Florida	Yes	500
Iowa	Yes	500
Kentucky	Yes	500
Missouri	Yes	500
Nebraska	Yes	500
North Dakota	Yes	500
Ohio	Yes	500
Tennessee	Yes	500
Washington	Yes	500
Oklahoma	Yes	730
Kansas	Yes	860
District of Columbia	Yes	1000
Nevada	Yes	1250
Delaware	Yes	No Limit
Idaho	Yes	No Limit
New Hampshire	Yes	No Limit
New Mexico	Yes	No Limit
Oregon	Yes	No Limit
South Dakota	Yes	No Limit
Utah	Yes	No Limit
Wisconsin	Yes	No Limit
Wyoming	Yes	No Limit

Table 2 Sample Statistics

Statistics calculated over 5,697 households in area-probability samples in 1995 and 2001 Survey of Consumer Finance

Variable	Units	Mean	Std. dev.	Median
Dependent variables:				
Denied Credit in Last Year?	Yes = 1; No = 0	0.21	0.41	0.00
Non-mortgage Debt	($10,000)	1.15	3.25	0.23
Delinquent on Any Debt Payment in Last Year?	Yes = 1; No = 0	0.16	0.37	0.00
State Payday Lending Regulations				
Payday Loan Limit	($)	230.12	234.31	300.00
Unlimited Payday Loans?	Yes = 1; No = 0	0.03	0.18	0.00
Payday Loan Permitted?	Yes = 1; No = 0	0.56	0.50	1.00
Proxies for "Prey:"				
Uncertain Income?	Yes = 1; No = 0	0.31	0.46	0.00
No College Degree?	Yes = 1; No = 0	0.68	0.46	1.00
Smoker?	Yes = 1; No = 0	0.29	0.45	0.00
Control variables:				
Years Since State Permitted Intra-state Branching		16.64	8.13	16.00
Years Since State Permitted Interstate Branching		12.15	3.55	13.00
Local Market Herfindahl	max = 100	14.71	8.59	13.17
Bankruptcy Exemption	($10,000)	11.15	23.65	3.00
Bankruptcy Exemption X Assets		5.18	40.54	0.36
Household Age	Years	47.04	16.84	44.00
Age^2	$Years^2$	2,496.54	1,756.62	1,936.00
Income	($10,000)	5.25	9.42	3.62
Income Squared	($100,000,000)	116.28	2,319.81	13.13
Assets	($1,000,000)	0.34	1.72	0.11
Married?	Yes = 1; No = 0	0.59	0.49	1.00
Family Size	persons	2.43	1.40	2.00
Non-White?	Yes = 1; No = 0	0.24	0.42	0.00
Male?	Yes = 1; No = 0	0.72	0.45	1.00
Rural?	Yes = 1; No = 0	0.25	0.43	0.00
Years at Current Employer		6.65	9.23	2.00
Thinks Credit Is Bad Idea?	Yes = 1; No = 0	0.30	0.46	0.00
County Unemployment Rate		5.08	1.83	4.70

Table 3 Differences in Denial, Debt, and Delinquency in States with Higher Payday Limits

Reported are regression coefficients (robust standard errors). DENIED = 1 for households who were denied credit in year before survey (0 otherwise). DEBT_NM equals household's non-mortgage debt. DELINQUENCY = 1 if households reported missing debt payment in previous year. PAYDAY LIMIT = state limit on payday loans (0 to $1250). UNLIMITED = 1 for the nine states without limits, 0 otherwise states. 2001 = 1 for households surveyed in 2001 (0 for households surveyed in 1995). Regressions estimated over 5697 households in 1995 and 2001 SCF.

	Dependent Variable (model)		
	DENIED (DProbit)	**DEBT_NM (Tobit)**	**DELINQUENT (DProbit)**
Payday Limit X Uncertain X 2001	*-6.84E-06*	*2.33E-04*	*-8.39E-05*
	(9.18E-05)	*(9.42E-04)*	*(9.16E-05)*
Unlimited X Uncertain X 2001	*-0.141****	*-0.241*	*-0.090**
	(0.029)	*(1.200)*	*(0.052)*
Payday Limit X No College X 2001	*9.60E-05*	*0.001*	*3.61E-05*
	(9.80E-05)	*(0.001)*	*(8.93E-05)*
Unlimited X No College X 2001	*-0.150****	*2.722**	*0.036*
	(0.026)	*(1.479)*	*(0.134)*
Payday Limit X Smoker X 2001	*-2.74E-04 ****	*2.18E-05*	*-4.71E-05*
	(9.31E-05)	*(8.04E-04)*	*(8.63E-05)*
Unlimited X Smoker X 2001	*0.054*	*-0.798*	*-0.036*
	(0.153)	*(1.207)*	*(0.086)*
Payday Loan Limit	2.17E-05	9.72E-04	1.67E-05
	(6.29E-05)	(6.82E-04)	(5.34E-05)
Unlimited Payday Loans?	-0.125***	0.039	0.001
	(0.039)	(0.801)	(0.069)
Uncertain Income?	0.054**	-0.081	-9.61E-04
	(0.024)	(0.203)	(0.023)
No College Degree?	0.065***	-0.151	0.009
	(0.022)	(0.247)	(0.021)
Smoker?	0.043*	-0.400**	0.034
	(0.023)	(0.189)	(0.024)
2001 Dummy	-0.007	-0.168	-0.072**
	(0.037)	(0.410)	(0.033)
Payday Limit X 2001	4.29E-05	-5.84E-04	7.46E-05
	(8.67E-05)	(0.001)	(7.32E-05)
Unlimited Payday X 2001	0.404*	-1.689	0.049
	(0.208)	(1.270)	(0.124)
Uncertain X 2001	-0.012	-0.308	0.044
	(0.030)	(0.312)	(0.035)
No College X 2001	0.003	-0.373	0.024
	(0.034)	(0.441)	(0.032)
Smoker X 2001	0.035	0.442	0.033
	(0.034)	(0.269)	(0.033)
Payday Limit X Uncertain	8.02E-06	-9.56E-05	2.95E-05
	(6.50E-05)	(6.96E-04)	(6.68E-05)

Table 3 continues . . .

Table 3 (continued)

Unlimited Payday X Uncertain	0.308**	0.163	0.103
	(0.137)	(0.904)	(0.109)
Payday Limit X No College	-1.04E-04	-4.35E-04	-6.62E-05
	(6.95E-05)	(7.25E-04)	(6.26E-05)
Unlimited Payday X No College	0.081	-0.571	-0.019
	(0.124)	(0.859)	(0.071)
Payday Limit X Smoker	8.22E-05	-3.56E-04	1.65E-05
	(6.41E-05)	(5.54E-04)	(6.27E-05)
Unlimited Payday X Smoker	0.119	0.475	0.038
	(0.122)	(0.798)	(0.086)
Age (years)	0.002	0.113***	0.004**
	(0.002)	(0.026)	(0.002)
Age Squared	0.000***	-0.002***	0.000***
	(0.000)	(0.000)	(0.000)
Income	-0.011***	0.114***	-0.005**
	(0.003)	(0.034)	(0.002)
Income Squared	0.000***	0.000**	0.000**
	(0.000)	(0.000)	(0.000)
Assets	0.006	0.129	0.012***
	(0.005)	(0.107)	(0.004)
Married?	-0.027	0.576***	-0.026
	(0.018)	(0.186)	(0.017)
Family Size	0.017***	0.005	0.020***
	(0.004)	(0.049)	(0.004)
Non-White?	0.090***	-0.252**	0.039***
	(0.014)	(0.120)	(0.013)
Male?	-0.024	0.120	-0.003
	(0.016)	(0.146)	(0.016)
Rural?	-0.029**	-0.099	0.023*
	(0.013)	(0.127)	(0.014)
Years at Current Employer	-0.003***	0.022***	0.000
	(0.001)	(0.007)	(0.001)
Thinks Credit Is Bad Idea?	-0.003	-0.302**	0.006
	(0.011)	(0.119)	(0.010)
County Unemployment Rate	0.003	0.031	0.001
	(0.003)	(0.033)	(0.003)
Years Instate Branching Permitted	0.002**	0.002	6.84E-04
	(7.22E-04)	(0.008)	(6.75E-04)
Years Interstate Branching Permitted	-9.59E-04	0.054	0.002
	(0.003)	(0.042)	(0.003)
Local Market Herfindahl	0.000	-0.001	-0.001
	(0.001)	(0.006)	(0.001)
Bankruptcy Exemption	0.000	0.002	0.001**
	(0.000)	(0.003)	(0.000)
Bankruptcy Exemption X Assets	0.000	0.004	0.000
	(0.001)	(0.006)	(0.000)

Table 4A Statistics on Payday Loan Prices and Stores across 37 U.S. Cities[4]

	Mean	Median	Std. Dev.	Min	Max
Price (per $100 borrowed)[1]	17.1	16.8	2.6	14.6	30.0
Payday Stores (per 100K)[2]	43.6	17.7	52.1	3.2	169.4
Pawnshops (per 100k)[3]	30.0	12.0	47.1	1.0	240.3
Population	31.2	10.2	64.2	.21	3,695

[1] Fox and Mierzwinski (2001) [2] Graves and Peterson (2005) [3] Yellowpages.com.
[4] Overlapping cities in Fox and Mierzwinski (2001) and Graves and Peterson (2005).

Table 4B More Payday Stores…Lower Payday Prices?

Ordinary least squares coefficient estimates (robust standard errors). Dep. Var. = Price per $100

	(1)	(2)	(3)	(4)
Payday Stores	0.013**	-	-0.009	-
	(0.005)		(0.007)	
Pawnshops	-	-0.013**	-0.006	-
		(0.006)	(0.006)	
Payday Stores + Pawnshops	-	-	-	-0.008**
				(0.003)
Population	-0.007**	-0.006**	-0.007**	-0.007**
	(0.003)	(0.003)	(0.003)	(0.003)
Constant	17.86***	17.66***	17.66***	17.83***
	(0.710)	(0.648)	(0.714)	(0.703)
R^2	0.069	0.059	0.073	0.073
P value for F-Test: (Payday Store = Pawnshop)			0.86	

*** Significant at the 99% level ** Significant at the 95% level