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DEBT COLLECTION AGENCIES AND THE SUPPLY OF CONSUMER CREDIT

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Debt Collection Agencies and the Supply of Consumer Credit

Viktar Fedaseyeu*

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Abstract

I examine contract enforcement in consumer credit markets by studying the role of third-party debt collectors. In order to identify the effect of debt collectors on credit supply, I construct a state-level index of the tightness of debt collection laws. I find that stricter regulations of third-party debt collectors are associated with a lower number of third-party debt collectors per capita and with fewer openings of revolving lines of credit. One additional restriction on debt collection activity reduces the number of debt collectors per capita by 15.9% of the sample mean and lowers the number of new revolving lines of credit by 2.2% of the sample mean. At the same time, regulations of third-party debt collectors do not affect secured consumer credit, which is consistent with the fact that debt collectors are used to enforce unsecured debt contracts. Stricter regulations of debt collectors decrease credit card recovery rates (by 9% of the sample mean for each additional restriction on debt collection activity), which appears to be the transmission mechanism by which debt collectors affect credit supply. The effect of debt collection laws is significant even when average credit scores are controlled for, meaning that consumer credit risk is not the only driver of credit access. My results can help explain the existence of a large market for unsecured consumer credit and shed light on contract enforcement in this market.

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

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1 Introduction

Consumer credit markets are large. At the end of 2012, the amount of consumer debt outstanding in the U.S., excluding loans secured by real estate, was \$2.779 trillion, compared to \$8.663 trillion in total nonfinancial corporate debt. Mortgage debt stood at \$9.431 trillion.[1] Despite the large size of retail credit markets, however, very little is known about contract enforcement mechanisms in those markets.[2] This paper starts to fill this void by examining a mechanism of creditor protection unique 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. Debt collectors play a prominent role in retail credit markets, with 14.6% of American consumers having at least one account in collections.[3]

Unlike in consumer credit markets, contracts in corporate credit markets have been a focus of much academic research. Aghion and Bolton (1992), Bolton and Scharfstein (1990), and Hart and Moore (1998), for example, demonstrated the robustness of debt contracts in corporate debt markets, where creditors receive control rights over debtors' assets after default. In retail credit markets, however, creditors can never obtain control rights over debtors and do not have full access to debtors' assets, especially their most valuable asset—human capital.[4] In addition, enforcing contracts over a large number of individual accounts with relatively small balances requires a technology different from that use to enforce contracts over relatively large corporate borrowers. Therefore, contract enforcement mechanisms developed

[1] Source: `http://www.federalreserve.gov/Releases/z1`, Z.1 Release of March 7, 2013, Table D.3.

[2] A new strand of theoretical research is emerging that starts to exploit unique features of contract enforcement in consumer credit markets to model unsecured consumer credit. Drozd and Serrano-Padial (2013) show that enforcement of consumer credit contracts via debt collection can help explain the rapid expansion of credit card borrowing in the U.S. in the 1980s and over the 1990s; Athreya, Sanchez, Tam, and Young (2013) introduce a model of unsecured consumer credit in the presence of both formal bankruptcy and informal default.

[3] Source: The Quarterly Report on Household Debt and Credit, May 2013, Federal Reserve Bank of New York.

[4] This, however, has not always been the case. Debtors' 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 debtors' 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. This statement can in no way be interpreted as an endorsement of slavery.

in corporate credit markets cannot function in retail credit markets without modifications.

Since creditors in retail credit markets lack direct access to debtors' human capital, they need a way to pressure the latter to share some of the income that accrues to their human capital. In order to exert this pressure, creditors often employ third-party debt collectors. The range of tactics utilized by such debt collectors is wide. They include repeated phone calls, letters, and other form of direct and indirect communication with debtors. Some debt collectors use unethical (and illegal) practices that include threats, harassment, and abusive language. In fact, third-party debt collection agencies are the most complained about industry in the U.S., generating about 20% of all consumer complaints filed with the Federal Trade Commission.[5] In addition, more than 5% of all civil cases filed in the entire federal courts system are against debt collectors. Thus, the pressure that third-party debt collectors exert on American consumers is significant. The question that I raise in this paper is whether the presence of third-party debt collectors enables lenders to extend credit in the first place.

Stronger creditor protection should lead to more consumer credit, which is the primary hypothesis that I test in this paper. In order to identify the effect of debt collectors on credit supply I use variation in state laws. Stricter debt collection regulations, which make it more difficult for debt collectors to operate, should result in less effective contract enforcement and should therefore lower credit supply. Consistent with this hypothesis, I find that stricter regulations of third-party debt collectors are associated with a lower number of third-party debt collectors per capita and with fewer openings of revolving lines of credit. One additional restriction on debt collection activity reduces the number of debt collectors per capita by 15.9% of the sample mean and lowers the number of new revolving lines of credit by 2.2% of the sample mean. The reduction of debt collection employment comes mostly from large

[5] A complaint filed with the FTC does not necessarily mean that the collection firm violated the law.

debt collection establishments: The share of employment by small debt collection establishments (fewer than 10 employees) grows when debt collection laws are more stringent. This is consistent with the idea that debt collection regulations impose a tax on size for debt collection firms. Further, I find that stricter regulations of debt collectors decrease recovery rates on charged-off unsecured credit cards (by about 1.1 percentage points, or 9% of the sample mean, for each additional restriction on debt collection activity), which appears to be the transmission mechanism by which debt collectors affect credit supply. To summarize, stricter debt collection regulations reduce the number of debt collectors, who can therefore exert less pressure on debtors. This reduces recovery rates and makes lenders less willing to provide credit in the first place.

As with any study of credit supply, separating demand effects from supply effects is a challenge. My results could be driven by demand-side variation if stricter debt collection laws reduce demand for consumer credit. However, this seems implausible. On the contrary, stricter debt collection regulations should increase demand because they lower consumers' indirect costs of obtaining credit. This happens because stricter debt collection laws limit options available to debt collectors, which means it is less likely that consumers will be forced to repay the debt. As a result, this should bias the results against finding a negative effect of debt collection restrictions on the amount of credit. In addition, I include control variables that reflect the riskiness of the pool of borrowers (by using consumer credit scores) and also measure the number of loan applications that consumers have made (by counting the average number of credit inquiries), which should alleviate concerns over the demand-side variation. The fact that debt collection statutes matter even when credit scores are included is significant: It shows that creditor remedies (and debt collectors in particular) complement the protections afforded to creditors from quantification of credit risk through credit scoring. This means that consumer credit risk is not the only driver of credit access.

Another concern with my analysis is that changes in debt collection laws may be driven by general economic conditions that are correlated with the credit cycle. Controlling for income per capita and lags of income growth should mitigate this concern, but cannot eliminate it completely. In order to address this alternative explanation more directly I use a falsification test. Any unobserved variation in the credit cycle is likely to affect all types of credit similarly. In particular, a credit expansion that is not attributable to changes in debt collection laws should increase the levels of both secured and unsecured credit. At the same time, a credit expansion attributable to changes in debt collection laws should have no effect on secured debt. This is because debt collectors are usually employed to collect unsecured debt, since in the case of secured debt the creditor can repossess the underlying collateral. I find that regulations of third-party debt collectors do not appear to affect secured consumer credit. It is therefore unlikely that my results are driven by some unobservable factors that affect the credit cycle.

The results reported in this paper show that consumer credit markets have developed a mechanism of lender protection and that this mechanism has a direct effect on credit supply. I show that this mechanism retains explanatory power even after controlling for consumer credit scores and credit inquiries, which means that consumer credit risk is not the only driver of credit access. At the same time, my results do not imply that credit expansion generated by more efficient debt collection is welfare improving, and further research is needed to shed light on this issue. Although other factors such as social norms and the stigma associated with default surely play an important role, robust contract enforcement can help explain the existence of large and active retail credit markets and contribute to our understanding of how these markets function. In terms of policy implications, my results indicate that financial regulation that institutes strong consumer protection must be balanced with creditor rights in order for the latter to extend consumer credit in the first place.

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 provides details about the regulation of debt collection and develops the index of debt collection restrictions. Section 5 describes the data, estimation strategy, and empirical results as well as some robustness tests. Section 6 concludes.

2 Relation to existing literature

This paper is the first empirical study of debt collection in consumer credit markets. Therefore, it complements the large corporate finance literature on investor and creditor rights that followed La Porta, Lopez-de Silanes, Shleifer, and Vishny (1998). Extant work on creditor rights in consumer credit markets mostly focuses on institutional details. Hunt (2007) gives an overview of the debt collection industry and provides details about its institutional structure and regulatory environment. Fedaseyeu and Hunt (2013) propose a model of the debt collection industry to explain existing empirical facts, and they study welfare implications of outsourcing debt collection to third-party agencies. 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 low-income areas. He also 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

household finance research and proposes the functional definition of this field. An active area of research in household finance focuses on consumers' access to credit and, in particular, on the demand for short-term high-interest loans such as payday loans. Melzer (2009) finds that access to payday loans does not seem to alleviate financial hardship, while Morse (2011) provides evidence that payday lending mitigates individual financial distress. The current paper complements this literature by studying a mechanism that enables traditional financial services providers to extend credit to risky borrowers.

This paper also complements the literature on personal bankruptcy, which focuses 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 they 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.). Moreover, since many consumers who face financial distress do not file for bankruptcy, their experience outside of bankruptcy (when they are in contact with

debt collectors) is highly relevant.

3 Industry overview

The size of the debt collection industry is significant. ACA International, an industry association of third-party debt collection agencies, conducts annual surveys of the industry. According to the latest survey available, the total amount collected in 2010 was $54.9 billion, of which $10.3 billion (or 19%) was retained as commissions.[6] As of March 2010, the industry employed 148,479 debt collectors.[7] For comparison, the total size of the U.S. police force is about 700,000 officers.

Debt collectors play an active role in retail credit markets by enforcing consumer credit contracts (primarily unsecured credit).[8] They contact millions of American consumers every year. In the first quarter of 2013, 14.6% of American consumers had at least one account being processed by debt collectors.[9] According to the Federal Trade Commission (FTC), which tracks consumer complaints, third-party debt collectors generate more complaints than any other industry. In 2010 the FTC received 140,036 complaints about third-party debt collectors, which represents 27% of all complaints received directly from consumers in 2010.[10] In addition, the amount of civil litigation against debt collectors is significant. In 2009, there were 10,128 lawsuits filed by consumers against debt collection agencies,[11] which

[6]Source: `http://www.acainternational.org`.

[7]Source: U.S. Census Bureau, County Business Patterns Survey 2010, with imputations for undisclosed values in Arkansas, the District of Columbia, and West Virginia.

[8]In the case of secured debt, the creditor can repossess the underlying collateral after debtors default. Therefore, third-party debt collectors are rarely involved in collecting on secured debt. For example, in the case of auto loans, creditors 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.

[9]Source: The Quarterly Report on Household Debt and Credit, May 2013, Federal Reserve Bank of New York.

[10]Source: Annual Report 2011: Fair Debt Collection Practices Act. Federal Trade Commission, Washington, D.C., March 2011.

[11]Source: WebRecon LLC, published by InsideArm.com (`http://www.insidearm.com/daily/debt-collection-news/debt-collection/fdcpa-statistics-provided-by-webrecon/`). Of the 10,128 lawsuits, 8,287 were filed under the Fair Debt Collection Practices Act, 1,174 under the Fair Credit Reporting Act, and 28 under the Telephone Consumer Protection Act. The remaining suits were filed under various other federal acts and state consumer statutes.

represents 5.4% of 185,900 original civil cases filed in the U.S. District Courts in 2009.[12] Thus, debt collectors are a very visible presence in the lives of American households.[13]

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, in which case they return net proceeds to the original creditors. Some debt collection firms purchase debt from original creditors (for a fraction of its face value) and retain all collection revenues they can generate on that debt. This activity is termed debt buying. Debt buyers are usually large collection firms, and collections on purchased debt now constitute a significant share of industry revenues. 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 collectors' compensation is customarily tied to the amount of collections they generate. Therefore, they have incentives to be persistent.[14] The extent to which debt collectors can be persistent is determined by state and federal law and by the way the law is enforced. Actions by federal and state regulators are a major concern and a topic of much discussion in the debt collection community.[15] Collection agencies are sued regularly by state Attorney Generals,[16] and those lawsuits bring high uncertainty owing to the potentially large penalties that can be imposed. In one recent example, 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

[12]Source: 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.

[13]According to InsideARM.com, several movie projects under way feature debt collectors.

[14]Being persistent is not illegal, unless debt collectors violate the law.

[15]InsideARM.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.

[16]New 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 had shut down 14 debt collection companies and required others to reform their deceptive practices. Ten collectors were criminally prosecuted. Other recent actions against debt collectors were initiated by Attorneys General in West Virginia and Colorado.

mental anguish damages. The initial debt the agency was trying to collect was only $200.[17]

Examples of debt collectors using unlawful practices are not uncommon; however, it is hard to establish their frequency relative to the total volume of the debt collection activity. At the same time, the large number of consumer complaints and lawsuits against debt collectors implies that the instance of illegal practices is not trivial. Without taking a stand on how prevalent illegal practices are, I list some of the practices mentioned during congressional hearings:[18]

- 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 or her parent with criminal charges for capital gains tax fraud unless the balance of the debt is put on the parent's credit card.
- Calling five to 15 neighbors in a brief period of time, informing them that the debtor is suspected of receiving stolen goods, and asking them to go to the debtor's home and request the debtor to call the collector. This is called a "block party." A variant is to hold an "office party" by calling the debtor's fellow employees.
- Soliciting postdated checks in order to later threaten criminal prosecution for passing bad checks.
- 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.[19]

[17] *Allen Jones v. Advanced Call Center Technologies.* Source: InsideArm.com.

[18] The information below comes from the 1992 hearings, and it may be the case that industry practices have changed since then.

[19] Source: The Fair Debt Collection Practices Act: Hearing before the Subcommittee on Consumer Affairs and Coinage of the Committee on Banking, Finance, and Urban Affairs, House of Representatives, One Hundred Second Congress, second session, September 10, 1992. (Washington: U.S. G.P.O.: For sale by the U.S. G.P.O., Supt. of Docs., Congressional Sales Office, 1993).

It is therefore likely that debt collection regulations bind, at least for some debt collectors. The extent to which they bind and affect the number of debt collectors and the credit supply is an empirical question, addressed in my analysis below.

4 Regulation of third-party debt collection

Debt collection in the United States is regulated by a federal law, the Fair Debt Collection Practices Act of 1977 (FDCPA). Unlike many other federal statutes, the FDCPA permits states to adopt their own regulations if they provide greater protection to the consumer than the federal law. The FDCPA therefore establishes a floor on consumer protection from debt collectors. Forty-three states have their own laws that regulate collection practices. Many of these statutes provide consumers with protections similar to those found in the FDCPA.

However, state laws do differ in some important respects that limit the operations of third-party debt collectors. Some states (Arizona, for example) require third-party debt collection agencies to obtain a license, while others (California, for example) do not. Some states (Arkansas, for example) require third-party debt collection agencies to post bonds with state regulators before commencing debt collection activities, while others (Iowa, for example) do not. States also differ in the responsibilities they assign to state debt collection regulators and in the powers those regulators are granted. For example, some states (Florida is one) allow Attorneys General or special debt collection regulatory bodies to impose civil penalties on violators of debt collection laws. Some states also put limits on consumer civil remedies: Virginia statutes, for example, do not contain private right of action for consumers aggrieved by debt collectors.

State debt collection laws have changed over time: I have been able to identify 33 such changes in 22 states since 1999, of which six changes loosened restrictions on debt collectors

and 27 changes tightened restrictions on debt collectors.[20] I use those changes to construct an index of debt collection restrictions that enables me to quantify the tightness of debt collection laws. Initially, I assign to each state a value that is the sum of the following six indicator variables that represent broad restrictions on debt collection activities this state had in 1998: 1) whether the state had a special board or commission that regulated debt collection activities; 2) whether the state imposed licensing requirements on third-party debt collectors; 3) whether the state imposed bonding requirements on third-party debt collectors; 4) whether the state declared certain abusive debt collection practices unlawful; 5) whether the state granted consumers a private right of action against debt collectors; and 6) whether the state made violations of debt collection laws a criminal offense. Then, for each year in which I am able to identify a nontechnical change[21] in debt collection laws I add 1 to the state index if the change can be interpreted as a tightening of debt collection laws and subtract 1 if the change can be interpreted as a loosening of debt collection laws. As a result, a higher value of the index implies a more restrictive environment for third-party debt collectors. Although giving each change equal importance in constructing the index does not accurately reflect the relative impacts of these regulations, it has the advantage of being transparent and easily reproducible.[22] In addition, it does not require any subjective judgment on my part about the relative strengths of each restriction.

Consider Colorado, for example. As of 1998, it had all six of the broad restrictions on debt

[20]The year 1999 was chosen because this is the first year when most of the dependent variables I use in my analysis are available. See Appendix A for a description of the procedure I used to identify relevant changes in state laws and Appendix B for a summary of those changes.

[21]I disregard technical changes because they are unlikely to have any material impact on the operations of debt collectors. For example, since 2004, California requires debt collectors to provide notice to debtors of their rights under the state and federal law. In another example, Florida replaced "Department of Financial Regulation" with "Office of Financial Regulation" in 2003.

[22]States did not change their laws uniformly, which makes it problematic to determine the precise impact of each regulation. Consider the following three examples of tightening of debt collection laws. In 2004, Georgia allowed class action lawsuits against unlicensed debt collection activity. In 2010, Florida authorized its attorney general to take action against third-party debt collectors and increased the amount of administrative fines from $1,000 to $10,000. In 1999, Oregon made violations of debt collection laws a criminal offense. It is fairly straightforward to see that each of these changes made it more difficult for debt collectors to operate since it increased their potential losses. However, it is unclear whether administrative fines in Florida should have a smaller or larger impact than class action lawsuits in Georgia or criminal punishment in Oregon.

collection activities mentioned above. Therefore, the initial value of the index for Colorado is 6. In 2000, Colorado repealed the requirement that every individual debt collector has to be licensed (it retained the requirement that debt collection agencies need to be licensed) and shortened the statute of limitations for violations of debt collection laws from two years to one year. I interpret this change as a loosening of debt collection regulations and subtract 1 from the initial value of the index for Colorado. Thus, in 2000 the value of the index for Colorado is 5. It remains 5 until 2003, when Colorado limited applicability of private remedies (violations of regulations are subject only to administrative enforcement) and added an affirmative defense for debt collectors in lawsuits against them. I interpret this change as another loosening of debt collection regulations and subtract 1 from the 2002 value of the index. Thus, in 2003 the value of the index for Colorado is 4. There were no other significant changes in debt collection laws in Colorado after 2003, and hence the value of the index remains 4 until 2012.

5 Empirical analysis

5.1 Data and variables description

The variables I use in my analysis come from two main sources: Trend Data database (compiled by TransUnion) and credit union call reports. TransUnion, which is one of the three largest consumer reporting agencies in the United States, collects data on, among other things, the amount of various types of consumer credit and on delinquency rates in each state. These data are provided in part via a solution called Trend Data, a database built from a series of large random samples of U.S. consumer credit histories. Each quarter, TransUnion draws a nationally representative random sample that contains 10 percent of consumer credit histories on file with TransUnion in that quarter. Each credit history con-

tains variables on the amount of revolving, installment, auto, and mortgage borrowing, as well as consumer repayment behavior and credit scores. TransUnion then aggregates these variables at the county, MSA, state, and national level (I use the state-level dataset because my main explanatory variable is the index of state laws). I convert variables from quarterly to annual frequency by calculating the average of the four quarterly observations every year for each Trend Data variable I use in my analysis.[23]

Revolving debt comprises accounts that are conventionally known as credit cards:[24] A credit card allows multiple advances up to a predetermined credit limit and repayment amounts largely at the discretion of the cardholder. Once they pay off the balance, cardholders may borrow this amount again. Installment loans are loans that have to be repaid in fixed installments over the life of the loan. They can be secured or unsecured. Auto loans are loans secured by motor vehicles while mortgage loans are loans secured by real estate. I use variables on revolving, bank auto, and mortgage debt in my analysis.

My analysis requires dependent variables that correctly reflect current credit conditions in each state and, in particular, the lenders' willingness to extend credit. Such variables are available in Trend Data beginning in the first quarter of 1999. For each quarter, Trend Data contains the number of new revolving lines of credit, the number of new auto loans, and the number of new mortgages, all normalized by the number of consumers with a credit report. Trend Data also reports average balances on these newly opened accounts.

In addition to variables on the number and balance of various loans by source of credit, Trend Data contains variables that reflect debtors' riskiness and their demand for credit.

[23] I did not use quarterly data because doing so may inflate the statistical significance of my results since my main explanatory variable has an annual frequency (state debt collection laws did not change very often). Another reason to use annual frequency is the fact that accounts are reported to credit bureaus with a lag, which ranges from one to three months. Hence, using quarterly data may create measurement error in the dependent variable because some accounts opened in the current quarter will be reported only in the next quarter, which may reduce efficiency. Averaging over the four quarters mitigates this measurement error.

[24] In Trend Data, revolving debt also includes some small home equity lines of credit. However, according to TransUnion, non-credit-card debt constitutes less than 10% of the total reported amount of revolving debt.

Riskiness can be measured by consumer credit scores, which are a widely used metric of borrowers' default probability and represent a rank-ordering of consumers' creditworthiness at a point in time. Demand for credit can be proxied by the number of credit inquiries: Whenever a consumer applies for a loan, the creditor initiates what is called a "hard pull" on the consumer's credit report (regardless of whether a loan is subsequently extended or not).[25] By counting the number of hard pulls, one can create a measure of how often consumers apply for credit, which is a proxy for credit demand.

Trend Data does not contain data on credit pricing or recovery rates. In order to obtain these variabes, I supplement Trend Data with credit union call reports. Since commercial banks do not report data on a state-by-state basis, I cannot use bank 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. This enables me to construct credit card recovery rates and interest rates on credit cards and other unsecured loans by state.[26]

Data on third-party debt collectors (the number of debt collection establishments and their employment) are available from the Census Bureau's County Business Patterns Survey since 1988.[27] Data on personal income come from the Bureau of Economic Analysis. Mid-year population estimates come from the Census Bureau, and the Consumer Price Index is obtained from the Bureau of Labor Statistics. Table 1 provides the list of variables I use in

[25] TransUnion uses all hard pulls from consumers' credit reports in constructing respective Trend Data variables, regardless of whether they are used in the calculation of consumer credit scores. Generally, hard pulls are used in the calculation of consumer credit scores. However, there is an exception to this practice when consumers engage in "rate shopping." That is, when a consumer is looking for a mortgage, auto, or student loan and more than one lender requests his or her credit report, the calculation of the consumer's credit score excludes these inquiries made within 30 days of scoring. Also note that not all credit inquiries go to TransUnion: Many lenders pull a credit report from only a single credit bureau when evaluating a consumer credit application, and the distribution of hard inquiries across credit bureaus is not necessarily uniform. However, this distribution is determined by competition in the credit reporting industry and should be unrelated to state debt collection laws.

[26] I exclude the Pentagon Federal Credit Union and the Navy Federal Credit Union because they provide credit across state lines. My results are not sensitive to the exclusion of these credit unions.

[27] A 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.

my analysis along with the source of data for each variable and the time period for which it is available. Table 2 provides summary statistics.[28]

[INSERT TABLE 1 ABOUT HERE]

[INSERT TABLE 2 ABOUT HERE]

I exclude Delaware and South Dakota because these two states have the most favorable banking laws in the U.S. and are therefore home to the vast majority of national credit card banks. Note that while the state of incorporation governs the regulation of interest rates that banks with a national charter can offer (which is the primary reason many banks have moved to Delaware and South Dakota), the relevant jurisdiction for creditor remedies and collections law is the state where the consumer resides (or resided when he or she opened the account). I keep the years in which debt collection laws changed if the effective date of the change fell in the month of January. Otherwise, I exclude the years in which debt collection laws changed.

5.2 State laws and the number of debt collectors

After defaulting on unsecured debts, debtors are contacted by debt collectors who try to recover some of the money owed to creditors. Since collection is a human-intensive process, the likelihood that a debtor will be contacted by a debt collector should depend on the number of debt collectors: A higher number of collectors per capita translates into a higher probability that a consumer will be contacted by a debt collector, conditional on default.[29] Thus, a higher density of debt collectors should improve contract enforcement, all else equal. Factors that affect the number of debt collectors should therefore also affect the strength of

[28]Since most of my dependent variables start in 1999, I report summary statistics for 1999-2012 even for the variables for which earlier data are available.

[29]The probability of being contacted by a debt collector has likely changed over time due to technological changes in the debt collection process. I use time fixed effects in my analysis in order to absorb such technological changes.

contract enforcement in consumer credit markets and, by extension, influence credit supply. My purpose in this section is to establish that debt collection restrictions affect the number of third-party debt collectors.

In principle, stricter debt collection laws may reduce debt collectors' effectiveness without necessarily reducing their numbers (by restricting certain debt collection practices, for example). However, to the extent that lower efficiency of debt collectors translates into lower pay, would-be debt collectors should be more likely to choose other occupations, all else equal. Hence, it seems intuitive that stricter debt collection laws should reduce the number of debt collectors. A higher value of the index indicates a more restrictive environment for third-party debt collectors. Therefore, a higher value of the index should be associated with fewer debt collectors per capita.

I estimate the following model:

$$Y_{i,t} = \alpha_i + \gamma_t + \beta \text{Index}_{i,t} + \eta' \text{Controls}_{i,t} + \varepsilon_{i,t}, \tag{1}$$

where $Y_{i,t}$ is debt collector density (defined as the number of debt collectors per million people). The following controls are included: mean credit score (to control for the riskiness of the pool of borrowers), number of credit inquiries (to account for demand-driven variation), real income per capita (to control for general economic conditions), and three lags of real per capita income growth (in order to account for the local business cycle). Time fixed effects are included to remove macro-level trends, while state fixed effects eliminate unobservable time-invariant heterogeneity across states. Standard errors are clustered by state in all specifications throughout this paper. All nominal variables are converted to 2010 dollars using the Consumer Price Index (CPI).

[INSERT TABLE 3 ABOUT HERE]

Table 3 presents the results of estimating the effect of state debt collection restrictions on debt collector density. As expected, a more restrictive debt collection environment (reflected in a higher value of the index of debt collection restrictions) leads to a lower number of debt collectors per capita. The coefficient is statistically and economically significant: In the specification that includes all control variables, a one-point increase in the value of the index lowers debt collector density by 66.561, or 15.9% of the sample mean. The magnitude of this effect is stable across various specifications.

Stricter debt collection laws may also influence the composition of debt collection agencies, in addition to reducing the number of debt collectors and lowering their effectiveness. For instance, it may be the case, as suggested by Fedaseyeu and Hunt (2013), that smaller debt collection establishments are better able to avoid regulatory scrutiny. Under this hypothesis, stricter debt collection laws impose a tax on size for debt collection firms. Therefore, the share of debt collection employment by small firms relative to total debt collection employment should increase when debt collection laws are more stringent. In order to investigate this hypothesis, I regress the proportion of debt collectors employed by debt collection establishments with fewer than 10 employees relative to total debt collection employment on the index of debt collection restrictions. Table 4 presents the results of this estimation.[30]

[INSERT TABLE 4 ABOUT HERE]

Consistent with the idea that stricter debt collection laws favor smaller debt collection establishments at the expense of larger ones, the share of employment by small debt collection establishments grows when there are more debt collection restrictions. A one-point increase in the value of the index increases this share by about 1.7 percentage points, or 13.8% of the sample mean. Thus, stricter debt collection laws reduce the number of debt collectors per

[30]Notice that the Census Bureau often suppresses size distributions because of privacy concerns, which is why the number of observations is significantly reduced.

capita, and most of the decrease seems to come from larger debt collection agencies.

5.3 State laws and the supply of unsecured credit

In this section I study the effect of debt collection laws on unsecured consumer credit. The results of the previous section indicate that a higher value of the index of debt collection restrictions leads to fewer debt collectors. This, in turn, should decrease the supply of unsecured consumer credit.

There are two ways in which lenders can lower credit supply: They may extend fewer loans and/or reduce the size of the loans they offer. I start by analyzing the effect of debt collection restrictions on the number of new loans. Table 5 presents estimates from regressions of the number of new revolving lines of credit per thousand consumers on the index of debt collection restrictions.

[INSERT TABLE 5 ABOUT HERE]

The effect of debt collection restrictions on the number of revolving lines of credit is negative, statistically strong, and economically significant. In the specification that includes all control variables, a one-point increase in the value of the index reduces the number of new revolving lines of credit per thousand consumers by 2.680, or 2.2% of the sample mean. As with debt collector density above, the magnitude of this effect is stable across various specifications.

Even though I cannot observe credit supply directly, this negative effect cannot be attributed to demand since it is implausible that stricter debt collection regulations reduce the demand for credit. On the contrary, stricter debt collection regulations should increase demand because they lower consumers' indirect costs of obtaining credit. This happens because stricter debt collection laws limit the options available to debt collectors, making

it less likely that consumers will be forced to repay the debt. This should bias the results against finding a negative effect of debt collection restrictions on the amount of credit.

[INSERT TABLE 6 ABOUT HERE]

The second channel through which lenders can change credit supply is by adjusting the size of the loan. Table 6 explores this channel, presenting estimates from regressions of average balances of new revolving loans on the index of debt collection restrictions. I do not find any statistically distinguishable effect of debt collection restrictions on revolving loan balances (and the magnitude of the coefficient varies substantially across different specifications). The point estimates are negative, however, suggesting that lenders are reducing the size of the loans.[31]

5.4 State laws and pricing of unsecured credit

Apart from the number of loans and their size, effective debt collection may influence the pricing of credit. Its ex ante effect on pricing, however, is ambiguous. On the one hand, the expansion of credit supply may lead to lower interest rates. On the other hand, lenders may be willing to expand the pool of borrowers by extending credit to riskier applicants. In this case, the average equilibrium interest rate may go up because these new borrowers should be charged higher interest commensurate with their risk characteristics.[32]

[INSERT TABLE 7 ABOUT HERE]

I find no significant effect of state debt collection laws on the pricing of unsecured credit card loans (see Table 7). One explanation is that lenders do not adjust their pricing in

[31] Due to the nature of revolving credit, consumers have the flexibility to determine the exact amount of their borrowing (they can borrow up to a prespecified credit limit). Therefore, lenders have less control over revolving loan balances than over the number of revolving loans they issue.

[32] Slightly more formally, assume that r_s is the interest rate charged to the safe borrowers and r_r is the interest rate charged to the risky borrowers ($r_s < r_r$). If debt collection is ineffective and only safe borrowers obtain credit, the equilibrium interest rate is r_s. When debt collection is effective and both types of borrowers obtain credit, the equilibrium interest rate is $r_s\omega + r_r(1-\omega)$, where ω is the share of credit obtained by safe borrowers. It is immediate that $r_s < r_s\omega + r_r(1-\omega)$.

response to debt collection effectiveness. However, the interest rate I observe (reported by credit unions) is the average interest rate on all credit card loans outstanding, not just the new loans (the latter interest rate is not reported). Therefore, my pricing regressions may have insufficient power.

5.5 The transmission mechanism: The results on loan recoveries

There are two potential channels by which debt collectors can influence credit supply. The first possible channel is changes in debtors' likelihood of default. Stricter debt collection laws and the resulting weaker enforcement of consumer credit contracts may prompt debtors to default more often, and a higher likelihood of default should make lenders less willing to extend credit in the first place. The second channel is changes in recovery rates conditional on debtors' default. Stricter debt collection laws and the resulting weaker enforcement of consumer credit contracts should directly reduce recoveries, which, in turn, should make lenders less willing to extend credit. The effect of debt collection laws on delinquencies and credit card recovery rates is shown in Table 8. In the first three columns of Table 8, the dependent variable is the number of revolving borrowers 90 days or more past due (per thousand consumers). In the last three columns the dependent variable is the average recovery rate on charged-off unsecured credit card loans.

[INSERT TABLE 8 ABOUT HERE]

I find no statistically distinguishable effect of debt collection laws on the likelihood that debtors will default on their revolving loans. On the other hand, stricter debt collection laws do appear to lower recovery rates on charged-off credit card loans. The corresponding coefficient is negative and statistically significant. It's also economically large: A one-point increase in the value of the index (in the specification that includes all control variables)

reduces recovery rates by 1.1 percentage point, or 9% of the sample mean. This suggests that the primary way in which debt collectors influence credit supply is through loan recoveries after default.

5.6 Alternative explanations and robustness tests

One concern with my analysis so far is that changes in debt collection laws may be driven by general economic conditions that are correlated with the credit cycle. Controlling for income per capita and lags of income growth should mitigate this concern, but cannot eliminate it completely. In order to address this alternative explanation more directly, I use a falsification test. Any unobserved variation in the credit cycle is likely to affect all types of credit similarly. In particular, a credit expansion that is not attributable to changes in debt collection laws should increase the levels of both secured and unsecured credit. At the same time, a credit expansion attributable to changes in debt collection laws should have no effect on secured debt. This is because debt collectors are usually employed to collect unsecured debt, since in the case of secured debt the creditor can repossess the underlying collateral.[33]

[INSERT TABLE 9 ABOUT HERE]

Table 9 presents estimates from regressions of the number of new bank auto loans (in the first three columns) and the number of new mortgages (in the last three columns) on the index of debt collection restrictions. Changes in debt collection laws do not exhibit statistically distinguishable effects on either auto loans or mortgages. It is therefore unlikely that unobservable variations in the credit cycle drive my results.

[33] In 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, creditors use repossession agencies ("repo men" as they are known colloquially). Those agencies are separate from debt collectors. County Business Patterns surveys track these two types of establishments in separate categories.

Another concern is the influence of outliers. In particular, my results can be driven by individual states that experienced a very rapid growth in the amount of revolving debt after relaxing their debt collection laws or a very rapid decline in the amount of revolving debt after tightening their debt collection laws. In order to investigate this possibility, I run the same regressions as before, but exclude states that changed their debt collection laws from the analysis one by one. The results of these regressions are presented in Table 10. Each row in this table presents the coefficients from two regressions, after excluding the state specified on the left. The first is the regression of debt collector density on the index of debt collection restrictions and all controls. The second is the regression of the number of new revolving lines of credit on the index of debt collection restrictions and all controls. I report the coefficient on the index of debt collection restrictions from each of those regressions, showing standard errors in parentheses.

[INSERT TABLE 10 ABOUT HERE]

The coefficients reported in Table 10 are in line with those reported above in terms of their magnitude and statistical significance. The regression of new revolving lines of credit on the index of debt collection laws produces the smallest coefficient when Rhode Island is excluded from the analysis, which is unsurprising since Rhode Island undertook the most drastic overhaul of its debt collection laws and is therefore likely to be the most informative state.[34]

[INSERT TABLE 11 ABOUT HERE]

Finally, my results could potentially be driven by some irregularities during the recent financial crisis. In order to alleviate this concern, I repeat the analysis after excluding

[34] Rhode Island had no restrictions on debt collection activity until 2007, when it adopted a Fair Debt Collection Practices Act that introduced private remedies, defined prohibited practices, and made violations of debt collection laws a criminal offense.

2007-09 from the sample. The results, presented in Table 11, continue to exhibit the same basic pattern as before. The point estimates are also in line with those from earlier tests. I conclude that my results are unlikely to be driven by outliers or by the recent financial crisis.

6 Conclusion

I examine contract enforcement in the consumer credit market by studying the role of third-party debt collectors. I construct a state-level index of the tightness of debt collection laws and find that stricter regulations of third-party debt collectors are associated with a lower number of third-party debt collectors per capita and with fewer openings of revolving lines of credit. One additional restriction on debt collection activity reduces the number of debt collectors per capita by 15.9% of the sample mean and lowers the number of new revolving lines of credit by 2.2% of the sample mean. Most of the reduction in debt collection employment comes from larger debt collection agencies: The share of employment by small debt collection agencies (fewer than 10 employees) grows when debt collection laws are more stringent. I also find that stricter regulations of debt collectors decrease recovery rates on charged-off unsecured credit cards (by 1.1 percentage point, or 8% of the sample mean for each additional restriction on debt collection activity), which appears to be the primary transmission mechanism by which debt collectors affect credit supply. Overall, stricter debt collection regulations reduce the number of debt collectors, making them less able to exert pressure on debtors. This reduces recovery rates and makes lenders less willing to provide credit in the first place. At the same time, regulations of third-party debt collectors do not affect secured consumer credit. It is therefore unlikely that my results are driven by some unobservable factors that affect the credit cycle (since those factors are likely to influence all types of credit at the same time).

My results are unlikely to be driven by credit demand since stricter debt collection regulations should increase demand because they lower consumers' indirect costs of obtaining credit. This happens because stricter debt collection laws limit the options available to debt collectors, making it less likely that consumers will be forced to repay the debt. As a result, this should bias the results against finding a negative effect of debt collection restrictions on the amount of credit.

The results reported in this paper show that consumer credit markets have developed a mechanism for lender protection and that this mechanism has a direct effect on credit supply. I show that this mechanism retains explanatory power even after controlling for consumer credit scores and credit inquiries, which means that consumer credit risk is not the only driver of credit access. At the same time, my results do not imply that credit expansion generated by more efficient debt collection is welfare improving, and further research is needed to shed light on this issue. Although other factors such as social norms and the stigma associated with default surely play an important role, robust contract enforcement can help explain the existence of large and active retail credit markets and contribute to our understanding of how these markets function. In terms of policy implications, my results indicate that financial regulation that institutes strong consumer protection must be balanced with creditor rights in order for the latter to extend consumer credit in the first place.

References

P. Aghion and P. Bolton. An incomplete contracts approach to financial contracting. *Review of Economic Studies*, 59(3):473–494, 1992.

K. Athreya, J. M. Sanchez, X. Tam, and E. R. Young. Bankruptcy and Delinquency in a

Model of Unsecured Debt. Working Paper 2012-042B, Federal Reserve Bank of St. Louis, 2013.

P. Bolton and D. Scharfstein. A theory of predation based on agency problems in financial contracting. *American Economic Review*, 80(1):93–106, 1990.

J. Y. Campbell. Household finance. *Journal of Finance*, 61(4):1553–1604, 08 2006.

A. A. Dick and A. Lehnert. Personal bankruptcy and credit market competition. *Journal of Finance*, 65(2):655–686, April 2010.

I. Domowitz and R. Sartain. Determinants of the consumer bankruptcy decision. *Journal of Finance*, 54(1):403–420, 1999.

L. A. Drozd and R. Serrano-Padial. Modeling the credit card revolution: The role of debt collection and informal bankruptcy. Working Paper 13-12, Federal Reserve Bank of Philadelphia, April 2013.

S. Fay, E. Hurst, and M. White. The household bankruptcy decision. *American Economic Review*, 92(3):706–718, 2002.

V. Fedaseyeu and R. Hunt. The economics of debt collection: Ex-post enforcement of consumer credit contracts. Working paper, Bocconi University and Federal Reserve Bank of Philadelphia, May 2013.

Federal Trade Commission. *Annual Report 2011: Fair Debt Collection Practices Act*. Washington, D.C., March 2011.

R. Gropp, J. Scholz, and M. White. Personal bankruptcy and credit supply and demand. *Quarterly Journal of Economics*, 112(1):217–251, 1997.

D. Gross and N. Souleles. An empirical analysis of personal bankruptcy and delinquency. *Review of Financial Studies*, 15(1):319, 2002.

O. Hart and J. Moore. Default and renegotiation: A dynamic model of debt. *Quarterly Journal of Economics*, 113(1):1–41, 1998.

R. Hunt. Collecting consumer debt in America. *Business Review, Federal Reserve Bank of Philadelphia*, (Q2):11–24, 2007.

R. Hynes. Broke but not bankrupt: Consumer debt collection in state courts. *Fla. L. Rev.*, 60, 2008.

R. M. Hynes, A. E. Dawsey, and L. M. Ausubel. The regulation of non-judicial debt collection and the consumer's choice among repayment, bankruptcy and informal bankruptcy. Virginia Law and Economics Research Paper 2009-13, October 2009.

R. La Porta, F. Lopez-de Silanes, A. Shleifer, and R. Vishny. Law and finance. *Journal of Political Economy*, 106(6):1113–1155, 1998. ISSN 0022-3808.

B. Melzer. The real costs of credit access: Evidence from the payday lending market. Working paper, Kellogg School of Management, Northwestern University, January 2009.

A. Morse. Payday lenders: Heroes or villains? *Journal of Financial Economics*, 102(1): 28–44, October 2011.

J. Scott and T. Smith. The effect of the Bankruptcy Reform Act of 1978 on small business loan pricing. *Journal of Financial Economics*, 16(1):119–140, 1986.

P. Tufano. Consumer finance. *Annual Review of Financial Economics*, 1(1):227–247, 2009.

M. White. Bankruptcy reform and credit cards. *Journal of Economic Perspectives*, 21(4): 175–200, 2007.

Table 1: Variables

VARIABLES	Availability	Source
Index of debt collection restrictions	1998-2012	State session laws
Debt collectors per million people	1988-2010	County Business Patterns
Share of debt collectors employed by establishments with fewer than 10 employees	1988-2010	County Business Patterns
Number of new revolving lines of credit, per thousand consumers	1999-2012	Trend Data (data item rennc, multiplied by 1,000)
Average balance of new revolving lines of credit	1999-2012	Trend Data (data item reabn, expressed in 2010 dollars using CPI)
Number of revolving borrowers 90 days or more past due, per thousand borrowers	1992-2012	Trend Data (data item repb90m, multiplied by 1,000)
Average recovery rate on charged-off unsecured credit card loans	1998-2012	Credit union call reports (account 681, divided by account 680)
Average interest rate on unsecured credit card loans	1998-2012	Credit union call reports (account 521)
Number of new bank auto loans, per thousand consumers	1999-2012	Trend Data (data item bannc, multiplied by 1,000)
Number of new mortgage loans, per thousand consumers	1999-2012	Trend Data (data item mtnnc, multiplied by 1,000)
Average number of credit inquiries	2000-2012	Trend Data (data item itoinq180)
Average TransUnion credit score	1998-2012	Trend Data (data item tmmean)

Table 2: Summary statistics (for the sample period 1999-2011)

VARIABLES	Mean	Median	St. dev.
Index of debt collection restrictions	3.40	4.00	1.96
Debt collectors per million people	419.90	376.09	211.25
Share of debt collectors employed by establishments with fewer than 10 employees	12.13%	9.63%	8.86%
Number of new revolving lines of credit, per thousand consumers	119.26	119.33	24.67
Average balance of new revolving lines of credit	$1930.28	$1724.23	$779.83
Number of revolving borrowers 90 days or more past due, per thousand borrowers	15.72	13.88	6.58
Average recovery rate on charged-off unsecured credit card loans	11.84%	11.00%	5.36%
Average interest rate on unsecured credit card loans	5.74%	5.57%	2.05%
Number of new bank auto loans, per thousand consumers	6.93	6.51	2.75
Number of new mortgage loans, per thousand consumers	9.25	8.44	4.15
Average number of credit inquiries	104.84	103.48	24.95
Average TransUnion credit score	660.47	664.20	22.39
Real income per capita (in $000)	38.71	37.08	6.80
Growth rate of real income per capita	1.02%	1.09%	2.39%

Summary statistics for 1999-2012. All dollar values are expressed in 2010 dollars using the CPI.

Table 3: Regressions of debt collector density on the index of state debt collection restrictions

VARIABLES	Debt collector density		
Index of debt collection restrictions	-52.471**	-66.604***	-66.561***
	(19.571)	(20.830)	(20.805)
Average number of credit inquiries over 180 days		0.956	1.282*
		(0.731)	(0.740)
Average TransUnion credit score			-4.328*
			(2.407)
Real income per capita, $000	-7.580	-9.170	-5.493
	(7.727)	(8.385)	(8.410)
First lag of income growth	339.318	293.220	282.051
	(332.318)	(347.026)	(347.170)
Second lag of income growth	-58.755	-70.585	6.594
	(375.174)	(358.832)	(346.144)
Third lag of income growth	172.496	138.498	240.302
	(327.640)	(343.670)	(320.794)
Year fixed effects	YES	YES	YES
State fixed effects	YES	YES	YES
Observations	520	483	483
Adjusted R-squared	0.821	0.829	0.832

Standard errors (clustered by state) are reported in parentheses below the coefficients. *** indicates statistical significance at the 1% level, ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level. The dependent variable comes from County Business Patterns.

Table 4: Regressions of the share of debt collectors employed by establishments with fewer than 10 employees on the index of state debt collection restrictions

VARIABLES	Share of debt collectors employed by establishments with fewer than 10 employees		
Index of debt collection restrictions	0.016**	0.018**	0.017**
	(0.007)	(0.007)	(0.007)
Average number of credit inquiries over 180 days		0.000	-0.000
		(0.000)	(0.000)
Average TransUnion credit score			0.002
			(0.002)
Real income per capita, $000	0.006	0.009	0.008
	(0.008)	(0.009)	(0.008)
First lag of income growth	-0.029	-0.093	-0.088
	(0.197)	(0.215)	(0.214)
Second lag of income growth	-0.261*	-0.271	-0.306
	(0.150)	(0.181)	(0.199)
Third lag of income growth	-0.204	-0.240	-0.256
	(0.234)	(0.271)	(0.279)
Year fixed effects	YES	YES	YES
State fixed effects	YES	YES	YES
Observations	257	236	236
Adjusted R-squared	0.870	0.871	0.872

Standard errors (clustered by state) are reported in parentheses below the coefficients. *** indicates statistical significance at the 1% level, ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level. The dependent variable comes from County Business Patterns. The number of observations is significantly reduced because of missing observations due to nondisclosure by the Census Bureau.

Table 5: Regressions of the number of new revolving lines of credit (per thousand consumers) on the index of state debt collection restrictions

VARIABLES	Number of new revolving lines of credit, per thousand consumers		
Index of debt collection restrictions	-2.789**	-3.147***	-2.680***
	(1.084)	(1.062)	(0.746)
Average number of credit inquiries over 180 days		0.099**	0.054*
		(0.042)	(0.031)
Average TransUnion credit score			0.623***
			(0.129)
Real income per capita, $000	-0.599***	-0.372	-1.014***
	(0.159)	(0.271)	(0.198)
First lag of income growth	17.856	17.724	22.344
	(15.143)	(14.918)	(14.110)
Second lag of income growth	27.999	26.635	23.040
	(21.468)	(19.136)	(15.241)
Third lag of income growth	31.794	18.973	12.818
	(20.020)	(19.688)	(17.598)
Year fixed effects	YES	YES	YES
State fixed effects	YES	YES	YES
Observations	658	613	613
Adjusted R-squared	0.955	0.961	0.966

Standard errors (clustered by state) are reported in parentheses below the coefficients. *** indicates statistical significance at the 1% level, ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level. The dependent variable comes from Trend Data.

Table 6: Regressions of the average balance of new revolving lines of credit on the index of state debt collection restrictions

VARIABLES	Average balance of new revolving lines of credit		
Index of debt collection restrictions	-42.458	-27.459	-6.629
	(41.106)	(49.893)	(50.963)
Average number of credit inquiries over 180 days		12.438***	10.434***
		(3.389)	(2.785)
Average TransUnion credit score			27.826***
			(8.506)
Real income per capita, $000	79.883***	99.437***	70.763***
	(10.063)	(14.695)	(13.266)
First lag of income growth	1154.310	1029.248	1235.419
	(1,494.626)	(1,448.314)	(1,424.549)
Second lag of income growth	1765.119	1146.988	986.542
	(1,383.337)	(1,169.886)	(1,062.074)
Third lag of income growth	549.679	55.111	-219.552
	(1,053.161)	(928.653)	(888.912)
Year fixed effects	YES	YES	YES
State fixed effects	YES	YES	YES
Observations	658	613	613
Adjusted R-squared	0.810	0.835	0.845

Standard errors (clustered by state) are reported in parentheses below the coefficients. *** indicates statistical significance at the 1% level, ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level. The dependent variable comes from Trend Data.

Table 7: Regressions of the average interest rate on unsecured credit card loans on the index of state debt collection restrictions

VARIABLES	Average interest rate on unsecured credit card loans		
Index of debt collection restrictions	-4.210	-7.405	-4.536
	(13.491)	(12.217)	(11.004)
Average number of credit inquiries over 180 days		-0.229	-0.505
		(0.356)	(0.372)
Average TransUnion credit score			3.832**
			(1.455)
Real income per capita, $000	-0.325	0.363	-3.586
	(4.288)	(4.066)	(4.312)
First lag of income growth	218.875	176.180	204.574
	(192.573)	(170.567)	(174.895)
Second lag of income growth	276.887*	223.242	201.145
	(153.303)	(145.528)	(137.169)
Third lag of income growth	298.264*	273.129*	235.301*
	(149.968)	(140.366)	(134.236)
Year fixed effects	YES	YES	YES
State fixed effects	YES	YES	YES
Observations	658	613	613
Adjusted R-squared	0.917	0.925	0.930

Standard errors (clustered by state) are reported in parentheses below the coefficients. *** indicates statistical significance at the 1% level, ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level. The dependent variable comes from credit union call reports.

Table 8: Regressions of revolving borrowers' delinquency rates and credit card recovery rates on the index of debt collection restrictions

VARIABLES	Number of revolving borrowers 90 days or more past due, per thousand borrowers			Average recovery rate on charged-off unsecured credit card loans		
Index of debt collection restrictions	0.685	0.755	0.667	-0.010**	-0.012**	-0.011**
	(0.547)	(0.613)	(0.656)	(0.004)	(0.005)	(0.004)
Average number of credit inquiries over 180 days		-0.034	-0.026		0.001***	0.001***
		(0.022)	(0.023)		(0.000)	(0.000)
Average TransUnion credit score			-0.118			0.001
			(0.077)			(0.001)
Real income per capita, $000	-0.351	-0.376	-0.254	-0.003	-0.003	-0.003
	(0.226)	(0.261)	(0.246)	(0.003)	(0.002)	(0.002)
First lag of income growth	-3.888	-1.929	-2.801	0.412**	0.383***	0.388***
	(9.182)	(9.954)	(9.423)	(0.161)	(0.127)	(0.126)
Second lag of income growth	-20.311**	-18.207**	-17.529**	0.341**	0.324**	0.319**
	(8.253)	(8.751)	(7.878)	(0.149)	(0.126)	(0.124)
Third lag of income growth	-15.299**	-15.549**	-14.388**	0.279**	0.202**	0.195**
	(6.568)	(5.943)	(5.657)	(0.113)	(0.095)	(0.093)
Year fixed effects	YES	YES	YES	YES	YES	YES
State fixed effects	YES	YES	YES	YES	YES	YES
Observations	658	613	613	658	613	613
Adjusted R-squared	0.889	0.894	0.896	0.610	0.655	0.657

Standard errors (clustered by state) are reported in parentheses below the coefficients. *** indicates statistical significance at the 1% level, ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level. The number of revolving borrowers 90 days or more past due comes from Trend Data; the average recovery rate on charged-off unsecured credit card loans comes from credit union call reports.

Table 9: Regressions of secured credit on the index of debt collection restrictions

VARIABLES	Number of new bank auto loans, per thousand consumers			Number of new mortgage loans, per thousand consumers		
Index of debt collection restrictions	-0.334	-0.298	-0.292	-0.443	-0.348	-0.260
	(0.234)	(0.269)	(0.275)	(0.332)	(0.262)	(0.265)
Average number of credit inquiries over 180 days		0.003	0.003		0.076***	0.067***
		(0.007)	(0.007)		(0.012)	(0.012)
Average TransUnion credit score			0.007			0.117***
			(0.030)			(0.035)
Real income per capita, $000	0.117**	0.160***	0.153**	0.264**	0.411***	0.290***
	(0.058)	(0.059)	(0.070)	(0.101)	(0.046)	(0.070)
First lag of income growth	6.977**	7.009*	7.062*	7.050	2.972	3.842
	(3.021)	(3.521)	(3.537)	(5.615)	(5.225)	(5.020)
Second lag of income growth	6.354**	4.580	4.539	10.834*	5.299	4.623
	(2.602)	(2.834)	(2.879)	(5.553)	(4.332)	(4.054)
Third lag of income growth	6.717***	6.526**	6.455**	6.333	-0.223	-1.382
	(2.219)	(2.721)	(2.805)	(4.615)	(3.946)	(3.789)
Year fixed effects	YES	YES	YES	YES	YES	YES
State fixed effects	YES	YES	YES	YES	YES	YES
Observations	658	613	613	658	613	613
Adjusted R-squared	0.830	0.843	0.843	0.837	0.870	0.876

Standard errors (clustered by state) are reported in parentheses below the coefficients. *** indicates statistical significance at the 1% level, ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level. Dependent variables come from Trend Data.

Table 10: Results of regressions of debt collector density and the number of new revolving lines of credit on the index of debt collection restrictions, excluding individual states

STATE	Debt collector density		Number of new revolving lines of credit, per thousand consumers	
Arkansas	-67.409***	(20.797)	-2.768***	(0.787)
Colorado	-64.589***	(23.240)	-2.558***	(0.878)
Connecticut	-66.349***	(21.874)	-2.524***	(0.885)
Florida	-69.787***	(21.670)	-2.759***	(0.765)
Georgia	-64.497***	(20.273)	-2.614***	(0.856)
Hawaii	-67.167***	(20.750)	-2.638***	(0.829)
Idaho	-64.468***	(21.451)	-2.733***	(0.838)
Illinois	-70.520***	(21.292)	-2.779***	(0.782)
Indiana	-68.287***	(20.824)	-2.709***	(0.805)
Louisiana	-71.867***	(21.824)	-2.682***	(0.854)
Maine	-72.563***	(21.520)	-2.452***	(0.866)
Maryland	-66.261***	(21.607)	-2.529***	(0.866)
Minnesota	-68.090***	(21.205)	-2.428***	(0.903)
Nevada	-66.721***	(21.146)	-2.714***	(0.831)
North Carolina	-67.129***	(21.286)	-2.740***	(0.829)
North Dakota	-69.472***	(22.256)	-2.851***	(0.768)
Oregon	-69.587***	(21.338)	-2.518***	(0.857)
Pennsylvania	-68.295***	(20.735)	-2.593***	(0.824)
Rhode Island	-75.501***	(21.453)	-1.847**	(0.851)
South Carolina	-67.311***	(21.012)	-2.560***	(0.831)
Tennessee	-50.598***	(13.724)	-2.664***	(0.863)
Utah	-67.805***	(20.848)	-2.598***	(0.829)
Washington	-67.248***	(20.946)	-2.660***	(0.816)

Each row presents regression results after excluding observations pertaining to the specified state. The first number in each row is the coefficient of the index of debt collection laws from the regression specification given in the right-most column of Table 3. The third number in each row is the coefficient of the index of debt collection laws from the regression specification given in the right-most column of Table 5. Standard errors (clustered by state) are reported in parentheses next to the coefficients. *** indicates statistical significance at the 1% level, ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level.

Table 11: Regressions of debt collector density and number of new revolving lines of credit on the index of debt collection restrictions, excluding 2007-2009

VARIABLES	Debt collector density			Number of new revolving lines of credit, per thousand consumers		
Index of debt collection restrictions	-41.701**	-66.679***	-65.988***	-2.460**	-2.925**	-2.428***
	(18.156)	(15.335)	(16.031)	(1.188)	(1.192)	(0.886)
Average number of credit inquiries over 180 days		1.169	1.406*		0.109**	0.049
		(0.791)	(0.805)		(0.048)	(0.038)
Average TransUnion credit score			-3.396			0.613***
			(2.444)			(0.152)
Real income per capita, $000	-3.507	-5.750	-2.231	-0.613***	-0.442	-1.074***
	(7.185)	(8.048)	(8.399)	(0.169)	(0.268)	(0.216)
First lag of income growth	366.605	286.436	231.038	25.344	26.695	35.994*
	(379.608)	(434.416)	(435.619)	(20.918)	(20.836)	(19.540)
Second lag of income growth	-51.099	-75.605	-58.400	10.850	12.127	14.038
	(454.007)	(431.343)	(422.465)	(27.995)	(24.968)	(19.887)
Third lag of income growth	128.286	144.356	205.707	20.543	9.364	4.279
	(397.004)	(454.538)	(437.154)	(23.273)	(23.594)	(20.098)
Year fixed effects	YES	YES	YES	YES	YES	YES
State fixed effects	YES	YES	YES	YES	YES	YES
Observations	387	350	350	519	474	474
Adjusted R-squared	0.808	0.818	0.819	0.952	0.959	0.964

Standard errors (clustered by state) are reported in parentheses below the coefficients. *** indicates statistical significance at the 1% level, ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level. Debt collector density comes from County Business Patterns; the number of new revolving lines of credit comes from Trend Data.

A Appendix A: Identifying Changes in State Debt Collection Laws

I use three sources to identify the statutes that regulate third-party debt collection in each state: 1) National Consumer Law Center's publication "Fair Debt Collection" (various years), 2) National List of Attorneys white papers with summaries of debt collection laws, and 3) Google search. Having identified relevant statutes, I then obtained the history of legislative changes. Some states after each section of their statutes list individual laws that either enacted or amended a particular section. Some of the states that do not list relevant laws in their statutes publish annual correspondence tables of laws that affected particular statutes. For the remaining states, I obtained the list of relevant laws either by keyword search on the websites of those states' legislatures or via LexisNexis (whenever LexisNexis provides references to the legislative history).

Having thus obtained the list of laws that enacted or amended debt collection statutes, I obtained the text of those laws either from the websites of state legislatures or from the HeinOnline database (I managed to obtain all relevant session laws in either of these two ways). After reading all of those laws, I discarded technical changes and used the rest in constructing the index of debt collection restrictions described above.

B Appendix B: A Brief Summary of Changes in State Debt Collection Laws

I briefly describe changes in debt collection laws below.

1. ARKANSAS: In 2009 (effective April 10, 2009), Arkansas adopted a state Fair Debt Collection Practices Act, which introduced private remedies (including class action lawsuits) and added prohibited practices and various other provisions.

2. COLORADO: In 2000 (effective July 1, 2000), Colorado repealed the requirement that every individual debt collector is obliged to be licensed (the requirement that debt collection agencies need to obtain a license was retained) and shortened the statute of limitations for violations of debt collection laws from two years to one year. In 2003 (effective May 21, 2003), Colorado limited the applicability of private remedies (violations of regulations issued by the collection agencies' board were limited only to administrative enforcement) and added an affirmative defense if the debt collector believed, in good faith, that the debtor was other than a natural person.

3. CONNECTICUT: In 2002 (effective October 1, 2002), Connecticut clarified instances in which a license may be revoked and authorized the banking commissioner to proceed on bond to collect civil penalties; further, a new requirement was added that any change of location of a place of business shall require prior written notice to the commissioner; licensing fees were increased from $400 to $800. In 2009 (effective October 1-5, 2009), Connecticut authorized the banking commissioner to deny a license based on certain convictions and increased the amount of bond from $5,000 to $25,000.

4. FLORIDA: In 2001 (effective July 1, 2001), Florida put a limit on the aggregate amount of statutory damages that can be awarded in class action lawsuits against debt collectors and specified a two-year statute of limitations for debt collection violations. In 2010 (effective October 1, 2010), Florida added a requirement that debt collectors maintain records and present them to the office of financial regulation; additionally, the Florida attorney general was authorized to take action against debt collectors for violations involving debt collection; further, administrative fines increased from $1,000 in total to $10,000 per violation; other restrictions and clarifications were added.

5. GEORGIA: In 2004 (effective May 1, 2004), Georgia explicitly authorized class action

lawsuits against unlicensed debt collection activity.

6. HAWAII: In 2012 (effective April 23, 2012), Hawaii increased fines for violations of debt collection laws from $1,000 in total to $5,000 per violation.

7. IDAHO: In 1999 (effective July 1, 1999), Idaho increased the amount of bonds required from $5,000 to $15,000 (this state has an unusual provision requiring two bonds). In 2002 (effective July 1, 2002), Idaho revised the definition of prohibited conduct and enabled the director of the Idaho Department of Finance to issue certain cease and desist orders; further, the monetary civil penalty increased from $1000 to $2,500, and the director's authority to bring an action to enjoin certain violations was extended. In 2008 (effective July 1, 2008), Idaho instituted licensing requirements (before it required permits) and revised powers of the director of the Department of Finance; further, a new civil penalty was added (courts were allowed to award the director $5,000 for each violation) and the amount of penalties that the director can impose increased from $2,500 to $5,000 per violation.

8. ILLINOIS: In 2005 (effective December 31, 2005), Illinois increased fines that the Department of Financial and Professional Regulation may impose from $1,000 per licensee per complaint to $5,000 for a first violation and to $10,000 for a second or subsequent violation.

9. INDIANA: In 2007 (effective July 1, 2007), Indiana authorized the Secretary of State to conduct investigations into violations of debt collection laws and to issue orders, including cease and desist orders; further, the Secretary of State was authorized to impose a civil penalty of up to $10,000 for each violation.

10. LOUISIANA: In 2006 (effective June 22, 2006), Louisiana provided for the validity of the assignment of debts to a debt collection agency by a client for collection of

delinquent amounts owed and clarified that such debts are valid and enforceable by the collection agency in court; further, it allowed the collection agency to represent the original creditor in all instances for the purpose of collecting such debt, including the right to bring legal action to collect the debt.

11. MAINE: In 2005, Maine added a clause that exempted licensed attorneys from bonding, licensing, and enforcement requirements for debt collection agencies. In 2009 (effective September 12, 2009), Maine specified that debt collectors cannot bring legal action in court unless represented by an attorney or unless the debt collector is an attorney; also in 2009 (effective June 3, 2009), Maine increased license fees from $400 to $600 and instituted some additional fees.

12. MARYLAND: In 2007 (effective October 1, 2007), Maryland debt collection laws were extended to debt buyers and added a clause that a license may be revoked or suspended if any owner, director, officer, or partner of a debt collection agency violated debt collection law (before that, only debt collection agency itself was covered); further, the reasons for revoking a license were expanded.

13. MINNESOTA: In 2004 (effective January 1, 2005), Minnesota clarified that individual collectors (and not just debt collection agencies) were subject to penalties if they engaged in prohibited practices. In 2010 (effective January 1, 2011), Minnesota increased the amount of bond from $20,000 to $50,000 (plus an additional $5,000 for each $100,000 received in collections in the previous year, up to a total of $100,000).

14. NEVADA: In 2001 (effective October 1, 2001), Nevada authorized administrative fines of up to $10,000 on unlicensed debt collection agencies and reclassified violations of debt collection laws from misdemeanors into gross misdemeanors. In 2007 (effective June 13, 2007), Nevada specified a procedure for debt verification that requires debt collection

agencies to send certain documents to the debtor in order to verify the debt; further, violations of the federal FDCPA were deemed violations of state debt collection laws; in addition, the upper bound on the initial registration fee was eliminated.

15. NORTH CAROLINA: In 2001 (effective October 1, 2001), North Carolina increased the amount of initial bond from $5,000 to $10,000 and increased the maximum amount of bond upon renewal from $50,000 to $75,000 (nonresident collection agencies were required to post a second bond in the amount of $10,000); further, the definition of deceptive representation was clarified and expanded. In 2009 (via three separate bills, effective August 15, 2009 and October 1, 2009), North Carolina increased license application fees from $500 to $1000, required collection agencies to notify the state Commissioner of Insurance of any convictions or administrative actions against them, both within the state and in any other state, and increased civil penalties from $100 to $2,000 per violation to $500 to $4,000 per violation; further, North Carolina increased the standard of evidence required to establish the amount and nature of debt when debt collectors initiate legal action against debtors.

16. NORTH DAKOTA: In 2003 (effective March 17, 2003), North Dakota granted the Department of Financial Institutions the power of subpoena and reclassified violations of debt collection laws from misdemeanors into felonies. In 2011 (effective April 18, 2011), North Dakota expanded the power of the state regulator and added new prohibited practices; further, it instituted a minimum net worth requirement of $25,000 for debt collection agencies operating in the state.

17. OREGON: In 1999 (effective October 23, 1999), Oregon made violations of debt collection laws a criminal offense. In 2005 (effective January 1, 2006), Oregon authorized the Director of the Department of Consumer and Business Services to conduct investigations

and serve orders.

18. PENNSYLVANIA: In 2000 (effective June 26, 2000), Pennsylvania enacted the Fair Credit Extension Uniformity Act that wrote prohibited debt collection practices into state law and specified private remedies.

19. RHODE ISLAND: In 2007 (effective July 7, 2007), Rhode Island adopted a state Fair Debt Collection Practices Act, which specified prohibited practices and private remedies and made violations of debt collection laws a criminal offense.

20. TENNESSEE: In 2004 (effective July 1, 2004), Tennessee allowed collection agencies to take assignments of debts and to sue in their own name and also specified procedural requirements as to how such suits can be initiated.

21. UTAH: In 1999 (effective March 18, 1999), Utah introduced registration and registration fees for debt collection agencies.

22. WASHINGTON: In 2011 (effective April 22, 2011), Washington expanded the list of prohibited practices and required debt collectors to provide itemization of the claim and debtor's payment history; further, limits were introduced on debt collection agencies' ability to act upon debtors' bonds if the latter appear in court.