Predatory Lending?

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May 4, 2005

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Abstract

Legislators are outlawing "predatory lending"without having defined it. We define predatory lending as a welfare *reducing* provision of credit and we show how that can happen if lenders dupe gullible households into *over*-borrowing. We find little evidence of excessive debt or delinquency in states with higher payday loan limits or states with easier mortgage foreclosure, even for potential prey (households without college degrees, with uncertain income, or that smoke). Higher payday loan limits are associated with looser credit constraints for some of those households, and even lower delinquency (for a very small subset), suggesting that payday lenders may raise welfare for less educated and risky households by increasing credit supply. Using a very small set of "found" data, we find that more payday lenders (and pawnshops) per capita is associated with lower payday loan rates and fees, suggesting that competition may obviate usury limits.

JEL Classifications:

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1 Introduction

"Predatory" is how consumer advocates, journalists, lawyers, legislators and some bank regulators condemn certain lending practices in the booming subprime credit market. The alleged predators are sub-prime mortgage lenders and deferred deposit ("payday") lenders. Their prey? The lower income, often uneducated, households representing the demand side of these consumer credit markets.

There is no general definition of predatory lending, but 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.[1] More particularly, predators are said to conceal finance charges, hide fees, and encourage overborrowing to earn extra interest charges, late payment penalties, and refinancing fees ("loan flipping").

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.[2] We define predatory lending as a welfare *reducing* provision of credit. By "welfare," we mean a household's well-being (or utility). That definition seems general enough to cover some of the specific practices–overlending and overcharging, deception, targetting 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.

Information asymmetries are common in credit market models, but the usual assumption, at least in commercial lending, is that the borrowers are better informed and that lenders

[1] For example, Senator Sarbanes: "Predatory lending... is a practice that is hard to define." Or Senator Gramm: "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." (American Banker, 8/24, 2000).

[2] By essay, we mean we ask a lot of questions, starting with the title, without necessarily answering them all.

have to screen and monitor (or ration credit) 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. Cash transactions just require addition and subtraction, but credit entails multiplication and division. After marriage, mortgages are probably the most complicated contract most people ever enter. Given the subtleties involved with credit, and the potential lack of sophistication of sub-prime borrowers, our reverse information asymmetry–where 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 those costs could represent conscience, technological costs (of learning the pitch), or risk of prosecution. The upside to exaggerated borrowers income beliefs 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.[3]

While the assumption of income delusion is arguable, there are bits and pieces of supporting evidence. In their research on credit card markets, Ausubel (1991, 1999) and Shui and Ausubel (2004) find that credit card holders systematically *underestimate* the size of their card balances or their duration.[4] Underestimating borrowing is not much different

[3] In an appendix, we also consider a credit *counseling* scenario where another lender can *correct* borrowers' income beliefs, at some cost, and thereby raise borrower welfare (by reducing their borrowing). 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] These studies of consumer responses to randomized credit card offerings show that households are overly responsive to the low, introductory ("teaser") rates on card offerings. Households choosing cards with the

from *overestimating* repayment capacity, or income, as we assume here. Subprime mortgage lenders have also been criticized for exaggerating household income so borrowers can qualify for various mortgage benefits. In a survey by Stock (2001) of households with "high-cost" loans in Dayton, Ohio, 42 percent of the borrowers that were in foreclosure said they have been encouraged (by lenders) to borrow more than they had intended.

After defining predatory lending, we try to detect it among payday lenders. Payday lenders make very small, very short-term loans to mostly lower income households. Business is booming for payday lenders, but critics condemn payday lending, especially the high fees and frequent refinancings, as predatory. Many states prohibit payday loans, so we test for excess borrowing and higher delinquency in states with higher payday loan limits, especially for households that are potential *prey*: those without college degrees or with uncertain income.

We use smoking as a third, more speculative, as a proxy for household discount rates. Big discounters will, in general, pay higher future costs for a given, immediate, gain in welfare. Smokers' seem to fit that description–they risk cancer and wrinkles in the future for seemingly small (to non-smokers), short-term gains in pleasure.[5] Big discounters will also have high demand for credit, all else equal, because they value the immediate consumption highly relative to the future costs (or repayment). Extra borrowing by big discounters should not be confused as predatory, however, since the extra demand reflects households' (impatient) preferences.

The problem with our smoking proxy (hence "speculative") 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.[6] DellaVigna and Malmendier (2004) show credit card lenders and other merchants can manipulate hyperbolic discounters

lowest introductory rate–but for the shortest period–ultimately pay more than had they accepted cards with somewhat higher rates–but for longer durations.

[5] Smokers have flatter wage profiles and they are willing to trade more future earnings for a given increase in current earnings (Munasinghe and Sicherman 2000)

[6] Gruber and Mulainathan (2002), for example, find that high cigarette taxes increase welfare for people who are prone to smoking because high taxes help people commit not to smoke.

(who don't recognize their self control problems) by offering products with front-loaded benefits and back loading costs. 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.

Essentially, we conduct a difference-in-difference analysis; first we look for differences in household debt and delinquency across payday states and non-payday states, then we test whether that difference is 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 payday-prey differences grew after payday lending was invented. That triple difference identifies any difference in debt and delinquency for potential prey in payday states after payday lending was introduced. We conduct similar tests for excess debt and delinquency in mortgage markets (though not subprime markets in particular).

Our findings seem mostly inconsistent with the hypothesis of predatory lending in states with higher payday limits and easier foreclosure. We *do* find that households with uncertain income (potential prey) in payday states have higher debt, but *not* higher delinquency. Just the opposite, in fact; households with uncertain income who live in states with unlimited payday loans tend to have slightly *lower* delinquency rates and they are less likely to report being credit constrained (i.e., denied credit or too discouraged to apply). We find some differences for smokers that are interesting (we think), but harder to interpret in terms of predatory lending without knowing *apriori* whether smokers discount rates are hyperbolic, or merely high.

Using a small set of data from different sources, we find 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 rates and fees.

Our paper has several cousins in the academic literature. Ausubel (1991) argues that credit card lenders exploit their more accurate assessments of household credit demand in their (lenders) 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 (mis)-behavioral issues. 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 and subprime mortgage lenders around the country. If payday lenders and subprime lenders are raising household welfare (by relaxing credit constraints), anti-predatory legislation may lower it.

2 Predatory Concerns in Subprime Credit Markets

Concerns about predatory lending are centered around the booming subprime mortgage markets and deferred deposit (payday) lending.

2.1 Subprime mortgages

Prime, or "A." borrowers have FICO scores above 660, no late mortgage payments in the past year, and less than two 30 day delinquencies on revolving debt in the last two years. Subprime borrowers have FICO scores below 660 and range from "A-" borrowers, who may have a single 30 day delinquency on mortgage or installment debt in last year, to "D" borrowers that have recently declared bankruptcy (HUD, 2002). According to most estimates, however, most subprime borrowers are "A-" credits.

The subprime mortgage market has expanded rapidly since the early 1990s (Figure 1). Subprime mortgage originations grew nearly *fivefold* (in dollar volume) between 1994 and

2001.

Foreclosures on subprime mortgages are many times higher than on prime mortgages, and the gap between them has widened (Figure 2). From Q1 1998 – Q1 2001, even as the economy was expanding, foreclosures on subprime mortgages rose to 8.0% while foreclosures on prime foreclosures fell to 0.4 percent. By the end of 2002, foreclosures on subprime mortgage were fifteen times higher than on prime mortgages.[7] Repossessions of mobile homes, whose buyers tend to be subprime, are also mounting (Figure 3).

Detractors see high and rising foreclosures as evidence that subprime lenders prey on subprime borrowers by selling credit at such high prices or in such large quantities that borrower foreclosure is virtually inevitable. The causality could run the other way: high foreclosure risk may justify the high interest rates. Distinguishing legitimate high risk, high cost credit from more odious practices is the challenge in detecting predatory lending.

2.2 Payday Advance Lenders

Payday advance lenders, also known as deferred deposit lenders, sell small, short-term, single-payment consumer loans to households (Elliehausen and Lawrence 2001). The borrower secures the loan with a post-dated personal check for the principal amount and finance charge. When the loan matures, usually 10-30 days later, the borrower buys the check back or the lender deposits it. The typical loan is about $300.

Payday lending evolved from check cashing (Caskey 2003) much like lending generally evolved from the ancient money changing business (Ragan 1998). Check cashers turn checks, usually paychecks or government benefit checks, into cash for a fee. Once a check casher had developed a relationship with a customer, i.e., cashed paychecks repeatedly, lending against future paychecks was an obvious step.

Finance charges on payday loans range from $15 to $20 per $100 lent. That translates into a high annual rate; if a borrower pays $30 for a $200 loan for 14 days, the annual interest rate is 390 percent.[8] High finance charges are the primary criticisms levied against payday

[7] The opposite trends in subprime and prime mortgage foreclosures could also reflect the downgrading of marginal, prime borrowers.

[8] The annual finance charge is the periodic rate ($30/$200) times the number of two week per year (26).

advance lenders, and many states and cities limit finance charges. Critics of payday lending also criticize them for overlending, in the sense that borrowers often refinance their loans repeatedly, and for "targettting vulnerable consumers" such as women making welfare-to-work transitions (Fox and Mierzewski 2001) and soldiers (Graves and Peterson 2004).

A survey of 427 payday borrowers by Elliehausen and Lawrence (2001) revealed that the typical payday customer earns between $\$25,000$ and $\$50,000$ per year and is under 45.[9] Compared to the population at larger, payday customers are more likely to be divorced (23 percent of payday customers versus 13.8 percent of the population), more likely to be unmarried, with children (23.3 percent versus 12.4 percent), and less likely to have graduated college (19.4 percent versus 34.9 percent). Fifty six percent of the payday customers in the survey had a revolving credit card, but nearly the same fraction reported "maxing" out their cards, hence their demand for other sources of credit.

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.

The rise of payday lenders has been the downfall of pawn brokers. 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 (Caskey 2003). Prices of shares in EZ Corp, 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 the dismal performance of pawnshops on payday

[9] The sample in Elliehausen and Lawrence (2001) consists exclusively of customers of payday lenders belonging to the industry trade association, the Community Financial Services Association of America (CFSA). At the date of the survey (year end 2000), the CFSA had over 60 members who operated approximately 5,000 of the 10,000 payday offices nationwide. Because CFSA members are among the largest payday lenders and its members are expected to adhere to a set of "Best Practices" there are concerns that the survey may not be representative of the larger population of payday borrowers. In addition, significant non-response bias seems likely and the survey was largely unable to address refusals or other sources of non-response due to a brief survey window.

lenders:

> 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.[10]

Payday lending is heavily regulated (Table 1). As of 2001, eighteen states effectively prohibited payday loans (via usury limits), and most other states limit loan size, prices, and loan frequency per customer (Fox and Mierzwinski 2001). 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 proscribed such affiliations. The Federal Deposit Insurance Corporation (FDIC)—the overseer of state chartered banks—still permits payday lenders to affiliate with state banks, but under (recently) straightened circumstances (Graves and Peterson, 2005).

Concerns about predatory practices have mounted as these subprime markets have grown. Occurrences of "predatory lending" in the *American Banker* increased from essentially zero per quarter in 1994 to over 500 per quarter in 2004:3 (Figure 5).

3 Defining and Modeling Predatory Lending

We define predatory lending as a welfare reducing provision of credit. Borrowers can be made worse by a credit transaction if they are deluded about their own income prospects, or if lenders actively deceive them. In either case, borrowers borrow more than the case where they have accurate income beliefs. Excess borrowing reduces household welfare even without risk of foreclosure, and even if the interest rate is competitive, i.e. just covers the lenders' cost of funds. Overborrowing always reduces welfare compared to the first-best, where households are not deluded or deceived about their future income, and may lower welfare below the level where households do not borrow at all.

[10] Joseph Rotunda, as quoted by Caskey (2003), p.14.

We illustrate using a standard, consumption-smoothing model of borrowing with two periods. Income varies over time, but not (for now) randomly. Period zero income equals zero. Period one income equals y. Households borrow against future income to smooth their consumption. Period zero consumption equals period zero borrowing: $C_0 = B$. Period one consumption equals $C_1 = y-(1+r)B$. Borrowers' welfare $= W(B) = U(B)+\delta U(y-(1+r)B)$, where U is a standard utility function. Lenders' profits are $(r-\rho)B$, where ρ is the lender's cost of funds. If the credit market is competitive, lenders earn zero profits, hence $r = \rho$. In that case, the optimal loan solves solves

$$\max_B \; U(B) + \delta U(y - (1+\rho)B)$$

The first order condition (FOC) for the optimal B is:

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

For a specific utility function, the FOC can be solved for the loan demand function that gives borrowers' optimal loan for given income, interest rate, and discount rate. Let that function be denoted in general by $B(y,\rho)$. We know from the usual comparative static analysis (see appendix) that loan demand is increasing in income ($B_y > 0$) and decreasing in the loan rate ($B_\rho < 0$). With optimal borrowing, at $B = B^*$, welfare equals $W(B^*) = U(B^*) + \delta U(y-(1+\rho)B^*)$.

3.1 Deluded Borrowers

Suppose borrowers mistakenly believe their future income is $y + \tau > y$. For now, we assume borrowers delude themselves about their future income and lenders either go along with the delusion or are not aware of it. Since loan demand is increasing in income, income delusion causes households to borrow more than is optimal and have lower than optimal welfare.

Figure 6 illustrates the welfare loss caused by income delusion. Borrowers' indifference curves over B and $B(1+\rho)$ are upward sloping. Welfare increases toward the southeast, where $B(1+\rho)$ is lower for given B. Optimal borrowing with accurate income beliefs is at the tangency, B^*, where borrowers' willingness to substitute higher second-period repayments for more first-period borrowing equals the interest rate $(1+\rho)$. Income delusion twists

the indifference curve through B^* counterclockwise, meaning borrowers are willing to repay more in the second period for a given increase in borrowing in the first-period. "Optimal" borrowing with deluded income beliefs is at the tangency B^τ. Welfare is lower at B^τ that at B^*.

Borrowers pay the safe rate of interest on all borrowing here, so the welfare loss from income delusion is not because lenders are "overcharging" for loans. The problem is over-borrowing; every unit of borrowing between B^* and B^τ reduces welfare because borrowers' true (undeluded) willingness to repay debt next period in exchange for higher consumption today is less than cost of the extra borrowing. In other words, deluded borrowers violate first-order condition (1).[11]

3.1.1 Overborrowing and the Rate of Discount: Delusion vs. Impatience

The overborrowing caused by income delusion can be confused with borrower *impatience*. A lower discount factor also increases debt for borrowers with accurate income beliefs so there is some tension between distinguishing between overborrowing *deluded* households and optimal borrowing by borrowers with high discount rates (but accurate income assessments). Observing an abnormally high debt-to-income ratio might reflect deluded income beliefs, or, borrower impatience.[12]

3.2 Deceptive Lenders

Suppose lenders can delude borrowers about their future income by an amount τ at a cost (to the lender) of $C(\tau)$, where $C'(\cdot) > 0$ and $C''(\cdot) > 0$. This cost can represents conscience (the guilty feeling from lying), prosecution risk, or the time spent learning the sales pitch.[13]

[11] Whether households are worse off than if they did not borrow at all depends on whether $W(B^\tau) < W(0) = U(0) + \delta U(y)$.

[12] Impatience also compounds the overborrowing caused by income delusion. For power utility functions, for example, the extent of overborrowing (for given τ) is decreasing in the discount factor δ. In other words, given two borrowers with the power utility function and the same degree of delusion (τ), the more impatient borrower (with the lower δ) will overborrow to a larger extent.

[13] The technological interpretation is close to the "costly falsification" in Lacker and Weinberg (1989), where project owners spend resources to conceal income in order to reduce repayments to investors. Here it

Borrowers here are *gullible* in the sense that they do not consider the possibility that lenders are deluding them about their (the borrower's) future income. Borrowers are increasingly skeptical as the amount of delusion increases, however, hence $C'(\cdot) > 0$ and $C''(\cdot) > 0$.[14] We could represent different degrees of gullibility with different $C(\cdot)$ functions, but we assume $C(\cdot)$ is the same for all borrowers.

Though gullible, households borrow optimally, given their perceived income. That means they are on their demand curve for credit, or equivalently, the amount they borrow satisfies the first order condition above. Profits for a falsifying ("predatory") lender are

$$(r - \rho)B(y + \tau, r) - C(\tau),$$

where $B(\cdot)$ represents the borrower's demand for credit. Given the interest spread $(r - \rho)$ on the loan, a price-taking predator chooses τ to maximize profits. The FOC for τ is

$$(r - \rho)\frac{\partial B(y + \tau, r)}{\partial \tau} = C'(\tau), \tag{2}$$

The predator exaggerates income to the point where the marginal revenue increased loan demand equals the marginal cost of exaggerating.[15]

The incentive to falsify is directly related to the interest spread on loans, and the spread–the mark up in other words–depends on the state of competition. In a completely competitive loan market, spreads are zero, so lenders would have no incentive to falsify. In fact, they could not *afford* to falsify; doing so would require higher spreads to compensate, so borrowers would switch to cheaper, honest lenders. Falsification or predation will occur only if the some barrier to entry causes positive spreads.[16]

What does this model imply about the policies lawmakers are pursuing to curb predatory lending? By limiting the spread on loans, usury limits might indeed reduce the incentive for

is the lenders who "falsify," at some cost, in order to earn higher repayments in the second period.

[14] One could model the information asymmetry here as an adverse selection problem, where borrowers do not know if a lender is lying, but they do know that some fraction of lenders are liars. Supposing that subprime borrowers can solve that subtle inference problem seems unlikely, so we simply suppose that borrowers are more or less gullible.

[15] Is the self-deluded borrower worse off than the borrower that is deceived by lender? Suppose borrower deludes self by τ^s. Further deception occurs if and only if $(r - \rho)\frac{\partial B(y+\tau^s)}{\partial \tau} > C'(\tau^s)$.

[16] Intrepid subprime lending may earn rents for their willingness to venture in to middle and lower-middle income neighborhoods that are off trail to mainstream, white-glove lenders.

lenders to stoke loan demand by exaggerating borrower income (or some other parameter than affects loan demand). Restricting entry into the subprime sector, the other remedy, seems contra-indicated by this model. More competition means lower markups, hence, less incentive to falsify income.

A *monopoly*-predator gets to set the price for loans as well. The first order condition for r is:

$$B(y+\tau, r) = -(r-\rho)\frac{\partial B(y+\tau, r)}{\partial r}. \tag{3}$$

The monopolist raises the interest rate until the extra revenue on every loan equals the loss in revenues from reduced demand for loans.

Given a particular utility function, the monopoly-predator solution (r, τ) is determined by (3) and (2). For example, if households have a utility with constant relative risk aversion (CRRA) of γ the FOC for pricing and predation are (see appendix):

$$r - \rho = \frac{\gamma(y+\tau)(1+r)}{y+\tau-(1-\gamma)(1+r)B}, \tag{4}$$

$$C'(\tau) = (r-\rho)\frac{B}{y+\tau}. \tag{5}$$

Note that, as shown in the appendix, with CRRA utility function, the ratio $\frac{B}{y+\tau}$ is a constant, independent of τ. Thus, the solution (r, τ) for CRRA utility dichotomizes: first the monopolist sets the interest rate per (4), then she decides how much to deceive borrowers' per (5). Hence:

Proposition 1 *If the households have a CRRA utility function, the predatory interest rate is independent of the size of delusion. However, the predatory makes a larger loan than an ordinary monopolist (proof in appendix).*

For other utility functions, a predator-monopolist will tend to charge higher rates than an ordinary monopolist.[17] The exception for CRRA utility is still notable, however, as it means regulators will not always be able to spot predators by the rate they charge. Predators are better detected by how much they lend (too much), than by how much they charge.

[17] This result can be proved analytically for quadratic and exponential utility functions. Moreover, if the assumption in Proposition 2 holds, this result holds for any utility functions.

Our model can also be used to analyze the effect of anti-predatory lending legislation on the interest rate and the amount of deception. Let the cost of falsification be $C(\tau, \alpha)$ with α being a measure of the toughness of the law. Assume that $C_{\tau\alpha} \geq 0$, that is, the marginal cost of falsification is increasing in α.

Proposition 2 *(1)* $\frac{\partial \tau}{\partial \alpha} \leq 0$*; (2) If borrowers have a CRRA utility function,* $\frac{\partial r}{\partial \alpha} = 0$*; (3) In general, if* $\epsilon \leq \frac{r}{r-\rho}$*, then* $\frac{\partial r}{\partial \alpha} \leq 0$*, where* $\epsilon = -\frac{r}{B_\tau}\frac{\partial B_\tau}{\partial r}$ *(proof in appendix).*

Result (1) implies that in general, raising the marginal cost of falsification should also reduce predatory incentives. Greater risk of detection, stiffer penalties, or bad press should make lenders less inclined to falsify income. Note that the elasticity ϵ measures how the responsiveness of loan demand with respect to income delusion changes with interest rate. Result (3) implies that when ϵ is not too large, a tougher anti-predatory law would reduce interest rate too. The condition $\epsilon \leq \frac{r}{r-\rho}$ is not restrictive. For example, it is satisfied with CRRA, exponential, and quadratic utility functions. In particular, Result (2) says that, with a CRRA utility function, a tougher anti-predatory law would have no impact on interest rate. We can also think of α as a parameter that characterizes households: if we assume that α is lower for undegreed households or for those with greater uncertainty about future income, then the model will predict greater income deception for these households which is what we test below.

3.3 Income Uncertainty

When income is uncertain, default is possible. If default risk increases with borrowing, the extra risk may deter deception. Risk also gives potential predators another angle; instead of deceiving borrowers about their future income, they might delude them about the relative risks of high or low income realizations. Income uncertainty also makes our assumption of income deception more tenable; households with fixed incomes may be hard to fool, but households with variable income may be more susceptible.

Suppose household's future income is distributed $F(y|\theta)$ over $(\underline{y}\ \overline{y})$, with density $f(y|\theta)$. The parameter θ affects the mean or variance (or both) of y in some unspecified way. We do not have to be specific about how θ affects F to make our point. Given a loan of B with

interest rate r, the borrower defaults if $y < B(1+r)$. If the borrower defaults, the lender recovers Ry ($R \leq 1$) and the borrower consumes zero with zero (normalized) utility. If $y \geq B(1+r)$, the lender gets $B(1+r)$ and the borrower consumes $C_1 = y - B(1+r)$.

For given θ,the borrower chooses B to maximize

$$U(B) + \delta \int_{B(1+r)}^{\overline{y}} U(y - B(1+r))dF(y|\theta) \tag{6}$$

and the FOC with respect to B is

$$U'(B) = \delta(1+r) \int_{B(1+r)}^{\overline{y}} U'(C_1)dF(y|\theta). \tag{7}$$

Let $B(r,\theta)$ denote the borrowers optimal loan demand as a function of r and θ. The comparative statics with respect to (7) determine whether borrower loan demand is increasing or decreasing in θ. Given $B(\cdot)$ and r, the probability of default equals $F[(1+r)B(\cdot)]$.

This new parameter in the model gives potential predators more ways to deceive. Predators might exaggerate average income, as we assumed before, or understate income variance. Suppose as before that predators can alter θ by an amount τ at cost $C(\tau)$. Let $\Pi(r, B(r,\tau))$ be the profits that the predator makes from the loan. That is,

$$\Pi(r, B(r,\tau)) = (1+r)B(r,\tau)(1 - F((1+r)B(r,\tau))) + \int_{\underline{y}}^{B(1+r)} RydF(y) - (1+\rho)B(r,\tau).$$

Then, the predator's maximization problem is

$$\max_{r,\tau} \quad L(r,\tau,R) = \Pi(r, B(r,\tau)) - C(\tau). \tag{8}$$

The FOC with respect to r and τ are:

$$\frac{\partial \Pi(r, B(r,\tau))}{\partial r} = -\frac{\partial \Pi(r, B(r,\tau))}{\partial B}\frac{\partial B(r,\tau)}{\partial r} \tag{9}$$

$$\frac{\partial \Pi(r, B(r,\tau))}{\partial B}\frac{\partial B(r,\tau)}{\partial \tau} = C'(\tau). \tag{10}$$

Equation (10) implies the predator-monopolist increases τ until the marginal cost of deception equals the marginal increase in profits. Increasing τ increases loan demand by $\frac{\partial B(\cdot)}{\partial \tau}$ and that increase in loan demand increases profits by $\frac{\partial \Pi(\cdot)}{\partial B}$. The change in profits associated with higher loan demand is:

$$\frac{\partial \Pi(r, B(r,\tau))}{\partial B} = [(1+r)(1 - F((1+r)B)) - (1+\rho)] - (1-R)(1+r)^2 Bf((1+r)B). \tag{11}$$

Higher loan demand means the lender earns the risk-adjusted spread on the extra borrowing (the term in [ ]). The downside of higher loan demand is the marginal increase in default risk by $f(\cdot)$.

Downside risk is limited by the recovery rate, R; the higher the recovery rate, the less the lender has to worry about the extra default risk associated with extra borrowing. With mortgage lending, for example, borrowers home equity may keep the lender nearly intact even in the event of default, so predation becomes more compelling (less risky). Note that if income is fixed (i.e. nonrandom), (10) reduces to the first order condition with certain income.

Given certain conditions, we can show

Proposition 3 *Assume that (a)* $B_\theta \geq 0$ *and* $B_r \leq 0$*, (b)* $\frac{\partial[B(1+r)]}{\partial r} \geq 0$*, and (c)* $L_{r\tau} \geq 0$*. Then, (1) a higher recovery rate leads to more delusion, a higher interest rate, larger contractual payments, and a higher default rate; (2) A predator charges higher a interest rate and offers a contract with larger contractual payments than an ordinary monopolist does; Thus, the probability of default/delinquency is higher under a predatory-monoplist than under an ordinary monopolist (proof in appendix).*

The proposition suggests that income risk tends to deter predation through two effect. Risk reduces the expected spread on loans, so lending (or overlending) is simply less profitable. Overlending may also increase the risk of default at the margin. The importance of that marginal effect depends on the recovery rate; the higher the recovery rate, the smaller the deterrent effect. In any case, the deterrent effect of risk is not necessarily enough to keep lenders completely honest. Even with limited recovery, as long as the risk of default is not increasing too rapidly, deception is still optimal. Moreover, higher recovery rates encourage delusion and higher interest rate, which in turn leads to larger contractual payment and thus higher default rate.

The assumptions of Proposition 3 are not restrictive. Assumption (a) follows from the model with non-random income, assuming that delusion encourages, while higher interest rate discourages, borrowing. Assumption (b) means the size of the total debt payment (principal plus interest) increases in the interest rate. Even if higher interest rates reduce loan

demand, in other words, loan demands falls less than the rise in the interest rate. Evidence in Han (2004) supports assumption (b). For assumption (c), note that $L_{r\tau} = \frac{\partial^2 \Pi(r,\tau)}{\partial r \partial \tau}$. That is, $L_{r\tau}$ measures how marginal profit of delusion changes with interest rate. In the model with non-random income that we study above, we can prove that $L_{r\tau} \geq 0$ if the borrowers have a CRRA, exponential, or quadratic utility function. So assuming it here seems reasonable.

We exploit this proposition later when we test for predatory lending in mortgage markets, after we test for predation by Payday lenders.

4 Testing for Predatory Payday Lending

Predators in our model dupe gullible households into overborrowing. In essence, predators contrive to increase the *demand* for loans so predators should be detectable by how much they lend. The identification problem here is that payday lenders may also increase the *supply* of credit legitimately. Defenders of the payday lending industry might describe it as a genuine financial innovation that lowers the cost of credit to low income, working households. Hence, we would expect more borrowing in states that allow payday lending (not all do), even if payday lenders are not predatory.

To distinguish predatory loans from legitimate lending we test whether debt levels in states that allow payday loans are unusually high for households that seem most susceptible to income or demand manipulation, i.e. prey. In terms of our model, we need proxies for the cost of deceiving borrowers, $C(\tau)$; low $C(\tau)$ households are easier to fool, so they will be fooled more. We identify low $C(\tau)$ households by no college diploma, uncertain income, and smokers. Those are our proxies for *prey*. We allow household debt levels to depend directly payday laws and on those prey proxies to allow for any differences in the supply of loans in those states and to those households. We identify predatory lending with the interaction between payday laws and our prey proxies. Higher debt and delinquency among prey in payday states is potential evidence of excessive *demand* for loans due to deceptive practices by payday lenders.

We test for predatory lending by payday lenders by looking at differences in household debt across states with different regulations on the payday lending industry. We focus on

whether that difference is higher for households that are more susceptible to manipulation by predatory lenders. Specifically, we estimate regressions across states (j), households (i), and years (y) :

$$\text{Tobit}(debt_{ijy}) = T(P_j, p_i, Y, P_jY, p_iY, P_jp_i, P_jp_iY, X_{ij}) + e_{ijy}.$$

The dependent variable is *total* debt because the SCF does not ask specifically about payday loans.[18] We estimate a Tobit function because the distribution of debt is truncated at zero. P_j measures how permissive states are toward the business of payday lending. The indicator p_i identifies potential prey: households without a college degree ("undegreed"), uncertain income, or smokers.

Debt may be correlated with P_j and p_i for legitimate (non-predatory) reasons. If payday lenders are increasing credit supply and lowering costs (compared to pawnshops, say), we would expect higher debt for households in states with more permissive payday regulations. Debt could also depend directly on our prey proxies p_i. Undegreed households may have lower future income (we control for current income), so they may have lower demand for credit *and* they may also face a lower supply. Households with uncertain income may have *higher* credit demand (than borrowers with fixed income) but a lower supply of credit (because uncertain income increases risk for lenders). Including P_j and p_i in the regression controls for these legitimate supply and demand effects. The year variable Y distinguishes households surveyed in 1995 and 2001. Household debt may differ across states for reasons unrelated to payday lending, so we eliminate such differences by looking at changes in debt within a state between those two periods. Ideally, we want to compare before and after the advent of payday lending but that date, even the year, is uncertain. Caskey (2002) figures there were fewer than 200 payday lenders at the at the beginning of the 1990s, and Rotunday, the CEO of EZ Corp (a pawnbroker) did not notice competition from payday lenders until the late 1990s (see above), about the same time "predatory lending" started appearing in the American Banker (Figure 5), so we approximate before and after (the advent of payday

[18] 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.

lending) using 1995 and 2001.[19]

We identify *predatory* lending with the interaction: $P_j p_i Y$. Predators in our model boost loan demand illegitimately by inflating borrowers' income. Their most likely prey are uneducated households, or households with more income uncertainty. Any preying on such households should show up as a positive coefficient on that interaction term. This is essentially a difference-in-difference-difference analysis: the first difference is across payday and nonpayday states, the second across prey and non-prey, the third across years (before and after the innovation of payday lending).

X is a long list of variables that might affect loan supply and demand: income, age, job seniority, county unemployment, marital status, family size, race, sex, attitudes toward credit, bank concentration and deregulation controls, and the state bankruptcy exemptions studied in Gropp et. al.[20] We use data on state bankruptcy exemptions as of 1999 as compiled by Lehnert and Maki (2002). We assign a bankruptcy exemption to each individual that takes into account state-specific exemption levels that vary according to both marital and homeownership status.

Our key identifying assumption is that X controls for other differences across households and states that might cause difference in observed debt levels. Given X, any *additional* debt among prey after the advent of Payday lending may represent overborrowing.

We estimate similar regressions to test whether payday lending is loosens household credit constraints,

$$Probit(creditconstrained) = H(P_j, p_i, Y, P_j Y, p_i Y, P_j p_i, P_j p_i Y, X_{ij}) + e_{ijy}$$

C*redit constrained* equals 1 if households reported they were rejected for credit, given

[19] The SCF is only conducted every three years, so our choice of years is limited accordingly. The 2004 survey is not yet available.

[20] Their identification issues are similar to ours in some respects. Higher exemptions may reduce the supply of credit (because lenders claims are less secure) *and* increase the demand for debt (because borrowers obigations are less binding). The net effect on the quantity of credit is ambiguous. But the demand effect should be larger for wealthy housholds (with more assets at risk), so the suppy effect can be identified by testing whether total debt decreases disprortionately for less well off borrowers in high exemption states. It does.

less credit than they applied for, or did not apply for credit because they expected rejection. Our final regression estimates whether households in payday states were more likely to miss a debt payment after the advent of payday lending:

$$Probit(missedpayment) = H(P_j, p_i, Y, P_jY, p_iY, P_jp_i, P_jp_iY, X_{ij}) + e_{ijy}.$$

Our model implies that the extra debt burden associated with predatory lending will tend to increase default (or delinquency) rates. Thus, if payday lenders are predatory, we would expect higher delinquency after the advent of payday lending in states that allow it, particularly for prey.

The delinquency regressions seem like the ultimate (or better) test of whether payday lending is welfare reducing, as "predatory" is defined here. If a finding of higher debt and/or looser credit constraints is associated with higher risk of credit delinquency, detractors of Payday lending can claim more convincingly that payday lenders lower welfare by luring uneducated households (or other prey) into unaffordable levels of indebtedness. If not– if delinquency rates are not higher payday states, defenders can argue that payday lenders raise welfare by increasing credit supply and relaxing credit constraints.

4.1 Data

We study the area-probability cross sections in the 1995 and 2001 Surveys of Consumer Finance (SCF). The sample in those years covered 2,780 and 2,917 households, respectively, giving us 5,697 households in all.[21] Table 2 reports summary statistics for sample. For reference later, note the magnitudes of the dependent variables (debt, credit constraints, and delinquency) and the predator-prey proxies. Total household debt averaged $44,000, and mortgage debt averaged $33,000. Sixteen percent of households missed a debt payment over the previous year, and twentyone percent were credit constrainted (i.e., they reported

[21] The list sample indicator and the geographic information are not available to the public (including the authors) so all the statistics in our study 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.

being rejected discouraged from applying for credit). Fifty six percent of households lived in states that allowed payday lending and 58 percent lived in states permitting non-judicial mortgage foreclosure. Thirty-one percent of households reported having uncertain income, 68 percent were undegreed, and 29 percent smoked.[22]

4.2 Results

Table 3a reports regression results using a single dummy variable to distinguish states that allow payday lending ($Payday = 1$) from states that to not ($Payday = 0$). We report all the regression coefficients but we emphasize the key interactions that measure differences in debt (etc.) among prey in payday states after the advent of payday lending. Households with uncertain income had significantly higher debt after the advent of payday lending if their state permitted payday loans, and smokers in payday states were substantially (8.0 percent) less likely to report being credit constrained after the advent of payday lending. Importantly, the higher debt and looser credit constraints were not associated with debt delinquency.

Table 3b reports similar regressions with more detail on the size payday limits: *Payday limit* equals the state limit on payday loans (0 for states that prohibit payday lending). *No payday limit* equals one for states with unlimited payday loans and zero for states with limits. Note that only three percent of households in our sample lived in states with unlimited payday loans. There is no difference in debt for households with uncertain income or without degrees in states with higher loan limits, either before or after the advent of payday lending. Payday lending is associated with looser credit constraints, however; undegreed households and households with uncertain income who lived in states with unlimited payday loans were about 15 percent less likely to report credit constraints after the advent of payday lending. That is a large effect compared to the mean probability of being credit constrained (21 percent). Smokers in states with higher payday limits were also significantly less likely

[22] The Survey of Consumer Finances actually consists of 5 separate datasets or "implicates" since missing data are multiply imputed. As such, all of our estimates and their corresponding standard errors are computed using the Repeat Imputation Inference (RII) techniques. See Montalto and Sung (1996) for an accessible introduction to RII estimation and inference.

to report being constrained after payday lending was introduced, but that effect is small. The probability of missing a payment is not higher in states with larger payday limits. On the contrary, in states allowing unlimited payday loans, households with uncertain income were about nine percent *less* likely to miss a payment after payday lending was introduced.

In sum, payday lending seems to loosen credit constraints for households without degrees, households with uncertain income, and households who smoke. Debt is not significantly higher for prey in payday states except for households with uncertain income.[23] In no case do we find higher debt delinquency associated with payday lending. In fact, we find somewhat lower delinquency risk for the (small set) of households with uncertain income that live in states with unlimited payday loans.

5 Testing for Predatory Mortgage Lending

To test for predatory lending in mortgage markets, we exploit the implication of our model that the incentive to dupe households into overborrowing is increasing in the recovery rate on default. The higher default risk associated with overlending tends to deter overlending, but a higher recovery rate weakens that deterrent. Hence, we would expect higher mortgage debt in states where default recovery rates are higher, particularly among potential prey.

We proxy for differences in recovery rates using differences in foreclosure procedures across states. Some states require more expensive judicial foreclosure procedures that should reduce recovery rates compared to states that permit easier, *non*judicial foreclosure (Pence 2003). A higher recovery rate might increase the supply of debt for legitimate reasons, of course, so to distinguish that effect from illegitimate overlending by predators who manipulate loan demand we test whether mortgage debt and total debt are *especially* high for potential prey who happen to live in states that permit non-judicial foreclosure.

Table 4 reports estimates of

$$Tobit(mortgagedebt_{ijy}) = T(N_j, p_i, Y, N_jY, p_iY, N_jp_i, N_jp_iY, X_{ijy}) + e_{ijy},$$

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

where N equals zero for state permiting $n$on-judicial foreclosure. The other variables are defined as above. Non-judicial foreclosure is associated with significantly mortgage debt, while households with uncertain income, and those without college degrees have significantly lower mortgage debt, as do smokers. None of the interactions between prey, foreclosure proceedings, and year are significant, meaning we do not find higher mortgage debt or delinquency in states where easier foreclosure might invite more predatory morgage lending.

6 Some evidence that competition lowers payday loan rates

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 loans strikes many critics as usurious or unconscionable, hence the tendency for states to impose usury limits on payday loan rates. Economists (at least us) would expect competition among payday lenders to drive fees down until the cost of a payday loan just covers the lenders' opportunity costs of funds, any other costs (both fixed and variable) of making payday loans, and the risk of default on loans. The results in this section suggest that competition does work; using a small data set combined from two sources, we find lower payday fees and rates in cities with more payday lenders and pawnshops per capita.

Our data on payday loan rates and fees are from a 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.)[24] In their analysis of the data, 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 claim that

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

competition does not work in payday lending.

Our data on the number of payday lenders in various cities from Graves and Peterson (2005). Their study pinpoints the location of payday lenders by zip code in twenty states with military bases to see if payday lenders "target" soldiers.[25] They demonstrate conclusively that payday lenders do cluster around bases; for example, the 92054 zipcode comprising Camp Pendelton had 22 payday outlets, 17 more than expected given the population in that zip. Graves and Peterson conclude (p. 2005):

> Those who genuinely care about the welfare of American soldiers...should find their empirical results profoundly troubling...for the reasonable and caring, supporting the troops should an emphatic return to ...usury laws insisted upon by previous American generations.

To see if competition among payday lenders might obviate usury limits, we matched Graves and Petersons' (2005) data on the number of payday lenders with PIRGs' (2001) data on payday loan rates and fees. The match was not perfect. The price data are from 2001 but the data on number of lenders are from 2004. The number of lenders in 2004 should be correlated with lenders in 2001, but if not, that mistmatch probably works against the competition hypothesis (as explained below). The overlap between cities in the two studies was not large; 37 cities had overlapping data on payday loan rates and location, and 22 cities in nine states had overlapping data on insufficient funds fees (NSF) and location.[26] Payday lenders also compete with pawnshops, not just with other payday lenders, so we tabulated the number of pawnshops (per 100,000 people) in the set of overlapping the cities from yellowpages.com.

Table 5 (panel A) reports summary statistics and correlations. The mean price for a two week payday loan was $17.1 per $100. The mean NSF fee charged (in case the borrowers'

[25] We ignore the question of whether locating near customers represents insidious targetting. When car rentals locate near airports, are they targetting fliers?

[26] The cities with overlapping payday location and loan rates were in Arizona, California, Colorado, Florida, Kentucky, North Carolina, Ohio, South Carolina, Texas, and Virginia. NSF data were not available for any Colorado cities.

post-dated check bounced) was $18.4. The mean number of payday lenders and pawnshops per 100000 population was 43.6 and 30, respectively. The median number of lenders was substantially smaller.[27]

Panel B reports coefficients from regressions of payday prices on the number of payday lenders and pawnshops per capita. Payday loan fees and NSF fees are both decline significantly as the number of payday lenders increases. The coefficient on *payday lenders/100,000* in columns 1 and 5 implies that 50 more payday lenders/100,000 (about one standard deviation) is associated with a $0.50 decline in the loan fee and a $6.5 drop in NSF fees. Payday loan rates also decline as the number of pawnshops increases (column 2), consistent with other evidence that payday lenders compete not just amongst themselves, but also against pawnhops.[28]

The negative correlation between payday loan rates, on the one hand, and the number of payday lenders or pawnshops, on the other, supports the hypothesis that competition does lower prices for payday loans. The $0.50 drop in loan fees per extra 50 payday lenders/100,000 is not large, but that estimate is probably biased downward. We identify a larger number of payday lenders in a given city with a larger *supply* of payday lenders, but more payday lenders might also reflect higher *demand*—and hence prices– for payday loans. To the extent that a larger number of payday lenders reflects higher demand for loans, rather than higher supply, the estimated coefficient on payday lenders per capita understates the negative effect of increased competition and supply on payday prices (recall figure 2).[29] That bias is probably compounded by the mismatch between the price data (from 2001) and the number of lenders (from 2003-04) because the cities where payday lenders grew fastest in that interim were probably those with higher demand (and thus higher prices) in 2001.

[27] 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. Our results do not change if we use the medians, instead of means.

[28] Regressing the annual percentage rate (as opposed to dollar fee) on *payday lenders/100,000* also yields a negative (but insignificant) coefficient.

[29] That bias is distinctly possible here, because Graves and Petersons' (2004) study concentrated on cities with military bases, and soldiers may have high demand for payday loans.

7 Conclusion

"Predatory" is an inflammatory term used by lawyers, lawmakers, journalists, and consumer groups to condemn high prices, excessive lending, and other seemingly dubious practices by payday and subprime (mortgage) lenders. Even those reformers admit that "predatory" is hard to define, however, 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) by exaggerating household income and hence, their willingness and ability to repay credit. We show that lenders will prey (in our sense) as long as the extra revenue from larger (or more expensive) loans exceeds the extra default risk associated with higher debt. We also show that credit *counseling*–disabusing households of their inflated income beliefs-limits the welfare loss from predatory lending. Counseling will not always drive out predation, however, because counseling involves convincing households to borrow *less* at terms that are not necessarily cheaper (because verifying households' income may cost as much falsifying it).

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 excessively (relative to households' income). The predators in our model lend excessively, and the extra debt leads to higher risk of delinquency. Reformers also condemn payday and subprime lenders of "targetting vulnerable consumers" (PIRG 2001) that are less sophisticated. The predators in our model naturally prey on households that are easier to fool.

Our model also helps in distinguishing illegitimate *predatory* lending from high cost, high risk–yet legitimate–credit. Reformers tend to focus on the interest rates charged by alleged predators, but our model shows that predators do not necessarily charge more than ordinary lenders. Predators always lend more, however, suggesting that predators are

better detected by how much they lend rather than how much they charge. The incentive to overlend, we show, depends on the cost of fooling households into overborrowing, on the one hand, and the recovery rate in case of default, on the other. If payday lenders and subprime mortgage lenders were preying on unsuspecting households, we would expect higher debt and delinquency among easier- to-fool-households (prey) living states with higher payday loan limits and cheaper home foreclosure procedure, yet we find differences consistent with that prediction. Households with uncertain incomes (potential prey) who live in payday states do have higher debt, but *not* higher delinquency. In fact, they have slightly *lower* delinquency rates and they are less apt to report being credit constrained (denied credit or too discouraged to apply). 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, payday loan may help risky households borrow more and 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 payday or subprime borrowers.

The differences we find for smokers are interesting, but harder to interpret in terms of predatory lending. Smokers tend to borrow less (given income and many other controls) and are more likely to report being credit constrained *unless* they live in states permitting payday loans. 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 procrastinaters) 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.[30]

While reformers often advocate usury limits to contain high payday loan prices, 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 naivety, payday consumers appear sophisticated enough to shop for lower prices. The problem (of

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

high rates) may not be too many such lenders, but too few. If scrutiny and prosecution risk 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 (to us) that payday lending raise household welfare by providing a lower cost, preferable alternative to borrowing from pawnshops. Unless credit is somehow bad, the extra (or more convenient) credit from payday lenders must be good.[31]

References

[1] Ausubel, Lawrence, "The Failure of Competition in the Credit Card Market," American Economic Review, Vol. 81, No. 1, March 1991, pp. 50-81.

[2] Ausubel, Lawrence, "Adverse Selection in the Credit Card Market," Working Paper, Department of Economics, University of Maryland, June 1999.

[3] Abt Associates Inc., "Mortgage Lending in North Carolina After the Anti-Predatory Lending Law," September 2004

[4] Brunnermeier, Markus and Parker, Jonathan, "Optimal Expectations," NBER Working Paper 10707, August 2004

[5] Caskey, John, "Pawnbroking in America: The Economics of a Forgotten Credit Market," Journal of Money, Credit and Banking, Vol. 23, No. 1, February 1991, pp. 85-99.

[6] Caskey, John, "Fringe Banking: Check-Cashing Outlets, Pawnshops, and the Poor," (New York: Russell Sage Foundation) 1994.

[7] Caskey, John, "Fringe Banking and the Rise of Payday Lending," presented at the conference "Credit Markets for the Poor", Princeton University, May, 2003

[31] 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.

[8] DellaVigna, Stefano and Malmendier, Ulrike, "Contract Design and Self-Control: Theory and Evidence", Quarterly Journal of Economics Vol. 119 No. 2, May 2004, pp. 353-402

[9] DellaVigna, Stephano and Paserman, M. Daniele (2004), "Job Search and Impatience" NBER Working Paper No. 10837

[10] Elliehausen, Gregory and Staten, Michael, "Regulation of Subprime Mortgage Products: An Analysis of North Carolina's Predatory Lending Law," Credit Research Working Paper #66, November 2002.

[11] Federal Deposit Insurance Corporation, "FDIC Revises Payday Lending Guidance", Press Release PR-19-2005, March 2, 2005, http://www.fdic.gov/news/news/press/2005/pr1905.html.

[12] Fox, Jean Ann, "Unsafe and Unsound: Payday Lenders Hide Behind FDIC Bank Charters to Peddle Usuary," Consumer Federation of America, March, 2004.

[13] Fox, Jean Ann and Mierzwinski, Edmund,"Rent-a-Bank Payday Lending: How Banks Help Payday Lenders Evade State Consumer Protections," Consumer Federation of America and U.S. Public Interest Research Group, November, 2001.

[14] Graves, Stephen M. and Christopher L. Peterson, "Predatory Lending and the Military: The Law and Geography of "Payday" Loans in Military Towns," mimeo, University of Florida College of Law, 2005.

[15] Gropp, Reint, Scholz, Karl John, and White, Michelle, "Personal Bankruptcy and Credit Supply and Demand," Quarterly Journal of Economics, Vol. 112, No. 1, February 1997, pp. 217-251.

[16] Gruber, Jonathon and Mullainathan, Sendil. "Do Cigarette Taxes Make Smokers Happier," NBER working paper # 8872.

[17] Han, Song. "Discrimination in Lending: Theory and Evidence;" Journal of Real Estate Finance and Economics, July 2004, v. 29, iss. 1, pp. 5-46

[18] Immergluck, Dan and Smith, Geoff, "Risky Business - An Econometric Analysis of the Relationship Between Subprime Lending and Neighborhood Foreclosures," Woodstock Institute Research Report, March 2004

[19] Inside Mortgage Finance Publications, Inc., "The 2003 Mortgage Market Statistical Mannual," Vol. II

[20] Lacker, Jeff and Weinberg, John A., "Optimal Contracts under Costly State Falsification," Journal of Political Economy, December 1989, v. 97, #6, pp.1345-63.

[21] Laibson, David, "Golden Eggs and Hyperbolic Discounting", Quarterly Journal of Economics, Vol. 112 No. 2, May 1997, pp. 443-477

[22] Lehnert, Andreas and Maki, Dean, "Consumption, Debt, and Portfolio Choice: Testing the Effects of Bankruptcy Law," Finance and Economics Discussion Series 2002-14, Federal Reserve Board, February 2002

[23] Litan, Robert, "A Prudent Approach to Preventing Predatory Lending" American Bankers Association, February 2001

[24] Pence, Karen, "Foreclosing on Opportunity: States Laws and Mortgage Credit," Finance and Economics Discussion Series 2003-16, Federal Reserve Board, April 2003

[25] Munasinghe, Lalith and Sicherman, Nachum "Why Do Dancers Smoke? Time Preference, Occupational Choice, and Wage Growth" NBER Working Paper No. 7542

[26] Montalto, Catherine P. and Sung, Jaimie, "Multiple Imputation In The 1992 Survey Of Consumer Finances", Financial Counseling and Planning, Volume 7, 1996, pp. 133-146

[27] Rajan, Raghuram, "The Past and Future of Commercial Banking Viewed Through an Incomplete Contract Lens", Journal of Money, Credit and Banking, Vol. 30, No. 3, Part 2, August 1998

[28] Shui, Haiyan and Ausubel, Lawrence, "Time Inconsistency in the Credit Card Market," 14th Annual Utah Winter Finance Conference, May 2004.

[29] Stock, Richard D. 2001. "Predation in the Subprime Lending Market: Montgomery County" Center for Business and Economic Research, University of Dayton. Project 1097. October, 2001.

[30] Townsend, Robert M, "Optimal Contracts and Competitive Markets with Costly State Verification," Journal of Economic Theory, Oct. 1979, v. 21, iss. 2, pp. 265-93

[31] U.S. Department of Housing and Urban Development and U.S. Department of Treasury, *Curbing Predatory Home Hortgage Lending: A Joint Report*, June 2000

Appendix

A Properties of Loan Demand Function

The FOC condition for household's loan demand problem is

$$U'(B) = \delta(1+r)U'(y-(1+r)B) \tag{12}$$

Denote the demand for loan by $B(y, r, \delta)$. Then, straightforward comparative static analysis leads to the following results (proof is avaliable upon request).

Proposition 4 *The household's demand for loan has the following properties:*

- $\frac{\partial B}{\partial y} \geq 0$, $\frac{\partial B}{\partial \delta} \leq 0$, $\frac{\partial B}{\partial r} \leq 0$.
- *With a CRRA utility function ,* $\frac{\partial B)}{\partial y} = \frac{B}{y}$, $\frac{\partial^2 B}{\partial y \partial r} \leq 0$, $\frac{\partial (B/y)}{\partial y} = 0$, *and* $\frac{\partial^2 B}{\partial y \partial \delta} \leq 0$.
- *Moreover, let* $\epsilon = -\frac{1+r}{B}\frac{\partial B}{\partial r}$ *and the risk aversion coefficient be* γ. *Then* $\epsilon \leq 1$ *if* $\gamma \geq 1$, $\epsilon > 1$, *if* $\gamma < 1$. *This in turn implies that contractual payments* $(1+\rho)B$ *is increasing in* r *is* $\gamma \geq 1$ *and is decreasing in* r *if* $\gamma < 1$.

B Proofs of Propositions 1 and 2

Let $B = B(y+\tau, r)$ be the demand for loan. Assume that $C(\tau, \alpha)$ satisfies: $C_\tau > 0$, $C_{\tau\alpha} > 0$ and $C_{\tau\tau} > 0$. The lender solves the following problem:

$$\max_{r,\tau} \; L(r,\tau) = (r-\rho)B(r,\tau) - C(\tau).$$

Then, the FOC conditions for the predator's problem are:

$$L_r = B(y+\tau, r) + (r-\rho)\frac{\partial B(\tau, r)}{\partial r} = 0, \tag{13}$$

$$L_\tau = (r-\rho)\frac{\partial B(\tau, r)}{\partial \tau} - C_\tau = 0 \tag{14}$$

To find out how the toughness of the anti-predatory lending law on interest rate and loan size, we need conduct a comparative statics with respect to α. First, take partial derivatives:

$$L_{rr}\frac{\partial r}{\partial \alpha} + L_{r\tau}\frac{\partial \tau}{\partial \alpha} = -L_{r\alpha} \tag{15}$$

$$L_{\tau r}\frac{\partial r}{\partial \alpha} + L_{\tau\tau}\frac{\partial \tau}{\partial \alpha} = -L_{\tau\alpha}, \tag{16}$$

with

$$L_{r\tau} = B_\tau + (r-\rho)B_{r\tau}, \quad L_{r\alpha} = 0, \quad L_{\tau\alpha} = -C_{\tau\alpha}.$$

By the theory of maximization, the second-order condition implies that (1) $L_{rr} \leq 0$; (2) $L_{\tau\tau} \leq 0$; (3) $\Delta = L_{rr}L_{\tau\tau} - L_{r\tau}^2 \geq 0$. Solve for $\frac{\partial r}{\partial \alpha}$ and $\frac{\partial \tau}{\partial \alpha}$ to get:

$$\frac{\partial r}{\partial \alpha} = -\Delta^{-1}C_{\tau\alpha}L_{r\tau}, \quad \frac{\partial \tau}{\partial \alpha} = \Delta^{-1}C_{\tau\alpha}L_{rr}.$$

Thus, $\frac{\partial \tau}{\partial \alpha} \leq 0$, and the sign of $\frac{\partial r}{\partial \alpha}$ depends on the sign of $L_{r\tau}$. If $\epsilon \leq \frac{r}{r-\rho}$, then $L_{r\tau} \geq 0$, implying $\frac{\partial r}{\partial \alpha} \leq 0$, where $\epsilon = -\frac{r}{B_\tau}\frac{\partial B_\tau}{\partial r}$. If the household has a CRRA utility function, $L_{r\tau} = 0$. Thus, $\frac{\partial r}{\partial \alpha} = 0$.

We now find out whether a predator charges higher interest rate than an ordinary monopolist. Since the FOC of an ordinary monopolist is (13) with $\tau = 0$, we can, theoretically, answer these questions by conducting a comparative static analysis on (13) to get $\frac{\partial r}{\partial \tau}$ and then evaluate the result at $\tau = 0$. It is straightforward to show that

$$\frac{\partial r}{\partial \tau} = -L_{r\tau}/L_{rr}. \tag{17}$$

In general, we cannot sign the above result. But, again, if $\epsilon \leq \frac{r}{r-\rho}$, $L_{r\tau} \geq 0$, implying $\frac{\partial r}{\partial \tau} \geq 0$. If the household has a CRRA utility function, $L_{r\tau} = 0$. Thus, $\frac{\partial r}{\partial \tau} = 0$.

C Proof of Proposition 3

The system for the comparative statics is

$$L_{\tau\tau}\frac{\partial \tau}{\partial R} + L_{r\tau}\frac{\partial r}{\partial R} = -L_{\tau R}, \tag{18}$$

$$L_{r\tau}\frac{\partial \tau}{\partial R} + L_{rr}\frac{\partial r}{\partial R} = -L_{rR}. \tag{19}$$

By the theorem of maximization, $L_{rr} \leq 0$, $L_{\tau\tau} \leq 0$ and $\Delta = L_{rr}L_{\tau\tau} - L_{r\tau}^2 \geq 0$. Also,

$$L_{\tau r} = \frac{\partial \Pi_B(r,\tau)}{\partial r} B_\tau + \Pi_B \frac{\partial B_\tau(r,\tau)}{\partial r} \tag{20}$$

$$L_{rR} = fB(1+r)(B + B_r(1+r)) \tag{21}$$

$$L_{\tau R} = B_\tau fB(1+r)^2 \tag{22}$$

Thus,

$$\frac{\partial r}{\partial R} = \Delta^{-1}(L_{\tau R}L_{r\tau} - L_{rR}L_{\tau\tau}) = \Delta^{-1} fB(1+r)((1+r)B_\tau L_{r\tau} - (B + B_r(1+r))L_{\tau\tau}) \tag{23}$$

$$\frac{\partial \tau}{\partial R} = \Delta^{-1}(L_{rR}L_{\tau r} - L_{\tau R}L_{rr}) = \Delta^{-1} fB(1+r)((B + B_r(1+r))L_{\tau r} - (1+r)B_\tau L_{rr}) \tag{24}$$

If, as we show in the model with no income uncertainty, $L_{r\tau} \geq 0$, and contractual payments, $B(1+r)$, are increasing in r, then the above equations imply that $\frac{\partial r}{\partial R} \geq 0$ and $\frac{\partial \tau}{\partial R} \geq 0$. These also imply that $\frac{\partial r}{\partial \tau} \geq 0$ at $\tau = 0$. Finally, default probability is increasing in recovery rate, and default probability for a predator is higher than for an ordinary monopolist. Note that default probability is $F(B(1+r)|\text{true } \theta)$. So it is enough to show $B(1+r)$ is increasing in R and is higher for predator.

$$\frac{\partial B(1+r)}{\partial R} = \frac{\partial B(1+r)}{\partial r}\frac{\partial r}{\partial R} + (1+r)\frac{\partial B}{\partial \tau}\frac{\partial \tau}{\partial R} \geq 0,$$

and using the FOC of r only and evaluating at $\tau = 0$, we get

$$\frac{\partial B(1+r)}{\partial \tau} = \frac{\partial B(1+r)}{\partial r}\frac{\partial r}{\partial \tau} + (1+r)\frac{\partial B}{\partial \tau} \geq 0.$$

D A Model of Credit Counseling

Can a welfare reducing provision of credit, as we define predatory lending, persist in equilibrium? If income delusion or deception lowers borrowers welfare, what is to stop another lender from correcting borrowers' income and borrowing decisions and sharing the welfare gain with the borrower?

This section considers a form of credit counseling cum lending where competitors to the predator correct borrowers' income beliefs and offer alternative credit contracts. The counselor is also assumed to be a profit maximizer, a monopolist in fact, but the counselor

gets a foothold in the market if and only if he or she can raise borrowers' welfare relative to the pure predatory outcome. We show that if counseling costs are high enough, optimal income verification is zero and the welfare loss from predatory lending persists in equilibrium. Profits from counseling are bounded for a very basic reason: counseling is costly, and in the end, it entails lending less but at a higher rate (to cover counseling costs). In some cases, counseling may not be profitable. Even so, the costs of counseling are a bound on the amount of deception that can occur. More precisely, the limit on how much welfare predators can filch from unsuspecting borrowers is bounded by the costs that a benign lender (or counselor) would have to spend to correct or protect the borrower.

Suppose at a cost of S, a counselor/lender can observe a borrower's true income and convey that information to the borrower.[32] In our setting, the only contract term that a lender offers is the interest rate. After having learned his true income, the borrower would compare his loan demand and utility using his true income and the interest rates offered by the counselor and the predator. If the lender/counselor wants the borrower's business after spending S, the borrower's welfare under the counselor/lender must be at least as high as under the contract offered by the predator. Hence, the counselor solves:

$$\pi(r^{cp}) = \max_{r} (r - \rho)B(y, r) - S \tag{25}$$

subject to the borrower's participation constraint:

$$U(B(y, r)) + \delta U(y - B(y, r)(1 + r)) \geq U(B(y, r^{cp}) + \delta U(y - B(y, r^{cp})(1 + r^{cp})), \tag{26}$$

where r^{cp} is the interest rate offered by the *constrained predator* (as indicated by the superscript cp).

The left hand side of (26) is the borrower's welfare from the loan offered by the counselor. The right hand side is welfare with the loan offer from the predator. Note that loan demand and utility on both sides are computed using the borrower's correct income.

Since the borrower's welfare is decreasing in the interest rate, the constraint (26) is equivalent to

$$r \leq r^{cp}. \tag{27}$$

[32]The fixed cost of counseling here is akin to Townsend's (1979) costly state verification model, except income is neither random, or freely observed by the borrower.

Thus, the counselor's FOC is

$$B(y,r) + (r-\rho)\frac{\partial B(y,r)}{\partial r} = \xi, \tag{28}$$

where ξ is the Lagrangian on borrower's participation constraint.

A counselor *lowers* the interest rate until the marginal profit loss (the left side) equals the marginal (shadow) profit from increasing utility for borrowers by lowering their interest costs (right side).[33] Note that counseling *per se* is not a source of profits to the lender as the benefit of corrected income beliefs is obtained entirely by the borrower. Counseling here is *thankless*; borrowers benefit in period one from observing their true optimality condition, but they do not pay directly for the counseling. However, the counselor is rewarded for his services by the new business of lending to the borrower.

Whether the participation constraint (27) binds depends on how r^{cp} compares to the interest rate charged by an ordinary monopolist (without deception). Denote that interest rate by r^m, and denote the solution to the counselor's problem by r^*. Then, we have the following results.

Proposition 5 *If $r^{cp} \geq r^m$, then (27) does not bind and $r^* = r^m$; otherwise, (27) binds and $r^* = r^{cp}$.*

The intuition is as follows: The lender/counselor earns maximum profits at r^m –the interest rate charged by an ordinary monopolist–and he will does so whenever the interest rate is feasible because the counselor is not benevolent (he is a monopolist too).[34] That happens when $r^{cp} \geq r^m$. When r^m is not feasible because $r^{cp} < r^m$, the counselor will charge an interest rate as high as possible, which is r^{cp} (assuming that the profits are increasing in interest rate up to r^m).

Denote the counselor's maximum net profits by $\pi(r^{cp})$. The potential profits to the counselor constrains the predator: the predator cannot delude borrowers and raise interest rates

[33] It may be easier to see this point using the original constraint (26). Let λ be the corresponding Lagrangian. Then the FOC becomes $B(y,r) + (r-\rho)\frac{\partial B(y,r)}{\partial r} = \lambda\delta U'(C_1)B(y,r)$.

[34] Note that r^* does not depend on τ^{cp} in this setup. This property does not hold in general. It depends on our assumption that S does not depend on τ^{cp} and that the counselor eliminates the delusion completely. Once these assumptions are relaxed, r^* will depend on τ^{cp}.

so much that maximal profits on the loan for the counselor is less than the fixed cost of counseling. Therefore, the equilibrium is determined by the following program.

The constrained predator's problem:

$$\max_{\tau^{cp}, r^{cp}} (r^{cp} - \rho) B(y + \tau^{cp}, r^{cp}) - C(\tau^{cp}) \tag{29}$$

subject to

$$\pi(r^{cp}) \leq 0 \tag{30}$$

and

$$\tau^{cp} \geq 0. \tag{31}$$

The FOC conditions imply:

Proposition 6 *If $(r^m - \rho)B(y, r^m) - S \leq 0$, then (30) does not bind and $r^{cp} = r^p$ and $\tau^{cp} = \tau^p$, where (τ^p, r^p) are solutions to the unconstrained predator's problem. Otherwise, (30) binds and r^{cp} is determined by $(r^{cp} - \rho)B(y, r^{cp}) - S = 0$, and τ^{cp} is determined by*

$$(r^{cp} - \rho)\frac{\partial B(y + \tau^{cp}, r^{cp})}{\partial \tau^{cp}} - C'(\tau^{cp}) + \mu = 0, \tag{32}$$

where μ is the Lagrangian multiplier for (31). In particular, if the borrower has a CRRA utility function, $r^{cp} \leq r^p$ and $\tau^{cp} \leq \tau^p$.

Proof. The FOC with respect to r^{cp} implies that

$$B(y + \tau^{cp}, r^{cp}) + (r^{cp} - \rho)B_r(y + \tau^{cp}, r^{cp}) \geq 0. \tag{33}$$

Dividing both siders by $y + \tau^{cp}$,

$$\frac{B(y + \tau^{cp}, r^{cp})}{y + \tau^{cp}} + \frac{(r^{cp} - \rho)B_r(y + \tau^{cp}, r^{cp})}{y + \tau^{cp}} \geq 0.$$

We have shown that for a CRRA utility function, $\frac{B}{y+\tau}$ is independent of τ, and so is $\frac{B_r}{y+\tau}$. Thus,

$$\frac{B(y + \tau^{p}, r^{cp})}{y + \tau^{p}} + \frac{(r^{cp} - \rho)B_r(y + \tau^{p}, r^{cp})}{y + \tau^{p}} \geq 0.$$

But,

$$\frac{B(y + \tau^{p}, r^{p})}{y + \tau^{p}} + \frac{(r^{p} - \rho)B_r(y + \tau^{p}, r^{p})}{y + \tau^{p}} = 0.$$

And by the theorem of maximization, an *ordinary* monopolist's problem implies that $\frac{B(y+\tau^p,r)}{y+\tau^p}+\frac{(r-\rho)B_r(y+\tau^p,r)}{y+\tau^p}$ is decreasing in r for any given τ (that is, $L_{rr}\leq 0$), as long as $r\leq r^m$. So, $r^{cp}\leq r^p$.

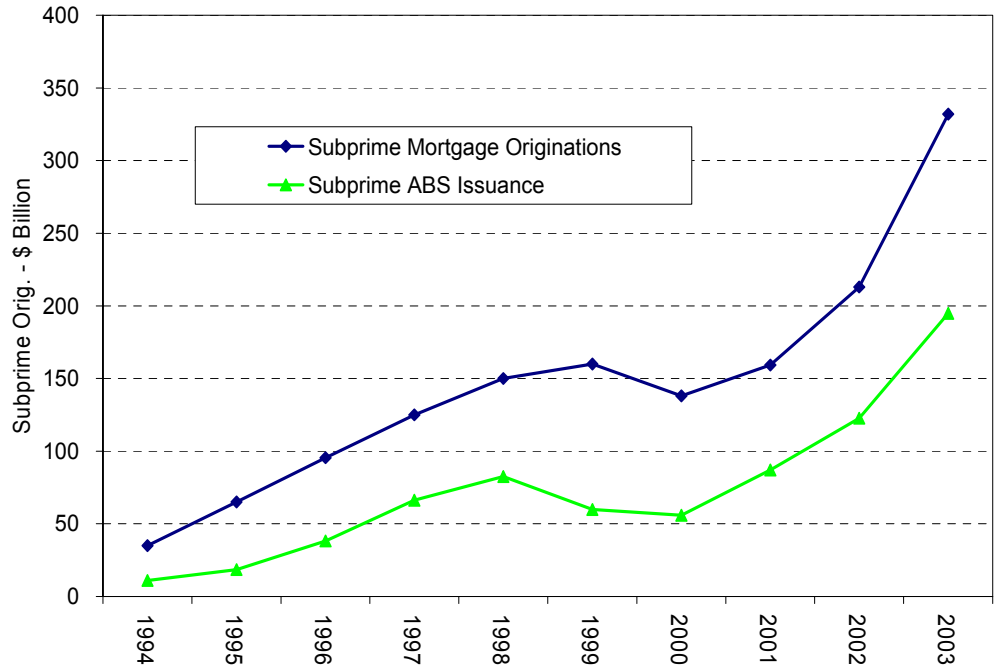
If (31) does not bind, i.e., $\mu=0$, (32) implies that, for a CRRA utility function,

$$\begin{aligned}
C'(\tau^{cp}) &= (r^{cp}-\rho)\frac{\partial B(y+\tau^{cp},r^{cp})}{\partial \tau^{cp}} \\
&= (r^{cp}-\rho)\frac{B(y+\tau^{cp},r^{cp})}{y+\tau^{cp}} \qquad \because \text{CRRA} \\
&\leq (r^{p}-\rho)\frac{B(y+\tau^{cp},r^{p})}{y+\tau^{cp}} \qquad \because L_r\geq 0 \text{ for } r\leq r^m \\
&= (r^{p}-\rho)\frac{B(y+\tau^{p},r^{p})}{y+\tau^{p}} \qquad \because \text{CRRA} \\
&= (r^{p}-\rho)\frac{\partial B(y+\tau^{p},r^{p})}{\partial \tau^{p}} \qquad \because \text{CRRA} \\
&= C'(\tau^p)
\end{aligned} \tag{34}$$

Because $C'(\tau)$ is increasing in τ, $\tau^{cp}\leq\tau^p$. ■

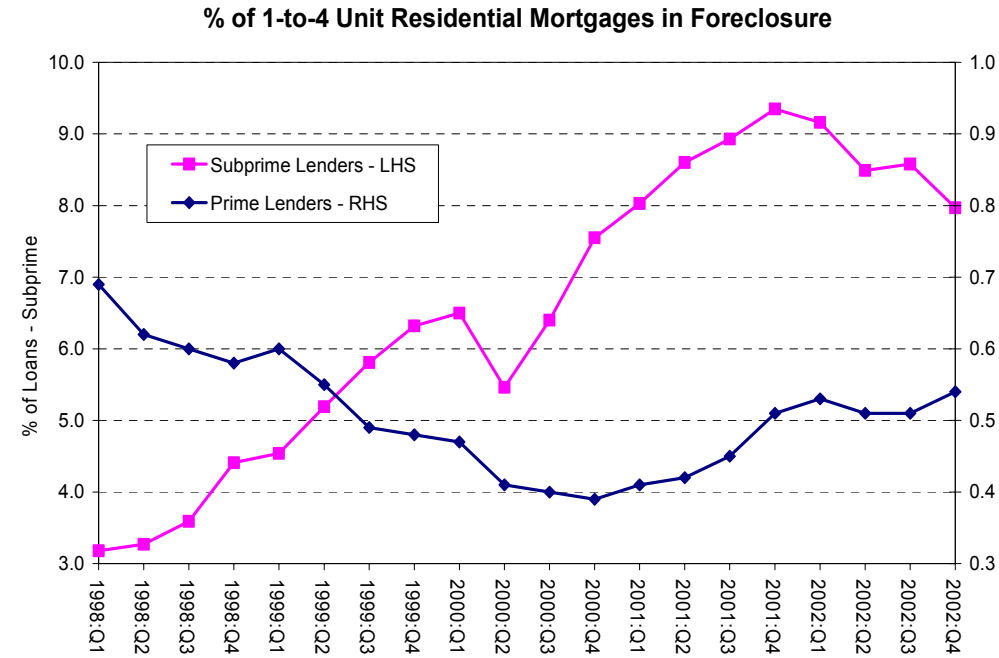
The intuition: If the fixed cost of counseling is so high that even the maximium feasible profit (at r^m) does not compensate for counseling, then the predator is unthreatened by counselors. If counseling is not that expensive, the predator has to lower the interest rate and deception until entry by the counselor become unprofitable (at the margin). This latter result can be proved analytically with a CRRA utility function.

Figure 1
Booming Subprime Mortgage Market



Source: The 2003 Mortgage Market Statistical Mannual, Inside Mortgage Finance Publications, Inc., Vol. II, pgs. 1-2

Figure 2
High Subprime Mortgage Foreclosures



Source: Mortgage Bankers Association. National Deliquency Survey, January 2003. Figures are seasonally adjusted.

Figure 3
Rising Mobile Home Repossessions

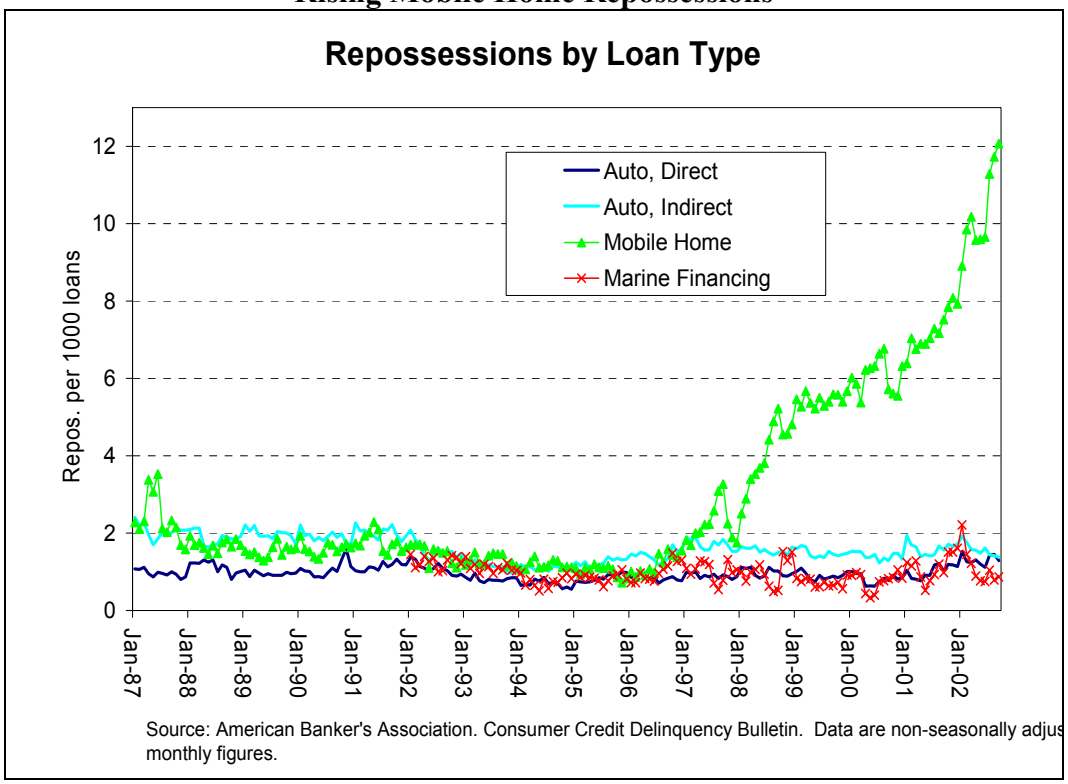


Figure 4
Payday share prices (AACE) have risen. Pawnshops (EXPW) have fallen

Figure 5
Growing Predatory Concerns

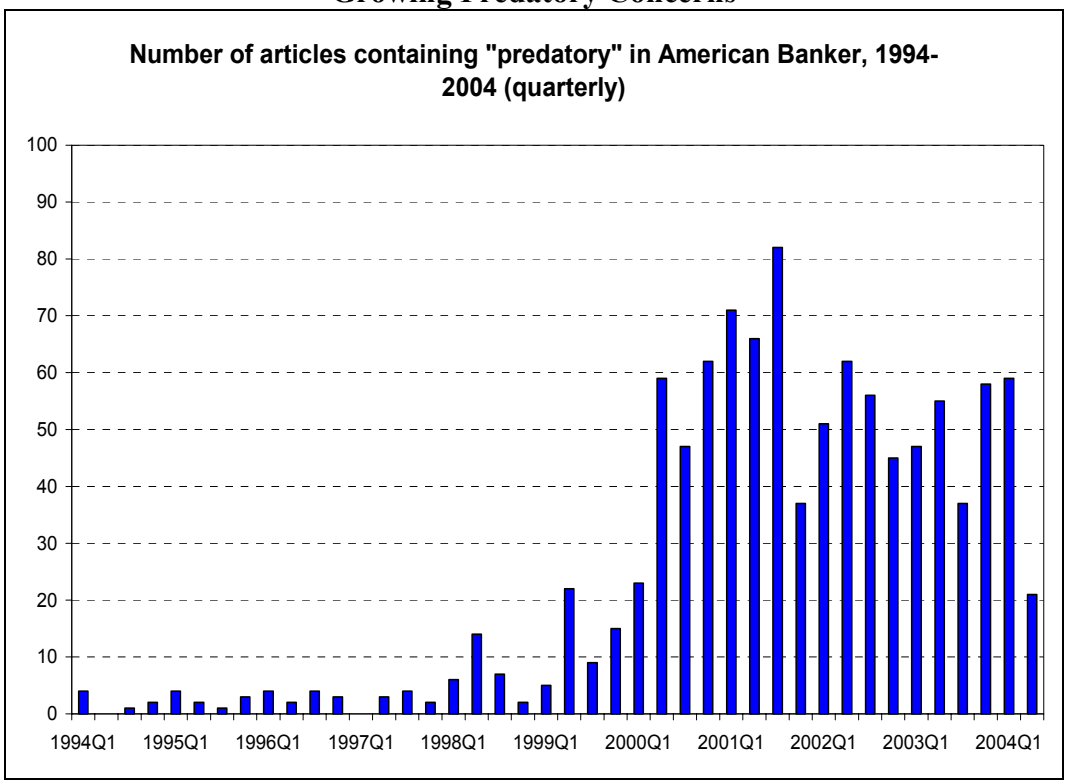


Figure 6
Over-borrowing due to income delusion/deception

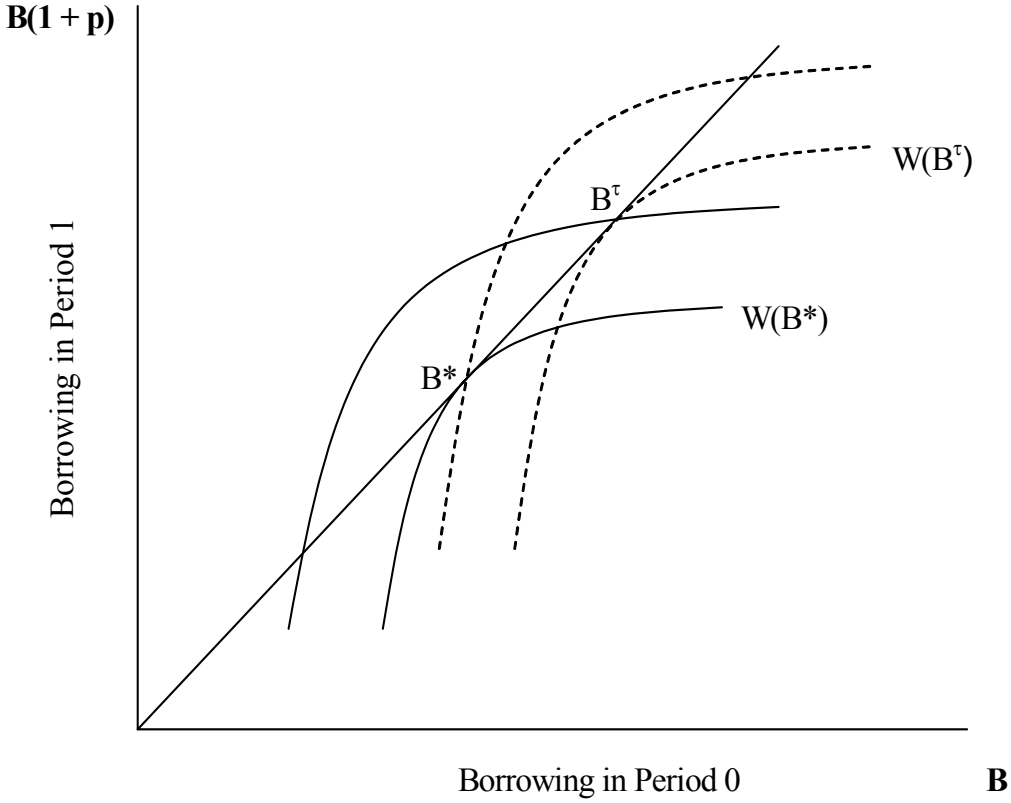
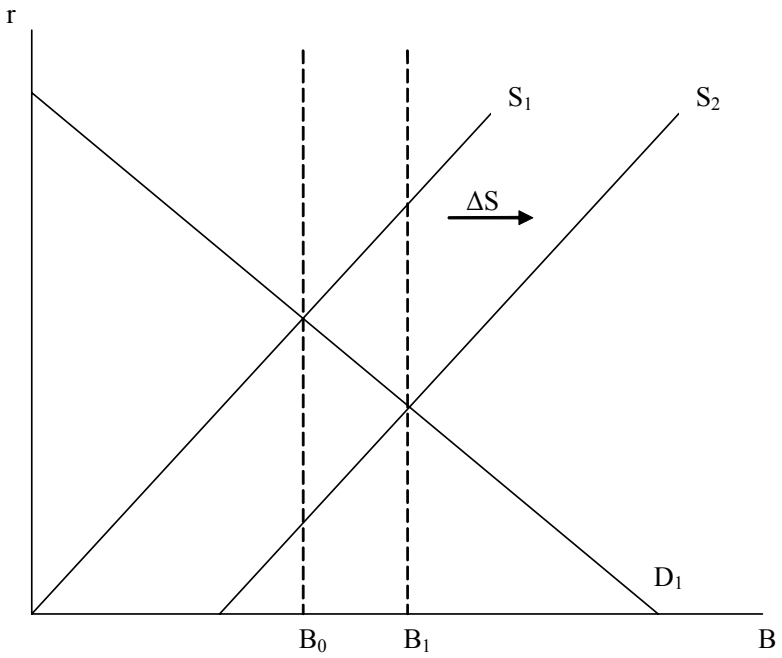


Figure 7
Identification Strategy

Payday lenders increase credit supply



Predators increase demand for credit by "prey"

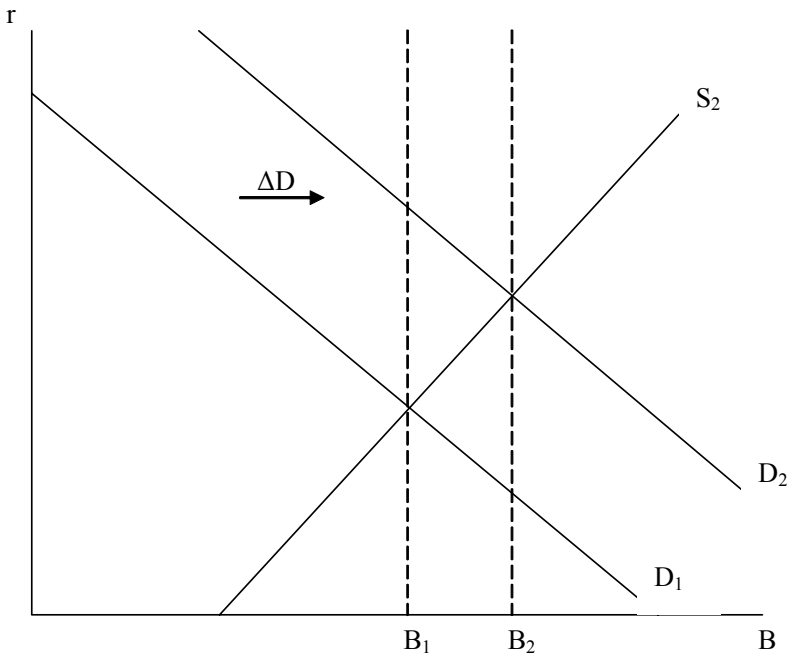
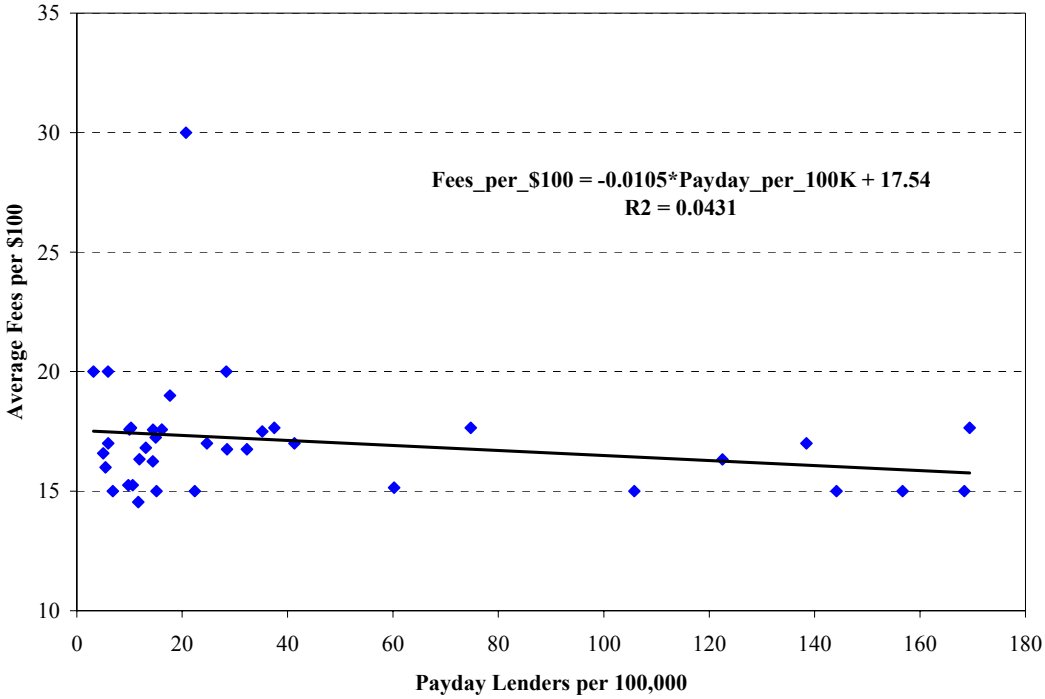


Figure 8
Effect of Competition of Payday Loan Terms

Authors calculations using data on payday loan fees from Fox and Mierzwinski (2001) and data on the geography of payday lenders from Graves and Peterson (2005). Regression: $terms_c = \alpha + \beta * competition_c + \varepsilon_c$ where $terms_c$ represents the average terms of payday lenders in a given city (either fees per $100 borrowed or NSF fees) and $competition_c$ represents measures of the number of payday per 100,000 individuals. All regressions are estimated ordinary least squares with robust standard errors.

Effect of Competition on Fees per $100



Effect of Competition on NSF Fees

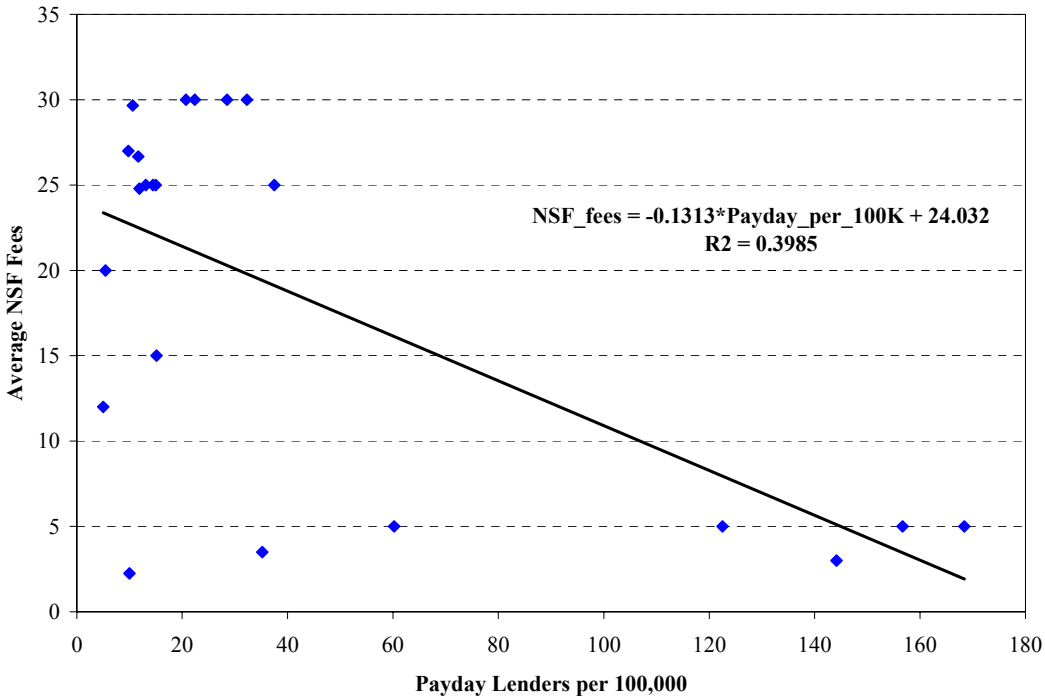


Table 1
State Regulations

Payday regulations as of 2001 are taken from Appendices A and B of Fox and Mierzwinski (2001). Fox and Mierzwinski classify states as Category 1, 2, and 3 depending on the regulatory environment. Category 1 states "(effectively) prohibit payday loans due to small loan interest rate caps, usury laws, and/or specific prohibition for check cashers." Category 2 states have "no small loan/usury cap for licensed lenders", while Category 3 states have "specific laws that permit payday loans." Category 2 and 3 states are considered to permit payday lending, while Category 1 states are considered to not permit payday lending. Data on legal foreclosure procedures is taken from Pence (2004).

State	2001 Payday Regulations			Non-Judicial Foreclosure Permitted?
	Allows Payday?	Max Loan	Max Cost per $100	
Alabama	No	-	-	Yes
Alaska	No	-	-	Yes
Arizona	Yes	500	17.65	Yes
Arkansas	No	-	-	Yes
California	Yes	300	17.65	Yes
Colorado	Yes	500	20.00	Yes
Connecticut	No	-	-	No
Delaware	Yes	No Limit	No Limit	No
District of Columbia	Yes	1000	16.10	Yes
Florida	Yes	500	15.00	No
Georgia	No	-	-	Yes
Hawaii	Yes	300	17.65	Yes
Idaho	Yes	No Limit	No Limit	Yes
Illinois	Yes	400	No Limit	No
Indiana	No	-	-	No
Iowa	Yes	500	16.67	Yes
Kansas	Yes	860	15.00	No
Kentucky	Yes	500	17.65	No
Louisiana	Yes	350	20.00	No
Maine	No	-	-	No
Maryland	No	-	-	No
Massachusetts	No	-	-	Yes
Michigan	No	-	-	Yes
Minnesota	Yes	350	15.00	Yes
Mississippi	Yes	400	22.00	Yes
Missouri	Yes	500	No Limit	Yes
Montana	Yes	300	25.00	Yes
Nebraska	Yes	500	17.65	Yes
Nevada	Yes	1250	No Limit	Yes
New Hampshire	Yes	No Limit	No Limit	Yes
New Jersey	No	-	-	No
New Mexico	Yes	No Limit	No Limit	No
New York	No	-	-	No
North Carolina	No	-	-	Yes
North Dakota	Yes	500	20.00	No
Ohio	Yes	500	15.00	No
Oklahoma	Yes	730	20.00	No
Oregon	Yes	No Limit	No Limit	Yes
Pennsylvania	No	-	-	No
Rhode Island	No	-	-	Yes
South Carolina	Yes	300	17.65	No
South Dakota	Yes	No Limit	No Limit	Yes
Tennessee	Yes	500	17.65	Yes
Texas	Yes	350	11.87	Yes
Utah	Yes	No Limit	No Limit	Yes
Vermont	No	-	-	No
Virginia	No	-	-	Yes
Washington	Yes	500	15.00	Yes
West Virginia	No	-	-	Yes
Wisconsin	Yes	No Limit	No Limit	No
Wyoming	Yes	No Limit	30.00	Yes

Table 2

Summary Statistics for Repeated Cross Sections from 1995 & 2001 Surveys of Consumer Finances

Authors' calculations using repeated cross-sections from the 1995 and 2001 Surveys of Consumer Finances (SCF). The sample consists of the subset of households in the area-probability sample. All summary statistics are computed using Repeated-Imputation Inference (RII) techniques.

Variable	Units	Mean	Std. Dev.	Median
Total Debt	($10,000)	4.42	8.61	1.12
Residential Mortgage Debt	($10,000)	3.27	7.36	0.00
Missed Payment in Last Year?	Yes = 1; No = 0	0.16	0.37	0.00
Credit Constrained?	Yes = 1; No = 0	0.21	0.41	0.00
Payday Loan Permitted ("Payday")?	Yes = 1; No = 0	0.56	0.50	1.00
Payday Loan Limit ("Payday Limit")	$	230.12	234.31	300.00
Unlimited Payday Loan ("Unlimited Payday")?	Yes = 1; No = 0	0.03	0.18	0.00
Non-Judicial Foreclosure ("No Judge")?	Yes = 1; No = 0	0.58	0.49	1.00
2001 Dummy ("2001")	Yes = 1; No = 0	0.51	0.50	1.00
Uncertain Income ("Uncertain")?	Yes = 1; No = 0	0.31	0.46	0.00
No College Degree ("No College")?	Yes = 1; No = 0	0.68	0.46	1.00
Smoker?	Yes = 1; No = 0	0.29	0.45	0.00
Years Instate Branching Permitted		16.64	8.13	16.00
Years Interstate Branching Permitted		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
Age in years		47.04	16.84	44.00
Age Squared		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
Number of Households		5,697	5,697	5,697

Table 3a
Testing for Predatory Lending In Payday States

Authors' calculations using repeated cross-sections from the 1995 and 2001 Surveys of Consumer Finances (SCF). The table presents estimated coefficients and standard errors for the subset of households in the area-probability sample. Probit models report marginal effects associated with a marginal change in continuous independent variables or switch in discrete (indicator) variables. Estimates and standard errors are computed using Repeated-Imputation Inference (RII) techniques.

	(1)	(2)	(3)
Dependent Variable	**Total Debt**	**Credit Constrained?**	**Missed Payment?**
Model	**Tobit**	**Probit**	**Probit**
Payday X Uncertain X 2001	*1.685**	*-0.010*	*-0.025*
	(0.975)	*(0.042)*	*(0.037)*
Payday X No College X 2001	*0.379*	*0.031*	*0.012*
	(0.978)	*(0.052)*	*(0.045)*
Payday X Smoker X 2001	*-0.569*	*-0.080****	*-0.015*
	(0.989)	*(0.030)*	*(0.038)*
Payday Loan Permitted?	0.618	0.026	0.017
	(0.618)	(0.031)	(0.026)
Uncertain Income?	0.291	0.049*	0.009
	(0.542)	(0.025)	(0.024)
No College Degree?	-2.131***	0.073***	0.015
	(0.530)	(0.024)	(0.022)
Smoker?	-2.430***	0.057**	0.030
	(0.529)	(0.026)	(0.025)
2001 Dummy	-0.499	-0.012	-0.077**
	(0.752)	(0.039)	(0.035)
Payday X 2001	-0.318	0.025	0.039
	(0.805)	(0.045)	(0.040)
Uncertain X 2001	-1.607**	-0.015	0.034
	(0.746)	(0.032)	(0.035)
No College X 2001	-0.296	0.004	0.029
	(0.747)	(0.037)	(0.034)
Smoker X 2001	1.258*	0.025	0.029
	(0.746)	(0.035)	(0.034)
Payday X Uncertain	-1.326*	0.022	-8.76E-04
	(0.693)	(0.032)	(0.030)
Payday X No College	-0.191	-0.057*	-0.040
	(0.702)	(0.032)	(0.029)
Payday X Smoker	0.735	0.017	0.017
	(0.701)	(0.032)	(0.031)
Years Instate Branching Permitted	0.069***	0.002***	6.86E-04
	(0.016)	(7.16E-04)	(6.63E-04)
Years Interstate Branching Permitted	0.058	1.09E-05	0.002
	(0.071)	(0.003)	(0.003)
Local Market Herfindahl	-0.009	-5.08E-04	-6.40E-04
	(0.015)	(6.88E-04)	(6.31E-04)
Bankruptcy Exemption	0.013**	2.71E-04	5.94E-04 **
	(0.005)	(2.84E-04)	(2.44E-04)
Bankruptcy Exemption X Assets	0.029***	-2.90E-04	-3.77E-04
	(0.004)	(6.06E-04)	(3.96E-04)
Age (years)	0.485***	0.002	0.004**
	(0.046)	(0.002)	(0.002)
Age Squared	-0.006***	-7.95E-05 ***	-7.95E-05 ***
	(4.63E-04)	(2.18E-05)	(2.01E-05)
Income	0.297***	-0.011***	-0.005***
	(0.040)	(0.002)	(0.002)

Income Squared	7.57E-04 ** (2.49E-04)	2.65E-05 *** (8.49E-06)	1.03E-05 ** (4.93E-06)
Assets	-0.189** (0.085)	0.005 (0.004)	0.012** (0.005)
Married?	1.603*** (0.378)	-0.028 (0.017)	-0.025 (0.017)
Family Size	0.574*** (0.099)	0.017*** (0.004)	0.020*** (0.004)
Non-White?	-1.601*** (0.277)	0.091*** (0.014)	0.039*** (0.012)
Male?	0.472 (0.361)	-0.024 (0.017)	-0.002 (0.016)
Rural?	-1.465*** (0.303)	-0.027** (0.014)	0.024* (0.014)
Years at Current Employer	0.062*** (0.013)	-0.003*** (0.001)	0.000 (0.001)
Thinks Credit Is Bad Idea?	-0.139 (0.241)	-0.002 (0.011)	0.005 (0.010)
County Unemployment Rate	-0.003 (0.065)	0.003 (0.003)	0.001 (0.003)
Number of Households	5,697	5,697	5,697

*** Significant at the 99% level ** Significant at the 95% level * Significant at the 90% level

Table 3b
Testing for Predatory Lending in Payday States

Authors' calculations using repeated cross-sections from the 1995 and 2001 Surveys of Consumer Finances (SCF). The table presents estimated coefficients and standard errors for the subset of households in the area-probability sample. Probit models report marginal effects associated with a marginal change in continuous independent variables or switch in discrete (indicator) variables. Estimates and standard errors are computed using Repeated-Imputation Inference (RII) techniques.

	(1)	(2)	(3)
Dependent Variable	**Total Debt**	**Credit Constrained?**	**Missed Payment?**
Model	**Tobit**	**Probit**	**Probit**
Payday Limit X Uncertain X 2001	*0.003*	*-6.84E-06*	*-8.39E-05*
	(0.002)	*(9.33E-05)*	*(9.09E-05)*
Unlimited Payday X Uncertain X 2001	*0.316*	*-0.141***	*-0.090**
	(2.789)	*(0.032)*	*(0.054)*
Payday Limit X No College X 2001	*0.001*	*9.60E-05*	*3.61E-05*
	(0.002)	*(1.01E-04)*	*(9.09E-05)*
Unlimited Payday X No College X 2001	*2.994*	*-0.150****	*0.036*
	(2.895)	*(0.029)*	*(0.144)*
Payday Limit X Smoker X 2001	*-0.001*	*-2.74E-04 ****	*-4.71E-05*
	(0.002)	*(9.46E-05)*	*(8.72E-05)*
Unlimited Payday X Smoker X 2001	*-4.370*	*0.054*	*-0.036*
	(2.797)	*(0.162)*	*(0.092)*
Payday Loan Limit	7.61E-04	2.17E-05	1.67E-05
	(0.001)	(6.50E-05)	(5.51E-05)
Unlimited Payday Loans?	-4.258**	-0.125**	0.001
	(1.853)	(0.049)	(0.081)
Uncertain Income?	-0.113	0.054**	-9.61E-04
	(0.517)	(0.024)	(0.023)
No College Degree?	-2.207***	0.065***	0.009
	(0.510)	(0.023)	(0.022)
Smoker?	-2.535***	0.043*	0.034
	(0.506)	(0.024)	(0.024)
2001 Dummy	-0.450	-0.007	-0.072**
	(0.723)	(0.037)	(0.034)
Payday Limit X 2001	-5.80E-04	4.29E-05	7.46E-05
	(0.002)	(8.95E-05)	(7.66E-05)
Unlimited Payday X 2001	-0.126	0.404*	0.049
	(2.560)	(0.239)	(0.138)
Uncertain X 2001	-1.365*	-0.012	0.044
	(0.709)	(0.030)	(0.035)
No College X 2001	-0.434	0.003	0.024
	(0.707)	(0.035)	(0.032)
Smoker X 2001	1.382*	0.035	0.033
	(0.717)	(0.034)	(0.033)
Payday Limit X Uncertain	-0.002	8.02E-06	2.95E-05
	(0.002)	(6.64E-05)	(6.56E-05)
Unlimited Payday X Uncertain	1.716	0.308**	0.103
	(2.023)	(0.148)	(0.117)
Payday Limit X No College	-3.20E-04	-1.04E-04	-6.62E-05
	(0.001)	(7.17E-05)	(6.38E-05)
Unlimited Payday X No College	2.155	0.081	-0.019
	(1.990)	(0.143)	(0.077)
Payday Limit X Smoker	0.002	8.22E-05	1.65E-05
	(0.001)	(6.59E-05)	(6.32E-05)
Unlimited Payday X Smoker	2.519	0.119	0.038
	(1.933)	(0.125)	(0.092)

Years Instate Branching Permitted	0.072*** (0.016)	0.002** (7.30E-04)	6.84E-04 (6.77E-04)
Years Interstate Branching Permitted	0.039 (0.070)	-9.59E-04 (0.003)	0.002 (0.003)
Local Market Herfindahl	-0.003 (0.015)	0.000 (0.001)	-0.001 (0.001)
Bankruptcy Exemption	0.014*** (0.005)	0.000 (0.000)	0.001** (0.000)
Bankruptcy Exemption X Assets	0.029*** (0.004)	0.000 (0.001)	0.000 (0.000)
Age (years)	0.485*** (0.045)	0.002 (0.002)	0.004** (0.002)
Age Squared	-0.006*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Income	0.296*** (0.040)	-0.011*** (0.002)	-0.005*** (0.002)
Income Squared	7.60E-04 ** (2.48E-04)	2.65E-05 *** (8.44E-06)	1.03E-05 ** (4.93E-06)
Assets	-0.188** (0.085)	0.006 (0.004)	0.012** (0.005)
Married?	1.569*** (0.378)	-0.027 (0.017)	-0.026 (0.017)
Family Size	0.583*** (0.099)	0.017*** (0.004)	0.020*** (0.004)
Non-White?	-1.616*** (0.277)	0.090*** (0.014)	0.039*** (0.012)
Male?	0.485 (0.361)	-0.024 (0.017)	-0.003 (0.016)
Rural?	-1.456*** (0.303)	-0.029** (0.014)	0.023* (0.014)
Years at Current Employer	0.063*** (0.013)	-0.003*** (0.001)	0.000 (0.001)
Thinks Credit Is Bad Idea?	-0.137 (0.241)	-0.003 (0.011)	0.006 (0.010)
County Unemployment Rate	0.004 (0.065)	0.003 (0.003)	0.001 (0.003)
Constant	-8.609*** (1.338)		
Number of Households	5,697	5,697	5,697

*** Significant at the 99% level ** Significant at the 95% level * Significant at the 90% level

Table 4
Testing for Predatory Mortgage Lending In States With Easier Foreclosure

Authors' calculations using repeated cross-sections from the 1995 and 2001 Surveys of Consumer Finances (SCF). The table presents estimated coefficients and standard errors for the subset of households in the area-probability sample. Probit models report marginal effects associated with a marginal change in continuous independent variables or switch in discrete (indicator) variables. Estimates and standard errors are computed using Repeated-Imputation Inference (RII) techniques.

	(1)	(2)	(3)
Dependent Variable	**Total Debt**	**Residential Mortgage Debt**	**Missed Payment?**
Model	**Tobit**	**Tobit**	**Probit**
No Judge X Uncertain X 2001	*-0.015*	*-0.711*	*0.057*
	(0.993)	*(1.502)*	*(0.051)*
No Judge X No College X 2001	*0.754*	*1.010*	*0.006*
	(0.969)	*(1.398)*	*(0.045)*
No Judge X Smoker X 2001	*0.796*	*0.062*	*-0.018*
	(1.004)	*(1.522)*	*(0.040)*
No Judicial Foreclosure?	1.857***	2.736***	-0.009
	(0.582)	(0.820)	(0.029)
Uncertain Income?	-0.912*	-1.926**	0.014
	(0.544)	(0.829)	(0.024)
No College Degree?	-1.100**	-1.397*	-0.007
	(0.540)	(0.781)	(0.024)
Smoker?	-2.022***	-3.180***	0.035
	(0.542)	(0.843)	(0.024)
2001 Dummy	-0.563	-1.978*	-0.068**
	(0.746)	(1.067)	(0.034)
No Judge X 2001	-0.277	-0.417	0.029
	(0.813)	(1.137)	(0.041)
Uncertain X 2001	-0.650	-0.270	-0.016
	(0.770)	(1.178)	(0.030)
No College X 2001	-0.496	-0.167	0.033
	(0.752)	(1.087)	(0.035)
Smoker X 2001	0.447	1.109	0.031
	(0.770)	(1.174)	(0.035)
No Judge X Uncertain	0.721	1.051	-0.008
	(0.694)	(1.058)	(0.030)
No Judge X No College	-1.915***	-2.735***	-0.002
	(0.691)	(0.997)	(0.032)
No Judge X Smoker	-0.014	0.269	0.008
	(0.707)	(1.083)	(0.033)
Years Instate Branching Permitted	0.065***	0.099***	5.69E-04
	(0.015)	(0.023)	(6.59E-04)
Years Interstate Branching Permitted	0.072	0.146	0.002
	(0.065)	(0.098)	(0.003)
Local Market Herfindahl	-0.015	0.010	-6.88E-04
	(0.015)	(0.022)	(6.35E-04)
Bankruptcy Exemption	0.015***	0.046***	6.31E-04 ***
	(0.005)	(0.007)	(2.41E-04)
Bankruptcy Exemption X Assets	0.029***	0.022***	-3.49E-04
	(0.004)	(0.005)	(3.89E-04)
Age (years)	0.485***	1.037***	0.004**
	(0.046)	(0.080)	(0.002)
Age Squared	-0.006***	-0.011***	-7.93E-05 ***
	(4.64E-04)	(8.22E-04)	(2.01E-05)
Income	0.295***	0.296***	-0.005***
	(0.039)	(0.045)	(0.002)
Income Squared	7.56E-04 **	7.89E-04 **	1.05E-05 **
	(2.48E-04)	(2.57E-04)	(4.93E-06)
Assets	-0.178**	-0.502***	0.012***
	(0.085)	(0.160)	(0.004)
Married?	1.569***	2.821***	-0.026
	(0.377)	(0.575)	(0.017)
Family Size	0.593***	1.071***	0.020***
	(0.099)	(0.141)	(0.004)

Non-White?	-1.635***	-2.693***	0.039***
	(0.276)	(0.426)	(0.012)
Male?	0.482	1.004*	-0.002
	(0.361)	(0.578)	(0.016)
Rural?	-1.325***	-1.773***	0.024*
	(0.305)	(0.457)	(0.014)
Years at Current Employer	0.064***	0.105***	0.000
	(0.013)	(0.019)	(0.001)
Thinks Credit Is Bad Idea?	-0.197	0.052	0.005
	(0.241)	(0.356)	(0.010)
County Unemployment Rate	-0.016	-0.258***	0.001
	(0.064)	(0.097)	(0.003)
Number of Households	5,697	5,697	5,697

*** Significant at the 99% level ** Significant at the 95% level * Significant at the 90% level

Table 5
Effect of Competition of Payday Loan Terms

Panel A: Summary Statistics

	Summary Statistics						Correlations				
Variable	**N**	**Mean**	**Median**	**Std. Dev.**	**Min**	**Max**	**Fees per $100**	**NSF Fees**	**Payday 100k**	**Pawn 100k**	**Pday +Pawn 100k**
Fees per $100	37	17.1	16.8	2.6	14.6	30.0	1.00	-	-	-	-
NSF Fees	22	18.4	24.9	11.0	2.3	30.0	0.25	1.00	-	-	-
Payday Lenders per 100k	37	43.6	17.7	52.1	3.2	169.4	-0.21	-0.63	1.00	-	-
Pawnshops per 100k	37	30.0	12.0	47.1	1.0	240.3	-0.20	-0.49	0.77	1.00	-
Payday + Pawn per 100k	37	73.7	29.8	92.7	4.2	384.4	-0.22	-0.60	0.94	0.94	1.00

Authors calculations using data on payday loan fees from Fox and Mierzwinski (2001) and data on the geography of payday lenders from Graves and Peterson (2005). The table presents summary statistics for 37 cities where we have data on payday loan terms from Fox and Mierzwinski (2001) as well as data on the number of payday lenders from Graves and Peterson (2005).

Panel B: Regression Analysis

	Dependent Variable							
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Independent Variable	**Fees per $100**	**Fees per $100**	**Fees per $100**	**Fees per $100**	**NSF Fees**	**NSF Fees**	**NSF Fees**	**NSF Fees**
Payday Lenders per 100k	-0.010* (0.005)	-	-0.007 (0.006)	-	-0.131*** (0.020)	-	-0.127*** (0.026)	-
Pawnshops per 100k	-	-0.011** (0.005)	-0.005 (0.006)	-	-	-0.101*** (0.026)	-0.005 (0.016)	-
Payday + Pawn per 100k	-	-	-	-0.006** (0.003)	-	-		-0.065*** (0.012)
Constant	17.540*** (0.597)	17.410*** (0.558)	17.543*** (0.605)	17.533*** (0.597)	24.032*** (2.503)	21.353*** (2.356)	24.011*** (2.566)	23.130*** (2.428)
Sample Size	37	37	37	37	22	22	22	22
R-squared	0.0431	0.0380	0.0467	0.0465	0.3985	0.2449	0.3987	0.3577
F-Test (Payday 100k = Pawn 100k)			0.03				9.89***	
p-Value F-Test			0.8557				0.0053	

*** Significant at the 99% level ** Significant at the 95% level * Significant at the 90% level

Authors calculations using data on payday loan fees from Fox and Mierzwinski (2001) and data on the geography of payday lenders from Graves and Peterson (2005). Regression: $terms_c = \alpha + \beta * competition_c + \varepsilon_c$ where $terms_c$ represents the average terms of payday lenders in a given city (either fees per $100 borrowed or NSF fees) and $competition_c$ represents measures of the number of payday lenders or pawnshops per 100,000 individuals. All regressions are estimated ordinary least squares with robust standard errors.