

Debt Collection Agencies and the Supply of Consumer Credit

(Job market paper)

Viktar Fedaseyeu*

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Abstract

I examine the role of third-party debt collectors in consumer credit markets. Using law enforcement as an instrument for the number of debt collectors, I find that higher density of debt collectors increases the supply of unsecured credit. The estimated elasticity of the average credit card balance with respect to the number of debt collectors per capita is 0.49, the elasticity of the average balance on non-credit card unsecured loans with respect to the number of debt collectors per capita is 1.32. There is also some evidence that creditors substitute unsecured credit for secured credit when the number of debt collectors increases. Higher density of debt collectors improves recoveries, which enables lenders to extend more credit. Finally, creditors charge higher interest rates and lend to a larger pool of borrowers when the density of debt collectors increases, presumably because better collections enable them to extend credit to riskier applicants.

Keywords: household finance, consumer credit, lender protection, creditor rights, debt collection

*PhD Candidate in Finance, Boston College. Email: fedaseye@bc.edu. I am deeply grateful to Phil Strahan for his unwavering support and encouragement and for the extensive feedback he has provided. I thank members of my dissertation committee, Tom Chemmanur, Darren Kisgen, Alan Marcus, Jonathan Reuter, Ronnie Sadka, and Hassan Tehrani, for their guidance. I benefited from helpful comments by Pierluigi Balduzzi, David Chapman, Ethan Cohen-Cole, Cliff Holderness, Edith Hotchkiss, Bob Hunt, Rich Hynes, Miles Kimball, Jeff Pontiff, Jun (QJ) Qian, Antoinette Schoar, Peter Tufano, and seminar participants at Boston College and the Household Finance Workshop at the 2010 NBER Summer Institute. Aliaksandra Shelestava provided assistance with legal issues. All errors are my sole responsibility.

1 Introduction

Despite their large size, retail credit markets have received relatively little attention in the academic literature.¹ Even less effort has been devoted to studying the role of creditor rights in those markets. Aghion and Bolton (1992), Bolton and Scharfstein (1990), and Hart and Moore (1998) show that debt contracts are robust financial instruments if investors are assigned control rights contingent on debtors' payments. In retail credit markets, however, consumer protection laws restrict the range of options available to creditors. Providers of consumer credit never have full access to debtors' assets, and especially to their most valuable asset — human capital.² Even the threat of withdrawal of future financing from defaulting borrowers seems weak, as Cohen-Cole, Duygan-Bump, and Montoriol-Garriga (2009) document that consumers regain access to unsecured credit remarkably soon after filing for bankruptcy. In this paper, I examine a mechanism of creditor protection endemic to retail credit markets: third-party debt collectors. They ensure that defaulted debts will not go away easily, in effect enforcing creditor rights after default.

Consumer defaults have now reached historically high levels. The number of borrowers 120 days or more late on their payments approached 7 million people in 2009. While bankruptcy has been a topic of much debate among academics and regulators, consumer experience outside bankruptcy is also highly relevant. In 1999, the number of consumers with accounts in collections exceeded the number of consumers filing for bankruptcy by the

¹In the second quarter of 2009, the amount of consumer debt outstanding in the U.S., excluding loans secured by real estate, stood at \$2.527 trillion, compared to \$7.243 trillion in total nonfinancial corporate debt. Mortgage debt stood at \$10.392 trillion. Source: <http://www.federalreserve.gov/Releases/z1/20090917/z1.pdf>, table D.3.

²This, however, has not always been the case. Debt prisons were common in the 19th century: one of English literature's finest authors, Charles Dickens, immortalized this institution in his novel *Little Dorrit* (Charles Dickens' father and his entire family were held in a debt prison during the writer's childhood). In Ancient Rome and other slavery-based civilizations the borrower who defaulted could be sold into slavery, thus literally giving creditors full control over debtors after default.

factor of 6. This ratio rose to 14:1 by 2009, likely due to the recession.

Stronger creditor protection should lead to more consumer credit, which is the primary hypothesis that I test. I find that a higher number of debt collectors per capita leads to an increase in balances on unsecured loans, but has no effect on secured loan balances. The estimated elasticity of the average credit card balance with respect to the number of debt collectors per capita is 0.49, the elasticity of the average balance on non-credit card unsecured loans with respect to the number of debt collectors per capita is 1.32. In addition, the pool of borrowers expands in response to higher debt collectors density, suggesting that creditors are willing to lend to riskier applicants. Consistent with this possibility, I document that creditors charge higher interest rates on unsecured non-credit card loans when debt collectors density increases.³ I also show that higher debt collectors density is associated with higher recovery rates on delinquent credit card loans, which provides a direct mechanism behind my results on credit supply: better recoveries enable lenders to extend more credit in the first place.

Several empirical concerns arise in my analysis. First, it is difficult to separate supply from demand. Second, reverse causality can bias my estimates because the expansion in credit supply may lead to an increase in the number of debt collectors and not the other way around. Third, my variables are subject to the measurement error to the extent that I am unable to match debt collectors with the debts they are likely to collect. I use plausibly exogenous within state variation in the strength of law enforcement to instrument for the number of debt collectors in order to determine their causal impact on the supply of consumer credit. I also use a falsification argument to strengthen my identification. Debt collectors are

³Although I report results for credit card APRs as well, the effect on credit card interest rates cannot be identified because credit union call reports do not separate credit card fees from other types of fees. As Furletti (2003) documents, fees have become an increasingly important component of credit card pricing and can account for up to 50% of interest.

primarily engaged in collecting unsecured debts.⁴ Hence, they should either have a negative effect on the amount of secured consumer credit (via the substitution effect) or no effect at all. If my results are attributed to spurious correlation, this spurious correlation is likely to affect both secured and unsecured credit similarly.

I use violent crime rate, the number of judicial employees per capita, and the median time interval from filing to disposition in federal civil cases as instruments. Debt collectors' compensation is customarily tied to the amount they collect and they are motivated to use all legal means available to them in order to collect the debts.⁵ Thus, the quality of law enforcement should be inversely related to the effectiveness of debt collection. Crime rate and the number of judicial employees are direct metrics of law enforcement quality and quantity, respectively.⁶ In accordance with the federal law that regulates debt collection, consumers subject to unfair and deceptive practices by debt collectors can file a lawsuit in a federal district court. The median time interval from filing to disposition is a measure of how quickly federal courts deal with incoming civil cases.⁷ Most contract litigation is handled by state courts, and hence federal courts' statistics should not be contaminated with cases that directly affect the supply of credit. The strength of law enforcement matters only if the borrower defaults, at which point creditors turn to debt collectors. It is, therefore, unlikely that the above metrics can directly affect credit supply or demand in ways other than via debt collectors.

⁴Since secured creditors can repossess collateral, they do not rely on debt collectors. One rare exception to this rule is the situation when the value of collateral falls below the amount outstanding on the loan *and* the creditor decides to collect the difference.

⁵Debt collectors in Spain, for example, use public humiliation to extract payments from defaulting consumers. Such tactics are illegal in the U.S. See Thomas Catan, "Spain's showy debt collectors wear a tux, collect the bucks — their goal: Publicly humiliate non-payers." *The Wall Street Journal*, page A1, October 11, 2008.

⁶Since property crime can directly affect the demand for consumer credit, only violent crime is used as an instrument.

⁷Lawsuits bring uncertainty, and debt collection agencies prefer to dispose of them quickly.

State-by-state data on the amount of consumer credit are unavailable from commercial banks that do business nationwide. To solve this problem, I use credit union Call Reports. By law, credit unions are allowed to lend only to their members, who must have a well-defined common bond (employer, location, or profession). Hence, credit unions are likely to be local credit providers. As of July 2009, credit unions provided 10% as much revolving credit as commercial banks and 42% as much unsecured non-revolving credit. Thus, they represent a significant share of all unsecured lending in the United States. Since credit unions are membership-owned organizations, they are likely to retain close contact with their borrowers.⁸ Hence, debt collection effectiveness should matter less for them than for nationwide financial institutions. In order to provide evidence of the general applicability of my findings, I obtained qualitatively similar, although weaker, results by using call report data for small banks.

The rest of this paper is organized as follows. Section 2 reviews related literature. Section 3 provides some institutional details about the debt collection industry. Section 4 describes the data, estimation strategy, and empirical results. Section 5 concludes.

2 Literature review

In contrast to the large corporate finance literature on investor and creditor rights that followed La Porta, Lopez-de Silanes, Shleifer, and Vishny (1998), there has been little work on lender rights in retail credit markets. Hunt (2007) gives an overview of the debt collection industry and provides details about its institutional structure and regulatory environment. Hynes (2008) examines the process of debt collection in state courts and finds that consumers who are sued by creditors or debt collectors are drawn from areas with lower socio-economic

⁸Credit union borrowers are a subset of credit union members.

characteristics. Moreover, he finds that these consumers are not likely to file for bankruptcy. Hynes, Dawsey, and Ausubel (2009) show that states with anti-harassment statutes that apply to creditors collecting their own debts have lower bankruptcy filing rates, but borrowers living in these states are more likely to default without filing for bankruptcy.

This paper belongs to the growing literature on household finance. Campbell (2006) delineates the field. He finds that many households make effective investment decisions while a less educated minority make significant mistakes. Tufano (2009) gives a recent overview of this area and proposes its functional definition. There exists a public policy concern that lower income less educated households are being underserved by the banking system and have to resort to alternative financial services providers to meet their credit and transaction demand. Caskey (1991) is the first academic study of pawnbroking in the United States. That work, as well as Caskey (1994) and Caskey (2005) gave rise to a substantial literature whose current primary focus is the study of payday lending. The issue of whether short-term high-interest loans are welfare enhancing or not is one of the central topics in the household finance literature. Melzer (2009) finds that access to payday loans does not seem to alleviate financial hardship, while Morse (2009) provides evidence that payday lending mitigates individual financial distress. Flannery and Samolyk (2005) study the payday loans industry by using proprietary store-level data and find that high interest rates are generally justified by high fixed costs; they find no evidence that loans from frequent borrowers are more profitable than other loans per se. Morgan and Strain (2007) find that bans on payday lending in Georgia and North Carolina led to a deterioration in households' financial situation in those states. Similarly, Zinman (2009) documents a deterioration in the overall financial condition of Oregon households after this state capped interest rates on payday loans. Karlan and Zinman (2009) use a powerful field experiment to demonstrate

that expanding credit access resulted in significant net benefits for borrowers across a range of outcomes. The current paper complements this literature by studying a mechanism that enables traditional financial services providers to extend credit to risky borrowers.

Another strain of active literature in household finance studies personal bankruptcy, with the emphasis on explaining the rising rates of personal bankruptcy filings over the last two decades and on the effect of bankruptcy law on credit availability. Fay, Hurst, and White (2002) and Domowitz and Sartain (1999) find support for the strategic model of bankruptcy, which predicts that households are likely to file when their financial benefit from doing so is high. Gross and Souleles (2002) document that propensity to file for bankruptcy significantly increased from 1995 to 1997, even after controlling for a variety of personal risk characteristics and interpret this result as an increase in the borrowers' willingness to default. Dick and Lehnert (2010) show that the expansion of credit supply over time is responsible for rising personal bankruptcy rates, an explanation that was suggested by White (2007). Scott and Smith (1986) document that the Bankruptcy Reform Act of 1978, which made personal bankruptcy more pro-debtor, led to an increase in the contract interest rates on small business loans. Gropp, Scholz, and White (1997) find that generous state-level personal bankruptcy exemptions increase the amount of credit held by high-asset households and reduce the availability of credit for low-asset households. Debt collectors, the focus of this paper, provide a creditor protection mechanism, which complements bankruptcy as a consumer protection mechanism (at least in the U.S.). It is interesting to contrast the ways these mechanisms affect credit availability. While bankruptcy shifts credit supply toward more affluent households, it is strong creditor rights that enable lenders to provide loans to risky borrowers.

3 Industry overview

The size of the debt collection industry is significant. ACA International, an industry association of third-party debt collection agencies, commissions PriceWaterhouseCoopers to conduct annual surveys of the industry. According to the latest survey available, the total amount collected in 2007 was \$40.4 billion, which represented nearly 21% of private sector bad debt for that year.⁹ This compares with a total of \$44 billion in payday loans extended in 2007 and around \$75 billion in student loans for 2008-2009.¹⁰ There are nearly 6,500 collection agencies in the U.S.¹¹ As of May 2009, they employed 107,340 debt collectors.¹²

Debt collectors play an active role in retail credit markets. They contact millions of American consumers every year. According to the Federal Trade Commission (FTC hereafter), which tracks consumer complaints, third-party debt collectors generate more complaints than any other industry. In 2008 the FTC received 78,838 complaints about third-party debt collectors, which represents 18.9% of all complaints received directly from consumers in 2008.¹³ Thus, debt collectors are a very visible presence in the lives of American households.¹⁴ Creditors turn to collectors after a loan has been in default for a certain period of time (usually after 180 days for credit card loans). Most debt collection agencies work on commission. According to ACA International's benchmarking survey, this commission

⁹Source: <http://www.acainternational.org>.

¹⁰Source: Economic impact of the payday lending industry. IHS Global Insight (USA) Inc., 2009, and the Department of Education.

¹¹Source: <http://www.acainternational.org/publications-collections-information-5431.aspx>

¹²According to Occupational Employment Statistics, the total number of bill and account collectors stood at 403,111 in May 2009, but this number includes collectors employed by creditors directly (in their in-house collection departments). The figure reported above only includes debt collectors working in the business support services industries, i.e., third-party debt collectors. Source: <http://www.bls.gov/oes/current/oes433011.htm>

¹³Source: Annual Report 2009: Fair Debt Collection Practices Act. Federal Trade Commission, Washington, DC, February 2009.

¹⁴According to InsideARM.com, there are several movie projects under way that feature debt collectors.

usually constitutes 25-30% of the total amount they collect for the creditor.¹⁵ The collection process is a human-intensive effort that requires debt collectors to constantly communicate with consumers. This communication is usually established over the telephone and by mail. Sometimes collection may require personal face-to-face contact but such cases are rare.

Debt collection in the United States is regulated by the federal law, the Fair Debt Collection Practices Act of 1977 (FDCPA hereafter). It supersedes state laws if those laws provide weaker protection for consumers. Forty-three states have their own laws that regulate collection practices. The majority of these statutes pre-date the FDCPA and provide very similar protection. As a result, most cases brought against debt collectors are tried in federal courts in accordance with the FDCPA. However, some states offer stronger protection to their residents than others.¹⁶ In addition, state laws are important because most of them contain licensing requirements: debts owed in a particular state can usually be collected only by an agency licensed in that state.

The industry is geographically disperse and segmented at the state level, which provides the basis for my identifying assumption that collectors in a particular state are more likely to pursue debtors who reside in that state. In any given year between 1988 and 2007, there has been no state without a debt collection establishment. The highest concentration of debt collection establishments was in California in 1989, with 11% of all U.S. debt collection establishments (it was 10.5% in 2007). In 2007, thirty-two states had the number of debt collectors of at least 1% of the total number of debt collectors in the U.S. Although some

¹⁵This estimate is indirectly supported by data from the Census Bureau. Net revenues of the debt collection industry equaled \$11.4 billion in 2005, which does not include the amount collected and returned to creditors. Net revenues were roughly 28% of the amount collected as reported in the PriceWaterhouseCoopers survey for 2007 (the data for 2005 are unavailable).

¹⁶These laws change infrequently: between 1987 and 2008 there appear to have been no more than four significant changes in state law concerning debt collection. Hence, controlling for the state fixed effect should account for the cross-sectional variation in state laws.

collection agencies are large public corporations with nationwide operations,¹⁷ 99% of collection agencies have fewer than 250 employees. Top 17 firms in this industry receive less than 20% of all industry revenues.¹⁸

My identifying assumption may be invalid if debt collection is outsourced, either to several large call centers in the U.S. or abroad. However, outsourcing in the collection industry has had limited success.¹⁹ Since negotiation is an important part of the collection process, collectors living in the U.S. are generally more effective than those from abroad. They are likely to be even more effective if they are familiar with the economic situation in the region where the debtor resides. As a result, most collection efforts that concern American consumers are performed by U.S. based collectors. In addition, state licensing requirements limit inter-state collection efforts. Within states, however, debt collection agencies are concentrated in low-cost metropolitan areas. Buffalo, NY, for example, is a hub for collection efforts in the state of New York. This suggests that individual states are the relevant unit of analysis.

¹⁷Asset Acceptance Capital Corporation, for instance, had market capitalization of \$207.5 million on December 31, 2009. To the best of my knowledge, large national operators still maintain offices in several states.

¹⁸Source: the author's calculations based on Dun and Bradstreet adjustment and collections services industry report, <http://www2.zapdata.com/IndustryReports>. Accessed on January 11, 2010.

¹⁹Outsourcing certain information technology functions such as procedures for locating debtors, however, has been generally successful. Source: Operational Efficiency in the ARM Industry, Kaulkin Ginsberg Whitepaper, October 2006.

4 Debt collectors and consumer credit

4.1 Data

Data on payroll and employment of debt collection establishments from 1988 to 2007 are available from the Census Bureau's County Business Patterns Survey.²⁰ When for privacy reasons the survey contains ranges rather than point estimates, I replace ranges with mid-points.²¹

Debt collectors density is calculated by dividing the number of debt collectors in a particular state in a given year by the state's population. Since collection is a human-intensive process, a higher number of collectors per capita translates into a higher probability that a consumer will be contacted by a debt collector. In addition, debt collectors will have more time to negotiate with the consumer. Both of these factors should enhance collection efforts.

I use credit union Call Reports to obtain data on consumer credit in each state.²² In contrast to national banks, credit unions are likely to be local lenders because credit unions are allowed to lend only to their members who must have a well-defined common bond (residence, employment or profession).²³ Call Reports are available from the National Credit Union Administration and cover the years from 1989 to 2008, although not all measures are available for all years.²⁴

²⁰A single debt collection agency can have several establishments in one or several states but the survey does not aggregate information at the agency (firm) level.

²¹When I drop observations that report ranges, the results remain qualitatively similar.

²²I exclude Delaware and South Dakota from my analysis since these states provide incentives for credit card banks to operate on their territory. However, my results are not sensitive to the exclusion of these states. I also exclude data from credit unions who are likely to provide credit nationwide: the Navy Credit Union (and all credit unions of naval bases) and the Pentagon Federal Credit Union.

²³In addition, credit unions can provide up to 12.5% of their assets in business loans. Those loans also tend to be local. However, the focus of this paper is consumer credit.

²⁴I report results using second-quarter Call Reports to establish a correspondence between credit union data and County Business Patterns surveys, which report data as of March of each year. I obtained similar results by using first- or third-quarter call reports instead.

Data on law enforcement and crime in the United States are obtained from the Survey of Public Employment and the Department of Justice’s crime statistics. Data on federal courts’ caseload statistics, which include median time intervals from filing to disposition in federal district courts, are available from annual reports of the Director of the Administrative Office of the United States Courts. Each state and the District of Columbia has at least one district court, with more populous states having a larger number of districts.²⁵ When there are several district courts in a single state, I compute an aggregate measure for the state by weighting the median time interval in each district by the corresponding number of cases.

Table 1 provides basic summary statistics for my sample.

[INSERT TABLE 1 ABOUT HERE]

4.2 OLS

The purpose of this section is to establish basic correlations using simple OLS regressions. For comparison, it may also be interesting to contrast OLS coefficients with the coefficients from instrumental variables regressions. OLS may raise understandable concerns due to reverse causality because debt collection agencies may anticipate the rise in consumer credit and start hiring to build additional capacity. I will address these concerns with instrumental variables estimation in the next section.

I estimate the following constant elasticity model:

$$\ln Y_{i,t} = \alpha_i + \gamma_t + \beta \ln X_{i,t-1} + \eta' \ln \text{Controls}_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where $Y_{i,t}$ is a measure of the amount of credit in state i in year t , and $X_{i,t-1}$ is the debt

²⁵California, New York and Texas each have four federal judicial districts.

collectors density, the number of debt collectors per million capita in state i in year $t - 1$. I use lags of the main explanatory variable to rule out a possibly mechanical relationship: the number of debt collectors may increase as a response to more credit offered in the current period. I use income per capita to control for general economic conditions and a non-performing loans rate as a proxy for the riskiness of the pool of borrowers.²⁶ I also include credit union assets per member (defined as total credit union assets divided by the number of credit union members) to control for the relative affluence of credit unions: this is a measure of the total amount of credit that can potentially be extended. Three lags of per capita income growth in each state are also included. I hope that lags of personal income will absorb the demand-side variation and will account for the local business cycle. Time fixed effects are included to remove macro-level trends while state fixed effects eliminate all unobserved state heterogeneity.²⁷ In all specifications, standard errors are clustered at the state level. All variables are expressed in real 1982 dollars using CPI.

Debt collectors pressure consumers to pay back their debts and to the extent that this pressure is inconvenient for consumers, which it must be based on the number of consumer complaints, a higher number of debt collectors should reduce the demand for credit. Hence, any positive effect of debt collectors on the amount of credit in the simple OLS framework should be attributed to credit supply (strong enough to overcome the negative impact of lower demand). I will use several measures of the amount of consumer credit in my analysis. The first of them is the amount of loans extended per credit union member. Since credit unions are allowed to lend only to their members, credit union membership is the relevant

²⁶Excluding non-performing loans does not affect the results in a significant way. Using state-level GDP instead of personal income does not affect the results. I prefer using personal income, however, because there is a discontinuity in the GDP-by-state time series at 1997, where the data change from SIC industry definitions to NAICS industry definitions.

²⁷As I mentioned before, this should also account for the difference in consumer protection laws across states since those laws remained virtually unchanged during my sample period.

demographic by which total amount of credit should be normalized. My other measures help me explore whether changes in the amount of credit are attributable to the loan size (the intensive margin), the number of loans (the extensive margin), or both. To do this I look at loan balances (amount of credit divided by the number of loans) and at loans per member and per capita (number of loans divided by credit union membership and by the state's population, respectively). I consider the following four types of loans: credit cards, other unsecured consumer loans, auto loans (secured by old or new vehicles), and mortgages (first-lien).

Table 2 presents the results of estimating the effect of debt collectors on the amount of unsecured credit per credit union member.

[INSERT TABLE 2 ABOUT HERE]

As expected, debt collectors density has a significant positive effect on the amount of total unsecured credit and on non-credit cards loans. A one-percent increase in the debt collectors density in year $t - 1$ leads to a 0.77% increase in the amount of credit card loans per credit union member and a 0.087% increase in the amount of non-credit card unsecured loans per credit union member in year t . This effect will be larger in the instrumental variables estimation. I attribute this fact to the following two consideration. First, it is difficult to separate supply from demand in the simple OLS framework, and since debt collectors should decrease demand, the coefficients on the total amount of credit should be smaller than the coefficients on the supply of credit. Second, the number of debt collectors should rise in accordance with *delinquent* credit, not the total amount of consumer credit. It is precisely in these circumstances that creditors should be unwilling to provide credit, *ceteris paribus*.

[INSERT TABLE 3 ABOUT HERE]

Debt collectors are usually employed to collect unsecured debt. In the case of a secured loan the creditor can repossess the underlying collateral.²⁸ As a falsification test, I regress the amount of secured credit on debt collectors density. These results are presented in Table 3. Changes in debt collectors density do not seem to affect the supply of auto loans and have a negative impact on the supply of mortgage loans. This is evidence of a substitution effect: when the amount of unsecured credit increases the amount of secured credit falls (notice that my regressions include total assets per member, with the intention to control for the total amount of credit that can potentially be extended). This is evidence that demand-side omitted variables are not driving my results since those variables are likely to affect all types of loans similarly.²⁹

4.3 Instrumental variables estimation

Debt collectors' compensation is usually tied to the amount of collections they generate. Therefore, they have strong incentives to be persistent. Sometimes the methods they use are on the borderline of legality. In many cases brought by the FTC and state Attorney Generals against debt collection agencies, the latter were found guilty of using abusive practices prohibited by the federal law. In testimony before the Consumer Affairs Subcommittee of the U.S. House Committee on Banking and Housing during 1992 oversight hearings on the Fair Debt Collection Practices Act, Richard W. Bell, a former collector, testified that abusive strategies were routine among the more than nineteen collection companies for which

²⁸In the case of auto loans the collateral can be relocated by the consumer and its repossession by the creditor may be complicated. In those instances they use repossession agencies (repo men as they are known colloquially). Those agencies are separate from debt collectors that are the focus of this paper. County Business Patterns surveys track these two types of establishments in separate categories.

²⁹It may be the case, however, that recessions shift demand from secured to unsecured credit. This concern is mitigated to the extent that time fixed effects control for the nationwide business cycle and lags of personal income in each state account for business cycles at the state level.

he worked over a ten-year period in Texas.³⁰ Bell testified that common abusive (and illegal) collection tactics included:

- Phoning a debtor’s parent, impersonating a government prosecutor, and requesting the parent to get the debtor to call about a criminal investigation regarding the debtor.
- Threatening the debtor and his parent with criminal charges for capital gains tax fraud unless the balance of the debt was put on the parent’s credit card.
- Calling 5-15 neighbors in a brief period of time, informing them that the debtor was suspected of receiving stolen goods, and asking them to go to the debtor’s home and request the debtor to call the collector. This was called a “block party.” A variant was to hold an “office party” by calling fellow employees.
- Soliciting postdated checks in order to later threaten criminal bad check prosecution.
- Threatening to report Latinos to immigration authorities and posing as an immigration officer.
- Encouraging women to engage in prostitution and men to sell drugs to pay a debt.

Collection efforts are more effective when law enforcement is less effective, although I am confident that most collectors use lawful means to collect consumer debts. Two facts support this statement. First, the FTC receives more complaints about third-party debt collectors than about any other industry. Second, the amount of civil litigation against debt collectors is significant. In the first five months of 2010, there were 4,808 lawsuits filed by consumers against debt collection agencies,³¹ which compares with 185,900 original civil cases filed in

³⁰Source: Fair Debt Collection.

³¹Source: WebRecon LLC, published by InsideArm.com. Of the 4,808 lawsuits, 4,099 were filed under the FDCPA, 419 – under the Fair Credit Reporting Act, 16 – under the Telephone Consumer Protection Act,

the U.S. District Courts in 2009.³² The threat of consumer litigation is so serious that there exists a specialized agency, WebRecon LLC, which tracks consumers and lawsuits in order to determine who the most litigious consumers are. This information is then used by collection agencies to determine what course of action is most appropriate should one of their debtors be on the list of repeat filers.

I use the following measures of law enforcement effectiveness as instruments: violent crime rate, the number of law enforcement personnel, and the median time from filing to disposition in federal civil cases. If law enforcement is pre-occupied with crime, collectors are more likely to get away with shady tactics. Thus, the number of debt collectors should be positively related to the crime rate and negatively related to the number of law enforcement employees. Total crime rate, although a significant predictor of the number of debt collectors, may also be correlated with the demand for credit. For example, people who have had something stolen may need to increase spending on their credit cards or obtain an additional consumer loan. In order to address this concern I distinguish between violent and property crime,³³ with the idea that property crime should pick up the demand side variation. I believe that violent crime per se should be unrelated to the demand for credit.³⁴

Judicial employment indicates the likelihood that legal action will be brought against debt collectors. Actions by federal and state regulators are a major concern for the debt

172 – under the Truth in Lending Act, with the remaining suits filed under various other federal acts and state consumer statutes.

³²Source: Judicial Business of the United States Courts, 2009. The total number of civil filings in 2009 was 276,397, which also includes removals from state courts, remands from courts of appeals, reopens, and transfers.

³³The following offenses are classified as violent: murder and non-negligent manslaughter, forcible rape, robbery, aggravated assault. Property offenses are: burglary – breaking or entering, larceny-theft, motor vehicle theft.

³⁴The only possible channel is medical bills if a consumer gets injured. However, these bills are either covered by health insurance or are a separate form of unsecured credit, which is not the focus of this study.

collection community.³⁵ Collection agencies are sued regularly by state Attorney Generals and consumers.³⁶ Conditional on being sued, however, debt collectors prefer to settle the matter as soon as possible.³⁷ Lawsuits bring uncertainty, and the extent of this uncertainty is high due to the potentially large penalties that can be imposed. On May 28, 2010, a jury in Texas awarded \$1.5 million in punitive damages against a debt collection agency, in addition to \$50,000 in mental anguish damages. The initial debt the agency was trying to collect was only \$200.³⁸ In order to avoid such ruining outcomes, collection agencies prefer to settle cases. In addition, collection efforts concerning disputed accounts may have to be halted, which reduces revenues, at least temporarily. Most cases against debt collectors are filed in federal courts under the FDCPA, which includes provisions for civil action. Therefore, the length of federal civil proceedings is relevant for debt collectors. On the other hand, most contract cases are tried in state courts, so that federal civil proceedings are not contaminated by actions brought by creditors against consumers. I present the results of the first-stage instrumental variables estimation in Table 4.

[INSERT TABLE 4 ABOUT HERE]

As expected, violent crime rate is a significant predictor of the number of debt collectors. In addition, higher capacity of the state's judicial system measured by the per capita judicial employment leads to a lower number of collectors. The median time interval from filing to

³⁵InsideARM.com, a leading on-line resource for debt collectors, regularly sends newsletters to its subscribers. In the first quarter of 2010, 59 newsletters were distributed, 30 of which discussed issues related to regulation, lawsuits involving collectors, and law enforcement matters.

³⁶New York Attorney General Andrew M. Cuomo, for example, started a statewide initiative in May 2009 to clean up the debt collection industry. As of May 2010, his office shut down 14 debt collection companies and required others to reform their deceptive practices. 10 collectors were criminally prosecuted. Other recent actions against debt collectors were initiated by Attorney Generals in West Virginia and Colorado.

³⁷As one collector from Florida put it on a discussion forum during Expo 3.0, an on-line conference of debt collectors, "we have to settle out of necessity."

³⁸Allen Jones v. Advanced Call Center Technologies. Source: InsideArm.com.

disposition in federal civil cases has a negative effect on the number of debt collectors, confirming the intuition that conditional on going to court debt collection agencies prefer to finish proceedings quickly.

[INSERT TABLE 5 ABOUT HERE]

I use instrumental variables to estimate the effect of debt collectors density on the total amount of credit (measured by the amount of loans per credit union member). Table 5 reports the results of this estimation. Again, I attribute the results that indicate credit expansion to credit supply: first, my instrumental variables are intended to pick up the supply side variation, second, as I mentioned before, debt collectors should reduce demand. Debt collectors density has a statistically significant effect on the amount of unsecured credit and a negative effect on secured credit, consistent with the substitution hypothesis. The coefficient on the variable of interest is now an order of magnitude larger than it was in simple OLS regressions. This finding is not surprising since the instrumental variable estimation is meant to purge other influences that contaminate OLS coefficients. For the reasons outlined above, I expect those influences to bias OLS coefficients downwards. Instrumental variables results are significant for both credit cards and other unsecured loans, unlike simple OLS results above. A one-percent rise in the debt collection capacity leads to an increase of 0.529% for credit card loans per credit union member and 1.67% for other unsecured loans per credit union member. It also leads to a 1.37% decrease in the amount of auto loans extended, per credit union member, and a 0.156% decrease in the amount of mortgage loans per credit union member. On the one hand, this is evidence that creditors substitute unsecured credit for secured credit when the collection process is more effective (the provision of unsecured credit becomes less expensive). On the other hand, secured creditor are also concerned about the value of their collateral. If law enforcement is weak and crime is rampant, property may

be damaged or destroyed, thus directly affecting secured creditors. My instruments are unable to separate these effects and since both of them should reduce the supply of secured credit, the above results should be interpreted with care.

[INSERT TABLE 6 ABOUT HERE]

There are two ways in which credit expansion can occur. Credit unions can increase their exposure to the current customers in terms of loan balances or the number of loans, or they may extend credit to a larger number of people by attracting new members. I explore these mechanisms below.

Table 6 presents estimation results for loan balances (loan amounts divided by the number of loans). Debt collectors have a positive effect on loan balances for unsecured loans, with the effect on non-credit card debt being the strongest. There is no effect on secured loan balances, which is not surprising given that debt collectors should be irrelevant for secured credit other than via a possible substitution effect. A one-percent increase in the number of debt collectors per capita leads to an increase of 0.493% for credit cards balances and 1.322% for balances on other unsecured loans. These results indicate that credit unions increase their exposure to current customers in terms of the size of the loans they are willing to offer.

I also investigate whether credit unions increase the number of unsecured loans per member, with the results reported in Table 7. I find no significant effect on the number of unsecured loans per member, both for credit cards and other unsecured loans. Although credit unions are willing to increase loan sizes, they do not seem to raise the number of loans each member receives.

[INSERT TABLE 7 ABOUT HERE]

To study whether credit unions expand membership I look at the number of members per capita and the number of loans per capita in Table 8. I find that the number of credit union members per capita grows in response to higher debt collectors density. The number of unsecured non-credit card loans per capita also increases. While credit unions seem to keep the number of loans per member stable, the fact that their membership grows results in the increase in the number of loans per capita. From the policy standpoint, robust collections enable credit unions to offer credit to a larger number of people: debt collectors may help traditional credit providers expand their network.

[INSERT TABLE 8 ABOUT HERE]

The expansion of credit attributed to debt collectors should benefit riskier borrowers. Debt collectors provide an enforcement mechanism in case the borrower defaults. This mechanism should be more important if the borrower is risky since in this case the creditor is more likely to turn to debt collectors. It is likely that a larger pool of credit union borrowers associated with higher debt collectors density means that borrowers are becoming riskier. The following considerations speak in favor of this hypothesis. First, assuming that credit unions behave rationally, they should start by attracting the safest applicants. Second, since credit unions are membership organizations and are likely to maintain a close relationship with their members, they should be able to assess the relative riskiness of their potential members. Although I cannot observe the riskiness of the pool directly, I can look at interest rates charged on unsecured loans. If credit unions are willing to lend to riskier borrowers, they should charge higher interest rates. Table 9 reports coefficients from regressions of interest rates on debt collectors density.

[INSERT TABLE 9 ABOUT HERE]

Although my results on pricing are weak, they indicate that higher debt collectors density is associated with higher interest rates on unsecured non-credit card debt, consistent with the hypothesis that gains in credit union membership are coming from riskier borrowers. Effective collection alleviates credit rationing and ensures entrance into retail credit markets for borrowers who would otherwise be unable to participate. These results complement Gropp, Scholz, and White (1997) who show that generous bankruptcy exemptions are beneficial for the wealthiest consumers. The effect on credit card pricing in Table 9 is positive but insignificant. This latter coefficient should be interpreted with care, however, because of data availability issues. Fee income is an increasingly important element of credit card pricing and can account for up to 50% of interest. Furletti (2003) describes the trends in credit card pricing and shows that lenders have dramatically changed their pricing strategies since the 1990s. In particular, they reduced APRs and shifted to charging various fees to credit card borrowers. Late fee revenue, for example, quadrupled between 1996 and 2001. Credit unions report APRs but do not separate their fee income into credit card related and other fees. As a result, I am unable to develop a good measure of credit card interest rates in my sample.

4.4 Debt collectors, loan recoveries and charge-offs

The results presented above indicate that effective third-party debt collection increases the supply of unsecured credit. In this section I intend to delineate the direct mechanism behind this finding. Higher debt collectors density should be associated with higher recovery rates. Higher recovery rates, on the other hand, decrease creditors' losses conditional on default and make them more willing to lend in the first place. Naturally, this mechanism should be more important for borrowers who are *ex ante* more likely to default. Charge-off rates, on

the other hand, should be lower when debt collectors density increases.

[INSERT TABLE 10 ABOUT HERE]

Table 10 presents estimation results from regressions of credit card charge-off and recovery rates on debt collectors density. I use credit card recoveries and charge-offs because debt collectors are relevant for unsecured credit (recoveries and charge-offs for other unsecured loans are unavailable). Debt collectors have a positive effect on credit card recoveries. These results indicate that a larger number of debt collectors enhances creditors' ability to collect delinquent debt and leads to the expansion of credit supply.

4.5 Small banks' credit supply

Although credit unions are not insignificant, most consumer lending in the United States is provided by banks. In order to address the issue of external validity of my results I test whether debt collectors density has an impact on the amount of credit provided by small banks.³⁹ Since call reports do not disaggregate data by geographic location, it is difficult to obtain good measures of banks' credit availability at the state level. It seems, however, reasonable to assume that small banks are more likely than large banks to restrict their activities to a particular state, which is crucial in my setting since I use state-level data to obtain debt collectors density. Bank call reports distinguish between two types of non-mortgage consumer loans: credit cards (and related plans), and other loans. Since other loans include secured along with unsecured loans, I use credit card loans as a measure of the amount of unsecured credit provided by small banks. Auto loans are not tracked as

³⁹I define small banks as banks with total assets below \$1 billion, expressed in year 2000 dollars. The cut-off is recalculated each year, so that the same bank may be regarded as small in some years and as big in others.

a separate category (they are included in other consumer loans), which is why the only measure of secured credit I can use is real estate loans. I use home equity line of credit loans in my falsification tests. Since banks do not report the number of loans, I normalize the total amount of loans by the state's population.

[INSERT TABLE 11 ABOUT HERE]

Table 11 presents regressions that use data on small banks. The results are weaker than for credit unions. They indicate a positive impact of debt collectors density on the supply of unsecured credit and no effect on secured credit. The fact that the coefficient of interest is only marginally significant is attributed to the measurement error in the dependent variable, which in this case should only increase standard errors.⁴⁰ First, it is impossible to obtain a clean measure of state-by-state amount of credit from bank call reports, and it is especially difficult to do for credit card loans. Second, unlike for credit unions, the relevant demographic to which small banks provide credit is difficult to determine. Small banks are unlikely to be able to serve the entire state's population, so that the denominator of my measure of the amount of credit introduces an additional measurement error.

5 Conclusion

Using plausibly exogenous within state variation in the strength of law enforcement as an instrument for the number of debt collectors, I find that higher debt collectors density increases the supply of unsecured consumer credit, both in terms of the amount of credit per credit union member and the size of the loan. A one-percent change in the number of

⁴⁰This measurement error should not bias the coefficients, however, unlike a measurement error in the regressors, which I attempted to deal with via instrumental variables estimation.

debt collectors per capita leads to a 0.49% change in the average credit card balance and a 1.32% change in the average balance on non-credit card unsecured loans. Consistent with the fact that debt collectors collect unsecured debts, there is no effect on the size of secured loans. In terms of secured loans per credit union member, however, I find weak evidence that creditors substitute unsecured credit for secured credit when the number of debt collectors increases. The number of credit union members grows with higher debt collectors density. Accordingly, the number of unsecured non-credit card loans per capita also increases.

Increased membership indicates that creditors lend to a larger pool of applicants when debt collectors density rises. These additional borrowers are likely to be riskier consumers with lower incomes. Consistent with this, creditors charge higher interest rates on unsecured non-credit card loans. I am unable to identify the effect on credit card interest rates because I cannot account for the fee income, which constitutes an increasingly important fraction of interest. I also show that higher debt collectors density is associated with higher credit card recovery rates, which provides a direct mechanism behind my results on credit supply.

My findings indicate the importance of lender protection in retail credit markets. While generous bankruptcy exemptions benefit more affluent consumers, effective debt collection enables creditors to lend to riskier, presumably lower income borrowers. Financial regulation aimed at consumer protection must be balanced with strong creditor rights to achieve the goal of expanding credit supply to the underserved populations.

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Table 1: Summary statistics

Variable	Mean	Median	St. dev.
Debt collectors per million capita	331.01	285.55	203.44
Total amount of unsecured credit per member	\$280.81	\$271.20	\$98.96
Amount of credit card loans extended, per member	\$99.42	\$96.98	\$63.55
Average balance on credit card loans	\$804.39	\$780.57	\$185.11
Average interest rate on credit card loans	12.00%	12.12%	1.36%
Amount of other unsecured loans extended, per member	\$137.18	\$127.73	\$87.91
Average balance on other unsecured loans	\$1,251.54	\$1,210.58	\$388.49
Average interest rate on other unsecured loans	12.62%	12.64%	1.04%
Amount of secured auto loans extended, per member	\$764.14	\$742.69	\$258.28
Average balance on secured auto loans	\$5,196.72	\$5,188.78	\$797.30
Average interest rate on secured auto loans	7.40%	7.61%	1.20%
Amount of mortgage loans extended, per member	\$551.19	\$434.39	\$371.27
Average balance on mortgage loans	\$39,317.24	\$35,227.83	\$17,731.44
Average interest rate on mortgage loans	7.29%	7.27%	1.90%

Summary statistics for the entire sample period, 1988-2009, in real 1982 dollars. Not all variables have observations in every year. The number of debt collectors is for the 1988-2007 period, various loan statistics are for the 1989-2009 period. The amount of credit per member is obtained by dividing the dollar amount of a particular type of loan by the number of credit union members. Other unsecured loans include all non-credit card unsecured loans (big ticket purchases, unsecured home improvement loans, etc.). Prior to 1992, call reports did not distinguish between credit cards and other unsecured loans. All variables are obtained by aggregating credit union data at the state level.

Table 2: OLS regressions of unsecured credit supply on debt collectors density, 1992-2008

Variable	$\ln(\text{Amount of credit card loans extended, per member}), t$	$\ln(\text{Amount of other unsecured loans extended, per member}), t$
$\ln(\text{Debt collectors per million capita}), t - 1$	0.077* (1.66)	0.087** (2.21)
$\ln(\text{Total non-performing loans rate}), t$	-0.028 (-0.61)	0.069** (2.32)
$\ln(\text{Total non-performing loans rate}), t - 1$	0.060 (0.53)	-0.062 (-1.21)
$\ln(\text{Assets per member}), t$	0.030 (0.69)	0.004 (0.13)
$\ln(\text{Income per capita}), t$	-0.083 (-0.02)	4.334 (1.03)
$\ln(\text{Income growth}),$ from $t - 1$ to t	-0.001 (-0.18)	0.002 (0.40)
$\ln(\text{Income growth}),$ from $t - 2$ to $t - 1$	-0.001 (-0.29)	0.0002 (0.05)
$\ln(\text{Income growth}),$ from $t - 3$ to $t - 2$	0.001 (0.37)	-0.006 (-1.56)
Year fixed effects	YES	YES
State fixed effects	YES	YES
No. of obs.	816	816
Adjusted R^2	0.87	0.94

All regressions use data aggregated at the state level. Amounts of loans per member are obtained by dividing total real amount of a particular loan type from credit union call reports by the total number of credit union members. Standard errors are clustered at the state level, t -statistics are reported in parentheses below the coefficients.

Table 3: OLS regressions of secured credit supply on debt collectors density, 1989-2008

Variable	$\ln(\text{Amount of secured auto loans extended, per member}), t$	$\ln(\text{Amount of mortgage loans extended, per member}), t$
$\ln(\text{Debt collectors per million capita}), t - 1$	-0.029 (-0.74)	-0.137*** (-2.82)
$\ln(\text{Total non-performing loans rate}), t$	0.026 (0.56)	0.138*** (3.13)
$\ln(\text{Total non-performing loans rate}), t - 1$	-0.189*** (-4.26)	-0.014 (-0.30)
$\ln(\text{Assets per member}), t$	0.036 (0.99)	0.169* (1.71)
$\ln(\text{Income per capita}), t$	2.261 (0.63)	3.307 (0.72)
$\ln(\text{Income growth}),$ from $t - 1$ to t	0.003 (0.68)	-0.009* (-1.65)
$\ln(\text{Income growth}),$ from $t - 2$ to $t - 1$	0.004 (0.90)	-0.009 (-1.54)
$\ln(\text{Income growth}),$ from $t - 3$ to $t - 2$	0.009** (2.34)	0.001 (0.27)
Year fixed effects	YES	YES
State fixed effects	YES	YES
No. of obs.	912	912
Adjusted R^2	0.91	0.93

All regressions use data aggregated at the state level. Amounts of loans per member are obtained by dividing total real amount of a particular loan type from credit union call reports by the total number of credit union members. Standard errors are clustered at the state level, t -statistics are reported in parentheses below the coefficients.

Table 4: First stage of instrumental variables estimation

Variable	$\ln(\text{Debt collectors per million capita}), t - 1$
$\ln(\text{Judicial employment per million capita}), t - 1$	-0.065** (-2.03)
$\ln(\text{Median time from filing to disposition}), t - 1$	-0.009* (-1.82)
$\ln(\text{Violent crime rate per 100,000 capita}), t - 1$	0.207*** (3.21)
Other controls	YES
Year fixed effects	YES
State fixed effects	YES
No. of obs.	910
Adjusted R^2	0.86

All regressions use data aggregated at the state level. Median time from filing to disposition was obtained from caseload statistics for federal district courts. If a state had more than one district court, the median for the state was calculated as a weighted average of district courts' medians using the number of cases as weights. Standard errors are clustered at the state level, t -statistics are reported in parentheses below the coefficients.

Table 5: IV regressions of unsecured and secured credit supply on debt collectors density, 1989-2008

Variable	$\ln(\text{Amount of credit card loans extended, per member}), t$	$\ln(\text{Amount of other unsecured loans extended, per member}), t$	$\ln(\text{Amount of secured auto loans extended, per member}), t$	$\ln(\text{Amount of mortgage loans extended, per member}), t$
$\ln(\text{Debt collectors per million capita}), t - 1$	0.529** (1.97)	1.670*** (3.07)	-1.370** (-2.04)	-0.156* (-1.88)
$\ln(\text{Assets per member}), t$	0.014 (0.45)	-0.102 (-0.22)	-0.008 (-0.15)	0.158*** (3.79)
$\ln(\text{Income per capita}), t$	-2.099 (-0.58)	-1.643 (-0.22)	6.202 (1.14)	4.610 (1.52)
$\ln(\text{Property crime rate per 100,000 capita}), t - 1$	-0.693** (-1.97)	-1.22* (-1.60)	0.812 (1.29)	-0.262 (-0.86)
Other controls	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
State fixed effects	YES	YES	YES	YES
No. of obs.	814	814	910	910
Adjusted R^2	0.86	0.94	0.90	0.93
Hansen J statistic (p-value)	2.547 (0.28)	0.225 (0.89)	0.959 (0.62)	1.988 (0.37)

All regressions use data aggregated at the state level. Amounts of loans per member are obtained by dividing total real amount of a particular loan type from credit union call reports by the total number of credit union members. Standard errors are clustered at the state level, z -statistics are reported in parentheses below the coefficients.

Table 6: IV regressions of unsecured and secured loan balances on debt collectors density, 1989-2008

Variable	$\ln(\text{Average balance on credit card loans}), t$	$\ln(\text{Average balance on other unsecured loans}), t$	$\ln(\text{Average balance on secured auto loans}), t$	$\ln(\text{Average balance on mortgage loans}), t$
$\ln(\text{Debt collectors per million capita}), t - 1$	0.493* (1.65)	1.322** (2.16)	-0.500 (-1.15)	0.646 (1.03)
$\ln(\text{Assets per member}), t$	-0.005 (-0.19)	0.079* (1.71)	0.004 (0.19)	0.097** (2.28)
$\ln(\text{Income per capita}), t$	-2.631 (0.77)	-6.455 (-1.08)	4.990** (2.00)	0.476 (0.14)
$\ln(\text{Property crime rate per 100,000 capita}), t - 1$	0.331 (0.97)	-0.904 (-1.37)	0.233 (0.91)	-0.291 (-0.75)
Other controls	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
State fixed effects	YES	YES	YES	YES
Instrumental variables	YES	YES	YES	YES
No. of obs.	814	814	910	910
Adjusted R^2	0.81	0.82	0.68	0.94
Hansen J statistic (p-value)	2.312 (0.31)	0.495 (0.78)	0.530 (0.77)	3.321 (0.19)

All regressions use data aggregated at the state-year level. Amounts of loans per member are obtained by dividing total real amount of a particular loan type from credit union call reports by the total number of credit union members. Standard errors are clustered at the state level, z -statistics are reported in parentheses below the coefficients.

Table 7: IV regressions of the number of unsecured loans per credit union member on debt collectors density, 1992-2008

Variable	$\ln(\text{Number of credit card loans per 1000 members}), t$	$\ln(\text{Number of other unsecured loans per 1000 members}), t$
$\ln(\text{Debt collectors per million capita}), t - 1$	1.023 (1.34)	0.349 (0.81)
$\ln(\text{Total non-performing loans rate}), t$	-0.020 (-0.20)	0.037 (0.97)
$\ln(\text{Total non-performing loans rate}), t - 1$	0.094 (0.79)	0.056 (1.15)
$\ln(\text{Assets per member}), t$	0.019 (0.36)	0.065** (2.24)
$\ln(\text{Income per capita}), t$	-4.730 (-0.85)	4.811* (1.74)
$\ln(\text{Income growth}),$ from $t - 1$ to t	-0.002 (-0.23)	-0.002 (-0.38)
$\ln(\text{Income growth}),$ from $t - 2$ to $t - 1$	-0.004 (-0.39)	0.003 (0.59)
$\ln(\text{Income growth}),$ from $t - 3$ to $t - 2$	-0.012 (-1.12)	-0.009* (-1.64)
$\ln(\text{Property crime rate per 100,000 capita}), t - 1$	-1.023* (-1.83)	-0.317 (-1.02)
Year fixed effects	YES	YES
State fixed effects	YES	YES
No. of obs.	814	814
Adjusted R^2	0.52	0.72
Hansen J statistic (p-value)	2.259 (0.32)	1.347 (0.51)

All regressions use data aggregated at the state level. Number of loans per member is obtained by dividing total number of loans of a particular loan type from credit union call reports by the total number of credit union members. Standard errors are clustered at the state level, z -statistics are reported in parentheses below the coefficients.

Table 8: IV regressions of the number of unsecured loans and credit union membership per capita on debt collectors density, 1989-2008

Variable	$\ln(\text{Number of credit card loans per million capita}), t$	$\ln(\text{Number of other unsecured loans per million capita}), t$	$\ln(\text{Credit union membership per 1000 capita}), t$
$\ln(\text{Debt collectors per million capita}), t - 1$	1.362 (1.34)	0.687** (2.09)	0.144** (2.25)
$\ln(\text{Total non-performing loans rate}), t$	0.0093 (0.07)	0.066 (1.11)	0.043 (1.30)
$\ln(\text{Total non-performing loans rate}), t - 1$	0.062 (0.41)	0.023 (0.32)	-0.035 (-1.38)
$\ln(\text{Assets per member}), t$	0.041 (0.59)	0.087** (2.43)	0.026 (1.15)
$\ln(\text{Income per capita}), t$	-2.864 (-0.41)	6.677* (1.65)	3.994*** (3.68)
$\ln(\text{Income growth}),$ from $t - 1$ to t	0.001 (-0.05)	-0.0002 (-0.03)	0.0003 (0.10)
$\ln(\text{Income growth}),$ from $t - 2$ to $t - 1$	-0.001 (-0.08)	0.005 (0.82)	0.001 (0.30)
$\ln(\text{Income growth}),$ from $t - 3$ to $t - 2$	-0.014 (-1.04)	-0.011 (-1.50)	-0.002 (-0.87)
$\ln(\text{Property crime rate per 100,000 capita}), t - 1$	-1.137 (-1.52)	-0.431 (-1.02)	0.035 (0.26)
Year fixed effects	YES	YES	YES
State fixed effects	YES	YES	YES
No. of obs.	814	814	910
Adjusted R^2	0.45	0.69	0.96
Hansen J statistic (p-value)	1.292 (0.52)	2.553 (0.28)	2.457 (0.29)

All regressions use data aggregated at the state level. Number of loans per million capita is obtained by dividing total number of loans of a particular loan type from credit union call reports by the state's total population. Standard errors are clustered at the state level, z -statistics are reported in parentheses below the coefficients.

Table 9: IV regressions of interest rates on debt collectors density, 1992-2008

Variable	$\ln(\text{Average interest rate on credit card loans}), t$	$\ln(\text{Average interest rate on other unsecured loans}), t$
$\ln(\text{Debt collectors per million capita}), t - 1$	0.036 (0.50)	0.109** (2.22)
$\ln(\text{Total non-performing loans rate}), t$	0.008 (1.13)	0.009 (0.99)
$\ln(\text{Total non-performing loans rate}), t - 1$	-0.013 (-1.52)	0.009 (0.82)
$\ln(\text{Assets per member}), t$	0.010** (2.10)	0.001 (0.09)
$\ln(\text{Income per capita}), t$	0.287 (0.63)	-0.134 (-0.25)
$\ln(\text{Income growth}),$ from $t - 1$ to t	-0.001* (-1.86)	0.0001 (0.14)
$\ln(\text{Income growth}),$ from $t - 2$ to $t - 1$	-0.002*** (-3.57)	-0.0003 (-0.33)
$\ln(\text{Income growth}),$ from $t - 3$ to $t - 2$	-0.002** (-2.19)	-0.002** (-2.06)
$\ln(\text{Property crime rate per 100,000 capita}), t - 1$	-0.040 (-0.82)	-0.067 (-1.13)
Year fixed effects	YES	YES
State fixed effects	YES	YES
Instrumental variables	YES	YES
No. of obs.	814	814
Adjusted R^2	0.92	0.85
Hansen J statistic (p-value)	3.494 (0.17)	3.311 (0.19)

All regressions use data aggregated at the state level. Average interest rates on a particular loan type were obtained by averaging interest rates reported by individual credit unions. Standard errors are clustered at the state level, z -statistics are reported in parentheses below the coefficients.

Table 10: IV regressions of credit card charge-off and recovery rates on debt collectors density, 1998-2008

Variable	$\ln(\text{Average charge-off rate on credit card loans}), t$	$\ln(\text{Average recovery rate on credit card loans}), t$
$\ln(\text{Debt collectors per million capita}), t - 1$	0.031 (0.10)	0.571* (1.84)
$\ln(\text{Total non-performing loans rate}), t$	0.183*** (3.65)	-0.489*** (-4.04)
$\ln(\text{Total non-performing loans rate}), t - 1$	0.281*** (4.89)	-0.022 (-0.17)
$\ln(\text{Assets per member}), t$	-0.479** (-1.96)	0.558 (1.13)
$\ln(\text{Income per capita}), t$	-11.609** (-2.16)	9.607 (-3.16)
$\ln(\text{Income growth}),$ from $t - 1$ to t	0.012 (1.63)	0.004 (0.31)
$\ln(\text{Income growth}),$ from $t - 2$ to $t - 1$	-0.008 (-1.04)	0.011 (0.66)
$\ln(\text{Income growth}),$ from $t - 3$ to $t - 2$	-0.005 (-0.87)	0.009 (0.78)
$\ln(\text{Property crime rate per 100,000 capita}), t - 1$	-0.154 (-0.66)	0.629 (1.36)
Year fixed effects	YES	YES
State fixed effects	YES	YES
Instrumental variables	YES	YES
No. of obs.	526	526
Adjusted R^2	0.73	0.63
Hansen J statistic (p-value)	0.385 (0.82)	2.668 (0.26)

All regressions use data aggregated at the state level. Standard errors are clustered at the state level, z -statistics are reported in parentheses below the coefficients.

Table 11: OLS and IV regressions of small banks' credit supply on debt collectors density, 1989-2008

Variable	$\ln(\text{Amount of credit card loans extended, per capita}), t$		$\ln(\text{Amount of HE-LOC loans extended, per capita}), t$	
$\ln(\text{Debt collectors per million capita}), t - 1$	0.273*	0.585*	-0.092	5.381
	(1.67)	(1.80)	(-1.05)	(1.15)
$\ln(\text{Bank assets per capita}), t$	2.261***	2.299***	1.276***	1.398***
	(5.29)	(3.97)	(8.31)	(4.13)
$\ln(\text{Income per capita}), t$	-28.807*	-30.511	23.361	5.854
	(-1.64)	(-1.03)	(1.49)	(0.25)
$\ln(\text{Income growth, from } t - 1 \text{ to } t)$	0.016	0.013	-0.031**	-0.087
	(0.76)	(0.37)	(-2.33)	(-1.39)
$\ln(\text{Income growth, from } t - 2 \text{ to } t - 1)$	0.016	0.017	-0.023*	-0.037
	(0.78)	(0.72)	(-1.82)	(-0.90)
$\ln(\text{Income growth, from } t - 3 \text{ to } t - 2)$	0.009	0.010	0.005	-0.014
	(0.49)	(0.53)	(0.41)	(-0.34)
Year fixed effects	YES	YES	YES	YES
State fixed effects	YES	YES	YES	YES
Instrumental variables	NO	YES	NO	YES
No. of obs.	372	370	960	958
Adjusted R^2	0.92	0.92	0.90	0.84

HELOC stands for Home Equity Lines of Credit, loans extended with equity in the house as the collateral. Data for HELOC loans are available since 1989, data for credit card loans are available since 2001 (prior to that year banks reported all installment loans to individuals arising from bank check credit or other bank revolving credit plans together with credit card loans). All regressions use data aggregated at the state level. Each year, small banks are defined as banks with domestic offices only, whose total assets in that year are below \$1 billion, expressed in real 2000 dollars. The same bank can be included in some years and excluded from others. Standard errors are clustered at the state level, z -statistics are reported in parentheses below coefficients.