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THE SUPPLY OF CONSUMER CREDIT

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Abstract

The activities of third-party debt collectors affect millions of borrowers. However, relatively little is known about their impact on consumer credit. To study this issue, I investigate whether state debt collection laws affect the ability of third-party debt collectors to recover delinquent debts and if this, in turn, affects the amount of credit being provided. This paper constructs, from state statutes and session laws, a state-level index of debt collection restrictions and uses changes in this index over time to estimate the impact of debt collection laws on revolving credit. Stricter debt collection regulations appear to reduce the number of third-party debt collectors and to lower recovery rates on delinquent credit card loans. This, in turn, leads to fewer openings of credit cards.

Keywords: household finance, consumer credit, creditor rights, contract enforcement, debt collection, law and finance

JEL Classification: D12, D18, G18, G20, K35

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1. Introduction

Revolving debt (commonly known as credit cards) is one of the largest types of unsecured consumer credit in the United States, with 38.1% of American families carrying credit card debt in 2013, for a total of $857.6 billion outstanding.[1] As with any debt, the willingness of lenders to provide credit card loans relies on the presence of enforcement mechanisms that allow creditors to pursue a defaulting borrower's income and assets (Djankov, Hart, McLiesh, and Shleifer (2008)). Between 2001 and 2013, on average 10.1% of outstanding credit card debt was more than 90 days delinquent, compared with 8.0% for student loans and 3.8% for mortgage loans.[2] This relatively high default rate implies that debt enforcement mechanisms may be particularly important for revolving debt.

Once a credit card loan is in default, lenders typically initiate the process of debt collection. It involves attempts to obtain repayment from defaulting borrowers and can be of two types: in-house debt collection (in which creditors try to collect the debt on their own) or third-party debt collection (in which creditors outsource debt collection to third-party agencies). Initially, most creditors start collecting on their delinquent accounts in-house and, if unsuccessful, later transfer these accounts to third-party agencies (Federal Trade Commission (2009)). These third-party agencies then contact borrowers and attempt to obtain repayment from them on behalf of the creditors.[3] Most debt collection agencies work on commission and retain a portion of the amount they collect for the creditors.

The activities of third-party debt collectors affect millions of borrowers: The proportion of American consumers with at least one account in third-party collections has not fallen

[1] Sources: Bricker, Dettling, Henriques, Hsu, Moore, Sabelhaus, Thompson, Windle, Devlin-Foltz, and Krimmel (2014); Board of Governors of the Federal Reserve System, G.19 series — Consumer Credit.

[2] Source: *The Quarterly Report on Household Debt and Credit*, Federal Reserve Bank of New York, various editions. Until the third quarter of 2012, the delinquency rate on credit card loans exceeded that of every other type of consumer credit. After the third quarter of 2012, student loans have had a higher delinquency rate than credit card loans.

[3] According to the Bureau of Labor Statistics' Occupational Employment Statistics, in 2012, third-party debt collectors outnumbered debt collectors employed directly by financial institutions.

below 9% since the end of 2001 (the earliest date for which the corresponding data from the *Quarterly Report on Household Debt and Credit* by the Federal Reserve Bank of New York are available) and stood at 14% at the end of 2013 (see Figure 1).[4] Relatedly, American consumers file more complaints about third-party debt collectors than about any other industry.[5] In a 2014 report, the Consumer Financial Protection Bureau (CFPB) stated that "debt collection constitutes one of today's most important consumer financial concerns, as indicated by the more than 200,000 consumer complaints that Federal agencies received in 2013 about the conduct of debt collectors" (Consumer Financial Protection Bureau (2014b), p. 2). In response to these concerns, the CFPB is currently in the process of preparing a new set of rules for the debt collection industry (Consumer Financial Protection Bureau (2014a)).

[INSERT FIGURE 1 ABOUT HERE]

While debt collection affects a substantial number of borrowers, there is relatively little research on this topic. 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 debt collection litigation is pervasive, that consumers who are sued by creditors and debt collectors are drawn predominantly from lower-income areas, and that very few consumers file for bankruptcy once they are sued. Dawsey, Hynes, and Ausubel (2013) document that personal bankruptcy filing rates are lower in states that allow borrowers to sue creditors that use abusive debt collection practices in-house. Relatively little is known, however, about the impact of third-party debt collectors on creditors' ability to recover delinquent debt and on their willingness to provide

[4]Source: *The Quarterly Report on Household Debt and Credit*, Federal Reserve Bank of New York, various editions. These are not yearly figures; accounts may remain in debt collection for several years. In addition to revolving credit, these figures include debt collectors collecting on other types of debt (medical bills, student loans, etc.).

[5]Source: Consumer Financial Protection Bureau (2014b).

unsecured loans in the first place. The aim of the current paper is to provide systematic evidence on this issue by investigating whether the strictness of laws that regulate third-party debt collectors affects their ability to recover delinquent debts and if this, in turn, affects the amount of credit being provided.

To measure the strictness of debt collection laws, I collect, from state statutes and session laws, state-level restrictions on third-party debt collectors. These restrictions range from licensing and/or bonding requirements imposed on third-party debt collection firms to declaring certain debt collection practices unlawful and/or making violations of debt collection laws a criminal offense. By counting the number of debt collection restrictions, this paper constructs an index of the strictness of debt collection laws, which varies both across states and over time. The mean value of this index in the sample is 3.43 (with a standard deviation of 2.01), and it ranges from 0 in the most lenient states (such as South Dakota in 2012) to 8 in the strictest state (Idaho in 2012). The empirical analysis in this paper then studies whether the value of the index of debt collection restrictions is related to the number of third-party debt collectors, the recovery rates on credit card loans, and the number of new credit cards being opened.

One potential difficulty in estimating the effect of debt collection laws on revolving credit is that the strictness of debt collection laws may itself depend on credit availability. For example, Delaware and South Dakota, two states generally regarded as bank friendly, also impose very few restrictions on third-party debt collectors (South Dakota imposes none, while Delaware imposes a licensing fee). Accordingly, many banks locate their credit card operations in these states. One useful feature of debt collection laws is that they changed over time, with different states changing their debt collection laws in different years. This makes it possible to estimate the effect of debt collection laws on credit market outcomes in a difference-in-differences framework, which is less vulnerable to endogeneity concerns.

Stricter debt collection regulations, which make it more difficult for debt collectors to operate, should reduce their number and result in less effective enforcement of credit contracts. Consistent with this hypothesis, higher values of the index of debt collection restrictions (indicating that more restrictions are imposed on third-party debt collectors) result in fewer third-party debt collectors per capita and lower recovery rates on credit card loans. A 1 point increase in the value of the index of debt collection restrictions decreases the number of third-party debt collectors per million people by about 16% of the sample mean (32% of the sample standard deviation) and decreases recovery rates on charged-off credit card loans by about 9% of the sample mean (25% of the sample standard deviation). In turn, the less effective debt enforcement associated with stricter debt collection laws reduces the number of new revolving lines of credit by about 2% of the sample mean (8% of the sample standard deviation) for a 1 point increase in the value of the index of debt collection restrictions.[6] Thus, stricter debt collection laws reduce the effectiveness of contract enforcement in consumer credit markets and reduce the availability of revolving debt.

Even though using changes in debt collection laws to estimate their effect on revolving credit can address some endogeneity concerns, these concerns can never be completely eliminated with nonexperimental data. To assuage them, I perform a variety of robustness checks. First, changes in state debt collection regulations are rather infrequent and do not appear to be clustered in time, suggesting that they are unlikely to be related to transitory changes in credit conditions. Second, the outcome variables in adopting and nonadopting states generally follow similar trends prior to changes in debt collection laws, and the estimates are generally robust to including state-specific time trends. Third, the effect of debt collection laws on credit market outcomes is not driven by the 2007–2009 financial crisis or outliers

[6]The number of debt collectors is obtained from County Business Patterns surveys by the U.S. Census Bureau, credit card recovery rates from credit union Call Reports (financial reports filed by credit unions with their regulator, the National Credit Union Administration), and the number of new revolving lines of credit from the Trend Data database (compiled by TransUnion). These data sources are described in Section 2 of the paper.

and is robust to a variety of samples and specifications. Fourth, debt collection laws do not appear to have a significant effect on placebo outcomes or secured credit (consistent with the fact that debt collectors are rarely used to collect on secured debts). Since both secured and unsecured credit are likely to be affected by the same general trends, this is further evidence that the effect of debt collection laws on revolving credit is probably not driven by the general credit cycle. Finally, the results presented in this paper paint a consistent picture across outcome variables that come from three independent data sources, suggesting that the link between debt collection laws and credit market outcomes is robust.

This paper finds that stricter debt collection laws reduce credit availability. This, however, does not imply that these laws necessarily reduce consumer welfare. Generally, the effect of credit access on welfare is ambiguous. On the one hand, credit access may alleviate economic hardship by enabling borrowers to smooth their consumption (e.g., Morgan and Strain (2007); Karlan and Zinman (2010); Zinman (2010); Morse (2011)). On the other hand, credit access may prompt some consumers to borrow too much, which may be due to behavioral biases including limited self-control and limited foresight (e.g., Laibson, Repetto, and Tobacman (2007); Bar-Gill and Warren (2008); Heidhues and Kőszegi (2010); Campbell, Jackson, Madrian, and Tufano (2011); Melzer (2011); Nakajima (2013)). Separately, debt collection may impose direct utility costs on borrowers, and these costs may sometimes be substantial, as indicated by the high number of consumer complaints against debt collectors. Thus, the effect of debt collection laws on borrower welfare depends on the characteristics of borrowers whose access to credit hinges on the strictness of debt collection laws and on the ability of these laws to restrict potentially harmful debt collection practices.

The main contribution of this paper is in enhancing our understanding of debt enforcement in consumer credit markets by studying a mechanism that has received relatively little attention in the literature. Overall, the impact of debt collection laws on credit access docu-

mented here is consistent with a broad literature on law and finance, which finds that creditor rights are an important determinant of financial markets development (e.g., La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998, 2000); Djankov, McLiesh, and Shleifer (2007)).

While the focus of this paper is on debt collection, it is not the only contract enforcement mechanism in consumer credit markets. Other such mechanisms include bankruptcy proceedings and garnishment (the right of creditors to deduct money directly from borrowers' monetary compensation). These mechanisms are undoubtedly important. For example, Gropp, Scholz, and White (1997) show that high levels of bankruptcy exemptions reduce credit availability and redistribute credit toward high-asset households, while Berkowitz and Hynes (1999) and Lin and White (2001) find mixed evidence on the effect of bankruptcy exemptions on mortgage acceptance rates. White (2007) argues that the growth in revolving debt is the primary reason for the rise in bankruptcy filings and that bankruptcy policies that favor creditors must be accompanied by changes in credit market regulations designed to prevent overborrowing. Barth, Gorur, Manage, and Yezer (1983) show that restrictions on garnishment reduce the availability of personal loans, while Dawsey and Ausubel (2001) and Agarwal, Liu, and Mielnicki (2003) document that creditor friendly garnishment laws increase the likelihood that borrowers will file for bankruptcy. The analysis in the current paper accounts for the level of bankruptcy and garnishment exemptions, and the link between debt collection laws and credit market outcomes remains robust.

The rest of this paper is organized as follows. Section 2 describes legal framework, the data, and hypotheses. Section 3 reports empirical results. Section 4 contains robustness tests. Section 5 concludes and discusses the potential welfare implications of debt collection regulations. Appendix A describes variables sources and definitions. Appendix B provides some institutional details of the debt collection process. Appendix C contains a brief summary of changes in debt collection statutes.

2. Legal framework, data, and hypotheses

2.1. Regulation of third-party debt collectors

The activities of third-party debt collectors in the United States are regulated by a federal law, the Fair Debt Collection Practices Act of 1977 (FDCPA).[7] The FDCPA prohibits certain types of "abusive and deceptive" conduct when attempting to collect debts, such as repeatedly contacting consumers by phone "with intent to annoy, abuse, or harass any person at the called number," or threatening arrest or legal action that is either not permitted or not actually contemplated. It also limits whom the collector can contact for the purposes of collecting a debt and when such contact can take place.

Unlike many other federal statutes, the FDCPA establishes a floor on consumer protection from debt collectors and permits states to adopt their own regulations if they provide greater consumer protection than the federal law. Forty-three states have adopted their own laws that regulate collection practices.[8] These state laws differ in some important respects that limit the operations of third-party debt collectors beyond the restrictions specified in the FDCPA. 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. Some states (Florida, for example) allow attorneys general or special debt collection regulatory bodies to impose civil penalties on violators of

[7]The FDCPA is codified at 15 U.S.C. §1692 *et seq.* It exempts the original creditors from its coverage and applies to third-party debt collectors and creditors who bought the defaulted debt from an original creditor for the purpose of debt collection.

[8]Note that, while the state of incorporation governs the regulation of interest rates that banks with a national charter can offer, the relevant jurisdiction for creditor remedies and debt collection laws is the state in which the consumer resides (or resided when he or she opened the account).

debt collection laws.

To quantify the strictness of debt collection regulations, I construct, from state statutes and session laws, an index of debt collection restrictions. Initially, each state is assigned a value that is the sum of the following six indicator variables that represent broad restrictions on debt collection activities this state had as of January 1999: 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.

The map in Figure 2 shows the level of the index of debt collection restrictions in different states in 1999, with darker areas representing more restrictions on third-party debt collectors. As noted previously, Delaware and South Dakota have very few restrictions on third-part debt collectors and are marked with light shades on the map. It also appears that the strictness of debt collection laws has a geographical pattern, with bordering states often having similar levels of debt collection restrictions and with Southern and Western states imposing the greatest number of debt collection restrictions. The origin of this pattern may be due to a variety of factors (such as states' political philosophy and general attitudes toward credit, which are likely to be somewhat similar in bordering states), and it is important to account for these factors in the analysis of the impact of debt collection laws on credit market outcomes. To the extent that these factors are not time-varying, including state fixed effects in the analysis will absorb their influence. This, however, requires time-series variation in debt collection laws. An important feature of state debt collection laws, therefore, is that they indeed changed over time.

Between 1999 and 2012, there have been 33 changes in debt collection laws in 22 states, of which six changes loosened restrictions on debt collectors and 27 changes tightened restrictions on debt collectors.[9] Panel A of Table 1 lists the number of changes in debt collection laws in each year between 1999 and 2012, and Panel B reports the value of the index of debt collection restrictions for each state in 1999 and 2012. In constructing the index of debt collection restrictions, every change in debt collection laws is classified as either a tightening of debt collection laws (in which case, 1 is added to the index) or as a loosening of debt collection laws (in which case, 1 is subtracted from the index).[10] As a result, a higher value of the index indicates a more restrictive environment for third-party debt collectors. The mean value of the index in the sample is 3.43, with a standard deviation of 2.01 (reported in Table 2).

Each legal change used to construct the index is assigned the same weight. While potentially reducing the amount of variation in the index of debt collection restrictions, this approach avoids subjective judgment about the relative strengths of various legal changes and makes the index transparent and easily reproducible. This approach may also be conservative, since by treating all law changes in the same way, it underestimates the role of more important regulations (which should have a pronounced impact on credit market outcomes) while overestimating the role of less important regulations (whose impact should be less pronounced), thus potentially understating the impact of debt collection laws.[11]

[9]The sample period in this paper covers 2000–2012 (this is the longest period for which all variables used in the subsequent analysis are available). In order not to overlook any changes that occurred immediately prior to the start of the sample period, changes in debt collection laws are coded from 1999 onward. Of 33 such changes, 30 occurred between 2000 and 2012 (25 tightenings and five loosenings). See Appendix C for details.

[10]The construction of the index accounts for all changes in debt collection laws that occurred between 1999 and 2012, other than technical changes such as renamings. For example, in 2003, Florida renamed its Department of Financial Regulation the Office of Financial Regulation. This change is not included in the index.

[11]States did not change their laws uniformly, and it is sometimes virtually impossible to determine the precise relative impact of each regulation. Consider the following three examples of the tightening of debt collection laws. In 1999, Oregon made violations of debt collection laws a criminal offense. 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. It is fairly straightforward to see that each of these changes tightened the regulations of third-party debt collectors. 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.

By exploiting changes in debt collection laws over time, this paper uses a difference-in-differences approach to estimate the effect of debt collection regulations on revolving credit. This approach contrasts changes in outcome variables in the states that adopt new debt collection regulations and in the states that do not adopt such regulations. In applying this framework, it is important to consider carefully the "experiment" created by changes in debt collection laws and the extent to which this experiment approximates the ideal case of such changes being exogenous to the credit cycle.

First, consider the time-series pattern of changes in debt collection laws. As Panel A of Table 1 shows, these changes are distributed rather evenly across years, consistent with the idea that they are driven by idiosyncratic state-level factors rather than nationwide trends. The only exception is the financial crisis of 2007–2009, when there was a moderate spike in the number of changes in debt collection laws. This is perhaps not unexpected, and the results of this paper hold even after excluding 2007–2009 from the analysis. Additionally, the fact that changes in debt collection laws are infrequent is consistent with the idea that they are not directly related to short-term changes in credit conditions.

In terms of the nature of changes in debt collection laws, a relatively large share of such changes involves states adjusting the levels of various payments imposed on third-party debt collectors: licensing fees, bonds, and administrative fines. Of the 33 changes in debt collection laws between 1999 and 2012, 16 either instituted such payments or modified their amounts, often substantially. For example, the average bond amount is $8,750 before a law change and almost triples to $25,000 afterward, with licensing fees almost doubling from $433.33 before a law change to $800 afterward.[12] These changes primarily account for accumulated inflation and are therefore unlikely to be driven by transitory changes in the credit cycle.

[12]These fees can be relatively large for an average debt collection agency because some states impose separate fees on each establishment of a debt collection agency and because most debt collection agencies are small: 90% of debt collection firms have fewer than 50 employees (Source: U.S. Census Bureau, Economic Census, various years).

The adoption of any changes to the state law depends on idiosyncratic factors such as the priority of different bills under consideration and the disposition of the legislators. As a result, the timing of a change to the state law is likely to be in part unanticipated. Even partly unanticipated law changes may generate discontinuous impacts on revolving credit, and the difference-in-differences empirical approach will identify the extent of these discontinuous impacts. To the extent that law changes are anticipated, however, creditors may have responded preemptively, thus potentially blunting the estimated impact of debt collection regulations on credit market outcomes. The difference-in-differences framework will fail to capture these effects if present, thereby potentially understating the total effect of changes in debt collection laws on revolving credit.

2.2. Bankruptcy and garnishment laws

The ability of unsecured creditors to pursue delinquent debtors is limited by not only the effectiveness of the debt collection process but also by bankruptcy law and garnishment law, and it is therefore important to control for the effect of these laws in the analysis. Garnishment is a legal order that enables creditors to collect a proportion of the debtor's property in the possession of a third party. The most common form of garnishment is wage garnishment, which refers to the process of deducting funds directly from a person's monetary compensation to satisfy his/her creditors. The ability of creditors to garnish wages is limited by federal and state law. Federal law limits wage garnishment to the lesser of 25% of disposable income or the amount by which disposable income exceeds 30 times the federal minimum wage, but some states offer greater protection to their residents. Consistent with prior literature (e.g., Dawsey and Ausubel (2001); Agarwal, Liu, and Mielnicki (2003)), this paper uses the proportion of income exempt from garnishment to account for the effect of garnishment laws. The mean share of income exempt from garnishment in the sample is

78.88%, with a standard deviation of 7.47% (reported in Table 2).

Personal bankruptcy allows individuals to discharge their unsecured debts in return for giving up their nonexempt assets (under Chapter 7) or to retain their assets but repay a portion of their debts over a three- to five-year period (under Chapter 13). This paper collects the level of both homestead exemption and nonhome personal property exemption for each state during the sample following the procedure described in Berkowitz and Hynes (1999) and Lin and White (2001).[13] Some states offer unlimited homestead exemptions to their residents. In such cases, the value of the homestead exemption is coded as $1 million, which is consistent with the amounts used in prior literature (e.g., Berkowitz and Hynes (1999), Lin and White (2001)).[14] Some states allow their residents to choose between a uniform federal bankruptcy exemption and the state's exemption level. In these cases, it is presumed that the borrowers use the highest of the two exemption values. To control for the influence of bankruptcy laws, the dollar amount of the combined real bankruptcy exemption (home and nonhome) is included as a control variable in the analysis, with the nominal values of bankruptcy exemptions converted into 2010 dollars using the consumer price index (CPI) obtained from the Bureau of Labor Statistics. The average level of the combined real bankruptcy exemption in the sample is $213,200, with a standard deviation of $364,300 (in 2010 dollars).

2.3. Variables and sample construction

The outcome variables used in this paper come from three main sources: the Trend Data database (compiled by TransUnion), County Business Patterns surveys by the U.S. Census Bureau, and credit union Call Reports (financial reports filed by credit unions with

[13]Some states allow their married residents who file jointly to double certain bankruptcy exemptions. Since the data used in this paper do not have information on the marital status of borrowers, the analysis uses exemptions available to singles.

[14]The amount of $1 million is greater than the maximum limited homestead exemption in the sample ($550,000).

their regulator, the National Credit Union Administration). 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 in each state. These data are provided in part via 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% of consumer credit histories on file with TransUnion in that quarter. Each credit history contains 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, metropolitan statistical area (MSA), state, and national levels (this paper uses the state-level data set because the main explanatory variable is a state-level index of debt collection restrictions).

The sample period covers 2000–2012 (this is the longest period for which all variables used in the analysis are available). Following the example of Jayaratne and Strahan (1996), who study the effect of bank branching restrictions on economic growth, all years in which debt collection laws were changed are removed from the sample. This is done because most changes in debt collection laws occurred in the middle of the year, and it is therefore unclear whether the value of the index before or after the change should be used in these cases.[15] Delaware and South Dakota are excluded from the analysis because these two states have some of the most favorable banking laws in the U.S. and are therefore home to many national credit card banks.[16] Finally, the years in which data on the number of third-party debt collectors are unavailable are excluded as well. This step also removes the District of Columbia because the data on third-party debt collectors there are missing in all years. The

[15] One of the robustness checks reported in Section 4 shows that the results of this paper hold when the years in which changes occurred are included in the sample, with the value of the index of debt collection restrictions in those years coded as the weighted average of the index values before and after the change, where the weights are given by the number of months until changes in debt collection laws come into effect.

[16] One of the robustness checks reported in Section 4 shows that the results remain quantitatively and qualitatively unchanged when Delaware and South Dakota are included in the analysis.

resulting annual sample contains 568 observations for 48 states.[17] Since Trend Data variables are available at quarterly frequency, there are 2,272 quarterly observations for these variables (corresponding to 568 annual observations for other variables). The main analysis presented in this paper uses quarterly regressions when the dependent variable comes from Trend Data and annual regressions for all other variables. In the latter case, control variables obtained from Trend Data are converted to annual frequency by calculating the average of the four quarterly observations every year.[18] Summary statistics for the sample are reported in Table 2. Panel A reports statistics for the variables that describe debt collection regulations and related laws, Panel B reports statistics for the variables that describe the amount of credit and borrower characteristics, Panel C reports statistics for the other variables. The details on variables construction are provided in Appendix A. All nominal variables are converted to 2010 dollars using the CPI.

[INSERT TABLE 2 ABOUT HERE]

Because third-party debt collectors are typically hired to collect unsecured debts, changes in debt collection laws should primarily affect the availability of unsecured credit. The type of unsecured credit that this paper studies is revolving credit, which comprises accounts that are conventionally known as credit cards.[19] Revolving borrowing is a sequential process. The creditor first decides whether to open a revolving account and determines its credit limit. The cardholder is then allowed to borrow up to this credit limit over multiple periods, with the actual amount borrowed and repaid each period largely at the discretion of the cardholder. Once they pay off the balance, cardholders may borrow this amount again.

[17] Thirteen years of data for 48 states translates into a theoretical maximum of 624 annual observations. Of the 33 law changes documented in Appendix C, 30 occurred between 2000 and 2012, which leaves 594 observations after excluding these years. Twenty-six of these 594 observations have missing data on debt collectors, which leaves 568 observations in the main annual sample.

[18] The results are qualitatively and quantitatively unchanged if the analysis is performed on annualized data; see one of the robustness tests in Section 4.

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

Since credit card agreements generally do not have a terminal date and can last for several years, the total amount of revolving debt outstanding may not quickly adjust to changes in the legal environment. Rather, changes in the legal environment are likely to affect new issuance activity first. Thus, this paper estimates the effect of changes in debt collection regulations on new revolving accounts.

The number of new revolving lines of credit, normalized by the number of consumers with a credit report, is available from Trend Data and averages 119.33 per 1,000 consumers.[20] The average amount actually borrowed on such accounts (which is termed "balance of revolving lines of credit") is $1,941.10 in the sample. In some tests, this paper compares the impact of debt collection regulations on revolving debt with their impact on secured debt, namely, auto loans and mortgages, and the respective variables are also obtained from Trend Data. Auto loans are loans secured by motor vehicles, while mortgage loans are loans secured by real estate. The average number of new auto and mortgage loans (per 1,000 consumers) in the sample is 6.92 and 9.20, respectively.

In addition to variables on the number of various loans by type of credit, Trend Data contains variables that reflect debtors' riskiness and their demand for credit. 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. The average credit score in the sample is 659.96. 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).[21] By counting the number of hard pulls, Trend Data creates

[20]This statistic implies a significant amount of credit card issuance during the sample period and is comparable with the data on credit card issuance from other sources. Based on the Federal Reserve Bank of New York (FRBNY) Consumer Credit Panel/Equifax, over the period 1999–2013, approximately 120 million new revolving accounts were opened each year. For the purposes of making comparisons with the data analyzed in this paper, over this period, about 0.12 new revolving accounts were opened per consumer per quarter. Source: Calculated by Avraham Peled of the Payment Cards Center of the Federal Reserve Bank of Philadelphia using data from the FRBNY Consumer Credit Panel/Equifax.

[21]TransUnion uses all hard pulls from consumers' credit reports in constructing respective Trend Data variables, regardless

a measure of the intensity with which consumers apply for credit, which is a proxy for credit demand.[22] This measure, termed Inquiries, averages 105.24 in the sample.

Trend Data does not contain information on credit pricing or recovery rates. To obtain this information, this paper supplements Trend Data with credit union Call Reports. The choice to use Call Reports from credit unions rather than commercial banks is motivated by two considerations. First, credit unions are more likely than commercial banks to be local credit providers and therefore lend within state borders. This is the result of legal requirements that allow credit unions to lend only to their members, who must have a well-defined common bond (employer, location, or profession).[23] Second, Call Reports from commercial banks do not contain data on their credit cards interest rates — for commercial banks, this information is available only at the national level from the Quarterly Report of Credit Card Interest Rates administered by the Federal Reserve Board. Call Reports from credit unions do contain data on credit card interest rates.

During the sample period, credit unions provided about 8% as much revolving credit as commercial banks.[24] Consistent with the findings in Bar-Gill and Bubb (2011) and Bubb and Kaufman (2013), credit unions charge lower average interest rates than commercial banks: During the sample period, commercial banks charged an average interest rate of 13.12% on their credit cards,[25] and credit unions charged an average of 10.70%. While data availability issues necessitate the use of credit union data in this paper, credit unions are owned by their members and may therefore react differently to changes in debt collection regulations than

of whether they are used in the calculation of consumer credit scores or not. 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 credit card 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.

[22] Trend Data does not report the actual number of credit inquiries. Instead, this variable is reported as the ratio of the actual number of inquiries to a benchmark value (which is not disclosed).

[23] The Pentagon Federal Credit Union and the Navy Federal Credit Union are excluded from the analysis because they provide credit across state lines.

[24] Source: Board of Governors of the Federal Reserve System, G.19 series — Consumer Credit.

[25] Source: Board of Governors of the Federal Reserve System, G.19 series — Consumer Credit.

commercial banks.[26] Direct evidence that compares the use of third-party debt collectors by commercial banks and credit unions is not available, which makes it difficult to establish the degree to which the results for credit unions generalize to commercial banks. However, at least in certain areas, credit unions appear to rely less than commercial banks do on practices that have the potential to harm consumers. For example, Bubb and Kaufman (2013) show that credit unions are less likely than commercial banks to use contractual terms that take advantage of potential consumer biases (such as high penalty rates after default) and attribute this evidence to the fact the credit unions are owned by their customers. Since third-party debt collectors may use harsher debt collection practices on average (Coffman (2011); Fedaseyeu and Hunt (2014)), this suggests that credit unions may rely less on third-party debt collectors than commercial banks do. If this is the case, then the effect of debt collection regulations on credit unions should also generalize to banks. All results for recovery rates and interest rates on credit card loans reported in this paper are based on the data obtained from credit union Call Reports. The average recovery rate on charged-off unsecured credit card loans in the sample is 12.66%, and the average interest rate is 10.70%.

Data on third-party debt collectors are available from the U.S. Census Bureau's County Business Patterns survey.[27] The sample average number of debt collectors per 1 million people is 421.61. To control for local economic conditions and the business cycle, the regression specifications presented in this paper include state-level unemployment rate, personal income, and personal income growth. The state-level unemployment rate is obtained from the U.S. Bureau of Labor Statistics and averages 5.94%. Data on personal income come from

[26] Both state and federal laws give the customers of credit unions ownership rights (both control rights and residual financial claims). For example, federal law requires federal credit unions to be managed by a board of directors elected annually by members. The statute governing federal credit unions is codified at 12 U.S.C. §1751 *et seq.*

[27] The County Business Patterns survey tracks third-party debt collectors under the code 561440 of the North American Industry Classification System (NAICS), which comprises firms engaged in collecting payments and then remitting the payments collected to their clients. This survey does not track debt collectors employed by original creditors. Further, note that 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.

the U.S. Bureau of Economic Analysis. The sample average real personal income is $38,400 annually, and real income growth averages 0.89% per annum. The high school graduation rate (from the National Center for Education Statistics) and the infant mortality rate (from the Centers for Disease Control and Prevention) are used as placebo outcomes in some of the robustness tests.

2.4. Hypotheses

Stricter debt collection laws make it more difficult for debt collectors to collect (by restricting the debt collection practices that collectors may use) or more costly for them to operate (by imposing licensing and bonding requirements and by establishing penalties for unlawful behavior). As a result, stricter debt collection laws should reduce recovery rates that third-party debt collectors can obtain and should also reduce their number (as higher operating costs may force some third-party debt collectors out of business).[28] This should further reduce recovery rates, because a lower number of collectors translates into a lower probability that a consumer will be contacted by a debt collector, conditional on default.[29] In sum, debt collection laws should have two effects on third-party debt collectors. First, stricter debt collection regulations should reduce the number of debt collectors. Second, they should also decrease the recovery rates that debt collectors can obtain.

[28]The ability of debt collection agencies located in one state to collect on debtors who reside in a different state may limit the impact of debt collection laws. This is because such interstate debt collection may effectively put some out-of-state debt collection agencies out of reach for state laws, in which case, these laws may have little effect on their operations. This, in turn, may potentially introduce a downward bias in the estimates reported here. Since data on cross-state debt collection are unavailable, I attempt to ascertain the extent of such interstate collection by asking the Payment Cards Center at the Federal Reserve Bank of Philadelphia to provide assessments of interstate debt collection from their contacts in the debt collection industry. In summary, some states require third-party debt collectors to have a physical presence in the state, but such requirements are not particularly onerous. The agencies that find it economically feasible can therefore establish a handful of call centers that collect across the entire United States. However, only a few large debt collection agencies appear to have the economies of scale that enable them to do it. When asked whether debt collection agencies can collect across different states, one contact responded: "The biggest issue is not 'can you,' it's 'can you do it effectively?' Unless you are willing to staff for 16+ hours, you probably won't get the penetration into some states that are 'time zone' challenged relative to the agency's location." Since 90% of debt collection firms have fewer than 50 employees (Source: U.S. Census Bureau, Economic Census, various years), it is unlikely that the issue of cross-state collection significantly affects the results reported here.

[29]The probability of being contacted by a debt collector has likely changed over time due to technological changes in the debt collection process (such as improvements in communication technology). Since these technological changes are aggregate in nature and not specific to a particular state, time fixed effects should absorb their effect.

Recovery rates in the data are not broken down separately for third-party debt collectors and in-house debt collectors. However, by decreasing the recovery rates that third-party debt collectors can obtain, stricter debt collection laws should lower aggregate recovery rates as well. The direct effect of stricter debt collection laws on creditors is to reduce the repayment amounts that they receive on the debts outsourced to third-party agencies. This may also prompt creditors to retain more debt collection in-house, thus substituting in-house collections for third-party collections. However, since creditors always have the option of collecting in-house, the decision to outsource an account to a third-party agency presumably indicates that creditors expect to recover more by hiring an agency to collect on that account than by collecting in-house.[30] Having to transfer debt collection back in-house, therefore, potentially reduces creditors' recoveries by making them choose a less effective collection process.

Because creditors' willingness to lend depends on the likelihood of repayment, lower recovery rates resulting from stricter debt collection laws should reduce credit supply. This may lead to fewer openings of credit cards.[31]

3. Results

This paper estimates difference-in-differences (fixed effects) models of the following form:

$$Y_{it} = \alpha + \beta \text{Index}_{it} + \eta' \text{Controls}_{it} + \mu_i + \gamma_t + \varepsilon_{it}, \tag{1}$$

[30] Note that creditors choose which accounts they outsource to third-party debt collectors. It may be that, for some types of accounts, in-house debt collection generates higher recovery rates than third-party debt collection. These accounts should not be affected by the regulations of third-party debt collectors, since the creditors can always use in-house debt collectors for such accounts.

[31] The impact of debt collection laws on revolving credit is the net effect of their impact on credit supply and demand. While stricter debt collection laws should lower credit supply, their impact on credit demand may go in the opposite direction. This is because stricter debt collection laws reduce the probability that the debt will have to be repaid, all else being equal. Thus, the estimates of the effect of debt collection laws on revolving credit reported in this paper potentially represent a lower bound on the supply response.

where Y_{it} is the value of the dependent variable in state i in year t, and Index_{it} is the corresponding value of the index of debt collection restrictions. In addition to the index of debt collection restrictions, all models include a vector of state dummies, μ_i, that absorb unobservable time-invariant heterogeneity across states, and year dummies, γ_t, that control for macro factors common to all states. Some specifications also include mean credit scores (to control for the riskiness of the pool of borrowers), credit inquiries (to proxy for the willingness of borrowers to apply for credit), unemployment rate, real income per capita and real income growth (to control for general economic conditions and account for the local business cycle), the percentage of income exempt from garnishment, and the combined real bankruptcy exemption (to account for state-level protections offered to consumers who default). To account for arbitrary correlation between observations within the same state, standard errors are clustered by state (Bertrand, Duflo, and Mullainathan (2004)).

3.1. The impact of debt collection restrictions on the number of debt collectors and on credit card recovery rates

Stricter debt collection laws should reduce the number of debt collectors and decrease the recovery rates on credit card loans. The empirical tests of these hypotheses are reported in Table 3, which shows the effect of debt collection regulations on the number of third-party debt collectors (in columns 1 and 2) and on credit card recovery rates (in columns 3 and 4). Columns 1 and 3 report regressions in which only the index of debt collection restrictions and state and year fixed effects are included as explanatory variables. Columns 2 and 4 report regressions with the full set of control variables.

[INSERT TABLE 3 ABOUT HERE]

As expected, stricter debt collection laws result in fewer debt collectors. The corresponding coefficient is negative, statistically significant, and economically sizable: In the

specification that includes all controls, a 1 point increase in the value of the index of debt collection restrictions reduces debt collector density by 68.564 debt collectors per 1 million people, or 16% of the sample mean (32% of the sample standard deviation) of debt collector density.[32] Stricter debt collection laws are also associated with lower recovery rates on charged-off credit card loans: In the specification that includes all controls, a 1 point increase in the value of the index of debt collection restrictions reduces recovery rates by 1.094 percentage points, or 9% of the sample mean (25% of the sample standard deviation) of recovery rates. These effects indicate that debt collection regulations have a substantial impact on the recoverability of revolving debt. The question of whether this impact translates into credit availability is the focus of the next section.

3.2. The impact of debt collection restrictions on revolving credit

The first two columns of Table 4 show regressions of the number of new revolving lines of credit on the index of debt collection restrictions. The specification in column 1 includes only the index of debt collection restrictions and state and year fixed effects, while column 2 includes the full set of controls. The estimated effect of debt collection restrictions on the number of new revolving lines of credit is negative and statistically significant. In the specification that includes all controls, a 1 point increase in the the value of the index of debt collection restrictions reduces the number of new revolving lines of credit per 1,000 consumers by 2.363 new accounts per quarter, or about 2% of the sample mean (8% of the sample standard deviation). This estimate implies that increasing the value of the index by 3 (which is equivalent to moving from the 25th to the 75th percentile of the index distribution)

[32] Creditors may also respond to stricter debt collection regulations by moving debt collection in-house. Since disaggregated data on the number of in-house debt collectors are unavailable, it is impossible to study the extent of substitution between in-house and third-party debt collectors. However, the finding that recovery rates do not fall as much as the employment of third-party debt collectors after debt collection laws are tightened suggests that there may be a compensating increase in the employment of in-house debt collectors.

decreases the number of new revolving lines of credit by approximately 6%.[33]

[INSERT TABLE 4 ABOUT HERE]

Note that debt collection restrictions have a larger impact on debt collection employment and on recovery rates (documented in the previous section) than on the number of new accounts. This is expected, given that recovery rates are not the only determinant of credit availability. It may be useful to compare the impact of debt collection laws with other regulations that affect consumer credit. The effect documented in Table 4 is somewhat lower than the impact of bankruptcy reported in Gropp, Scholz, and White (1997) but is comparable to the size of the effect documented in Berkowitz and Hynes (1999) and in Lin and White (2001). Gropp, Scholz, and White (1997) find that the probability of a consumer being turned down for credit or discouraged from borrowing is 5.5 percentage points higher in states with unlimited bankruptcy exemptions than in states in the bottom quartile of the exemption distribution, which compares with 17.3% of households in the sample that were denied credit or discouraged from borrowing. Berkowitz and Hynes (1999) study the effect of bankruptcy exemptions on the availability of mortgage loans and find that quadrupling the homestead bankruptcy exemption would lead to a decrease in the probability of mortgage denial by about 10 basis points in the states with low exemption levels and by about 2 percentage points in the states with high exemption levels, with these changes representing 0.6% and 13% of the sample average denial rate, respectively. To compare these figures with the estimates reported in the current paper, note that quadrupling the index of debt collection restrictions from 2 to 8 (which is also equivalent to moving from the lowest quartile to the maximum value of the index in the sample) implies a decrease in the number of new accounts by about 12% of the sample mean. Lin and White (2001) find that applicants who

[33]Of the states that changed their debt collection laws during the sample period, Idaho experienced such a change (the value of the index in Idaho increased from 5 to 8).

live in the states with unlimited bankruptcy exemptions are 2 percentage points more likely to be denied a home purchase loan and 5 percentage points more likely to be denied a home improvement loan than applicants who live in the states whose exemptions are in the lowest quartile of the exemption distribution, with these figures representing 13% and 17% of the average sample denial rate for home purchase and home improvement loans, respectively.

Columns 3 and 4 of Table 4 report regressions that estimate the impact of debt collection laws on the balance of new revolving lines of credit, where the specification in column 3 includes only the index of debt collection restrictions and state and year fixed effects, while column 4 includes the full set of controls. The effect of debt collection laws is negative and significant in the specification that excludes control variables. However, the estimate goes down in value and loses statistical significance after control variables are added to the regression. Since the number of new accounts is lower when debt collection laws are stricter, while the effect on credit card balances is, if anything, negative, the overall effect of stricter debt collection regulations is to decrease the availability of revolving credit.

The last two columns of Table 4 investigate the effect of debt collection restrictions on the pricing of revolving credit. The ex-ante effect of debt collection laws on pricing is ambiguous. On the one hand, the expansion of credit supply due to better debt collection may lead to lower interest rates. On the other hand, lenders may potentially be willing to expand the pool of borrowers by extending credit to riskier applicants when debt collection is more effective. In this case, the average equilibrium interest rate may potentially go up because these new borrowers will be charged higher interest rates commensurate with their risk characteristics. In addition, prior empirical literature has documented substantial price stickiness in the credit card market (e.g., Ausubel (1991); Calem and Mester (1995); Knittel and Stango (2003); Calem, Gordy, and Mester (2006)). This is supported by recent evidence in Bar-Gill and Bubb (2011) and Agarwal, Chomsisengphet, Mahoney, and Stroebel (2015),

who show that regulatory limits on certain credit card fees instituted by the 2009 Credit Card Accountability Responsibility and Disclosure Act did not lead to an offsetting increase in interest rates. As the estimates reported in the last two columns of Table 4 suggest, credit card interest rates do not appear to react to changes in debt collection regulations either.

4. Robustness tests

This section reports the results of several robustness tests. The first set of robustness tests is reported in Table 5, which shows the sensitivity of the effect of debt collection laws to alternative samples and specifications. Each row in Panel A of Table 5 presents the results from three separate regressions of the specified dependent variable on the index of debt collection restrictions, state and year fixed effects, and the full set of controls. For each regression, only the coefficient on the index of debt collection restrictions and the corresponding standard error are reported. For reference, the top row of Panel A reports estimates from baseline regressions presented in Table 3 and Table 4.

[INSERT TABLE 5 ABOUT HERE]

4.1. Parallel trends tests

The assumption underlying a difference-in-differences analysis is that of parallel trends, i.e., that the states that adopted new debt collection regulations and states that did not would have followed parallel trends in the absence of such regulations. The first test of this assumption is presented in row (2) of Panel A of Table 5, which reports the results of regressions that include state-specific linear time trends in the specification. This specification picks up the effect of changes in debt collection laws on outcome variables over and above their time trends within individual states. Since the time series dimension of the data is relatively short

and the inclusion of time trends relies on the ability to precisely estimate these trends, this specification is rather demanding of the data. Encouragingly, the effects of debt collection laws both on recovery rates and on new revolving accounts retain their economic and statistical significance, and only the estimate of the effect on the number of debt collectors goes down in value and statistical significance.

Graphical evidence on the parallel trends assumption is presented in Figure 3 and Figure 4. These figures plot the evolution of the main outcome variables (the number of third-party debt collectors per 1 million people, the average recovery rate on credit card loans, and the number of new revolving lines of credit per 1,000 consumers) around changes in debt collection laws (three years prior and three years after each change).[34] Figure 3 is constructed for changes that tightened debt collection laws, and Figure 4 is constructed for changes that loosened debt collection laws. Not all law changes have data available three years prior and three years after the change, and some law changes overlap within a three-year period (for example, in Maine in 2006 and 2009). Therefore, to maintain a consistent sample, the figures include only nonoverlapping law changes with sufficient data. Specifically, to be included in the parallel trends analysis, a law change must satisfy two conditions. First, the data on all of the main outcome variables (number of third-party debt collectors, recovery rates on credit card loans, and number of new revolving lines of credit) must be available for three years prior and three years after the change. Second, there must be no other changes in the same state in the three years before and three years after the change. These two requirements result in 13 law changes in the parallel trends analysis, of which 11 changes tightened debt collection regulations and two changes loosened debt collection regulations.[35]

[34]To make the graphs directly comparable, they are constructed using annual data. Thus, the number of new revolving lines is converted to annual frequency by calculating the average of the four quarterly observations every year.

[35]The treated states that are retained in the analysis are Connecticut, Georgia, Idaho, Illinois, Indiana, Louisiana, Maryland, Minnesota, Nevada, North Carolina, North Dakota, Oregon, and Tennessee. Colorado, Florida, Hawaii, Maine, Pennsylvania, Utah, and Washington drop out because of overlapping changes or because law changes occurred in 2002 or prior or in 2010 or after (and therefore do not have three years of data before or after the change); Arkansas and Rhode Island drop out because of missing data on debt collectors at some point in the seven-year period around law changes.

The evolution of the outcome variables around each of these changes is then compared to the evolution of the outcome variables in control states, i.e., the states that did not change their debt collection laws during the sample period. To be included in the control group, a state must have no missing data for the years in which changes in debt collection laws (in treated states) occurred. Of the 28 states that did not change their debt collection laws during the sample period, 23 satisfy this criterion.[36]

Consider Connecticut, for example. It changed its debt collection laws twice: in 2002 and in 2009. The 2002 change is excluded from the parallel trends analysis because there are only two years of data available prior to the change. The 2009 change is included in the parallel trends analysis, with year 2009 being assigned event date 0, year 2006 being assigned event date –3, year 2007 being assigned event date –2, etc. The value of each of the three main outcome variables in Connecticut in 2006, 2007, 2008, etc. is then compared with its average value across the 23 control states in, respectively, 2006, 2007, 2008, etc. The same analysis is performed for each of the 12 other changes. Figure 3 and Figure 4 then plot the evolution of the average values in treated and control states in event time (in the Connecticut example, control states' average in 2006 is assigned event date –3, control states' average in 2007 is assigned event date –2, etc.).

[INSERT FIGURE 3 AND FIGURE 4 ABOUT HERE]

Despite the low power that results from the small number of observations, the general picture that Figure 3 and Figure 4 paint is generally consistent with adopting and nonadopting states following parallel trends prior to law implementation.[37]

[36]The following four states drop out because of missing data on debt collectors in some of the years in which changes in debt collection laws (in treated states) occurred: Vermont, West Virginia, and Wyoming. Recall that Delaware and South Dakota were excluded during sample construction.

[37]Figure 4, constructed for the changes that loosened debt collection regulations, shows that recovery rates appear to decline in treated states relative to control states prior to loosenings of debt collection laws. Based on this pattern, one might expect that had the treated states continued to follow their pre-change trajectories also after law implementation, the recovery rates in these states would have declined even further. The fact that they didn't is consistent with the idea that lifting debt collection restrictions improved the recoverability of credit card debt.

4.2. Other robustness tests

As Panel A of Table 1 shows, there was a moderate spike in the number of debt collection regulations adopted during the recent financial crisis in 2007 and 2009. To rule out the possibility that the results presented previously are driven by these changes, the robustness check reported in row (3) of Table 5 excludes 2007–2009 from the analysis. The resulting estimates are similar to the baseline in terms of their magnitude and statistical significance, despite the fact that this test loses about 23% of the data (132 annual observations and 528 quarterly observations).

The main analysis in this paper excludes Delaware and South Dakota because these states have favorable banking laws and because of the large number of credit card operations located in them. The specification reported in row (4) of Table 5 uses the sample that includes these states, and the resulting estimates remain similar to the baseline.

Row (5) of Table 5 studies the sensitivity of the results to including years in which debt collection laws were changed. As mentioned earlier, most changes in debt collection laws occurred in the middle of the year. Therefore, including the years in which laws changed into the analysis produces ambiguity about whether the value of the index before the law change or after the law change should be used in such cases. Row (5) uses the sample that includes the years in which debt collection laws were changed and codes the value of the index of debt collection restrictions in those years as the weighted average of the index values before and after the change, where the weights are given by the number of months until changes in debt collection laws come into effect.[38] The resulting estimates are again similar to the baseline.

Row (6) of Table 5 uses the sample that includes years with missing data on debt collectors.

[38] In years in which more than one bill was adopted during the year (as in Maine and North Carolina in 2009), the number of months until the earliest effective date is used as the weight.

The estimated effects of debt collection laws on recovery rates and on new revolving lines are again in line with the baseline (the corresponding effect on debt collector density is omitted because of missing data).

Row (7) re-estimates the effect of debt collection laws on recovery rates by excluding credit unions located in border counties. This is done to address potential concerns that may arise because credit unions sometimes define their membership requirements quite broadly. For example, they may permit people to join not only if they live in a particular area but also if they work there. A sample that consists only of credit unions from inner counties should minimize the effect of commuters who live in one area but may borrow from credit unions in a different area. The resulting estimate is in line with the main specification, thus alleviating the above concerns.

The test reported in row (8) of Table 5 converts the number of new revolving lines to an annual frequency by calculating the average of the four quarterly observations every year. Again, the results are consistent with the baseline. Overall, the estimates appear to be rather stable across various samples and specifications.

Table 5 also reports the results of placebo tests. The first placebo test, reported in row (9) of Panel A, estimates the effect of placebo changes in debt collection laws on the main outcome variables. The second set of placebo tests, reported in Panel B, estimates the effect of actual changes in debt collection laws (used throughout this paper) on placebo outcomes.

To construct the placebo index of debt collection restrictions, each state that experienced a change in debt collection laws during the sample period is matched with a state that did not experience any changes in debt collection laws during the sample period, based on geographical proximity and the similarity of credit conditions as of 2000.[39] It is then assumed

[39]The procedure used to match treated states to control states is as follows. Each treated state is matched to the bordering control state that, among all bordering control states, was most similar to the treated state in terms of the number of new revolving lines of credit as of 2000. If a treated state has no bordering control states or if all bordering control states had been matched to other treated states, then this treated state is matched to the geographically closest control state (this last

that the changes in debt collection laws occurred not in the treated states but rather in the corresponding control states. Thus, the value of the placebo index remains unchanged in the treated states but changes in the control states as if they experienced the same changes in their debt collection laws as the corresponding treated states. Since in reality the control states did not change their debt collection laws, the placebo index should have no effect on the outcome variables. Indeed, the impact of placebo law changes, reported in row (9) of Panel A of Table 5, is insignificant.

Panel B of Table 5 investigates the effect of debt collection laws on two placebo outcomes that should be unrelated to the availability of credit: high school graduation rate and infant mortality rate. Debt collection laws should have little effect on such distantly related outcome variables, which is what the results presented in Panel B of Table 5 show.

[INSERT TABLE 6 ABOUT HERE]

To exclude the possibility that the results reported here are driven by outliers, I perform two additional robustness checks. One excludes states that changed their debt collection laws from the analysis one by one. The other performs a similar test by excluding each year from the analysis one by one. The results, reported in Table 6 and Table 7, are similar to the baseline estimates.

[INSERT TABLE 7 ABOUT HERE]

The analysis so far has focused on the impact of third-party debt collectors on unsecured credit. This is because debt collectors are primarily engaged in collecting unsecured debts,

step is used in only five cases: Georgia, Hawaii, North Dakota, Rhode Island, and Washington; Hawaii is matched with Alaska because these two states do not border any other U.S. state and had similar levels of new revolving lines of credit in 2000). The resulting matches are as follows (the first state in each pair is a treated state, and the second one is the corresponding control state): Arkansas— Oklahoma, Colorado—Wyoming, Connecticut—Massachusetts, Florida—Alabama, Georgia—West Virginia, Hawaii—Alaska, Idaho—Montana, Illinois—Wisconsin, Indiana—Kentucky, Louisiana—Mississippi, Maine—New Hampshire, Maryland—Virginia, Minnesota—Iowa, Nevada—Arizona, North Carolina—South Carolina, North Dakota—Nebraska, Oregon—California, Pennsylvania—Ohio, Rhode Island—New Jersey, Tennessee—Missouri, Utah—New Mexico, and Washington—Kansas.

since, in the case of secured credit, the lender can repossess the underlying collateral.[40] Thus, debt collection laws should have little direct effect on secured credit. However, debt collection may have an indirect effect on secured credit because secured and unsecured credit are linked by household behavior.[41] Mitman (2011) shows that higher bankruptcy exemptions may result in higher interest rates on unsecured debt (because households' propensity to file for bankruptcy increases) and can therefore prompt households to decrease their demand for unsecured credit and increase their demand for secured credit. By a similar logic, more stringent debt collection laws may increase the demand for unsecured credit (because borrowers' disutility from debt collection goes down) and may reduce the demand for secured credit. Since debt collection laws are unlikely to affect the supply of secured credit, stricter debt collection laws may lower the amount of secured credit (via the indirect demand effect). Thus, one might expect stricter debt collection laws to have either no or a negative effect on secured credit. Consistent with this conjecture, the effect of debt collection laws on the number of new secured auto loans and mortgages (reported in Table 8) is negative but statistically insignificant. This is also evidence that the results reported previously are not driven by general changes in the credit cycle, which should affect both secured and unsecured credit similarly.

[INSERT TABLE 8 ABOUT HERE]

5. Conclusion and discussion of welfare

This paper examines contract enforcement in consumer credit markets by studying the role of third-party debt collectors. By using variation in state debt collection laws over time, I

[40] Debt collectors are sometimes hired to collect on deficiency judgments (the remaining balance less the value of the collateral seized by the creditor). These judgments, however, are generally small relative to the initial loan amount.

[41] Secured and unsecured credit are also linked by their treatment in the bankruptcy system. For example, write-offs of unsecured debt in bankruptcy can improve repayment prospects on mortgages. However, since debt collection occurs prior to bankruptcy, the prospect of write-offs of unsecured debt to keep making mortgage payments should play little role here.

construct a state-level index of the tightness of debt collection laws and find that stricter debt collection regulations reduce the number of third-party debt collectors and lower recovery rates on delinquent credit card loans. This, in turn, leads to fewer openings of revolving lines of credit (commonly known as credit cards). A 1 point increase in the value of the index of debt collection restrictions (which indicates a tightening of debt collection laws) decreases the number of debt collectors per 1 million people by about 16% of the sample mean (32% of the sample standard deviation) and decreases recovery rates on charged-off credit card loans by about 9% of the sample mean (25% of the sample standard deviation), which in turn reduces the number of new revolving lines of credit by about 2% of the sample mean (8% of the sample standard deviation). While it is impossible to completely rule out the endogeneity of changes in state laws, the evidence presented here suggests a robust link between debt collection laws and credit market outcomes. The results indicate that stronger contract enforcement in consumer credit market increases credit access, which is in line with a broad literature on law and finance that finds that creditor rights affect the development of financial markets.

The welfare implications of debt collection laws on consumer welfare, however, are ambiguous. On the one hand, credit access may alleviate economic hardship by enabling borrowers to smooth their consumption over time (e.g., Morgan and Strain (2007); Karlan and Zinman (2010); Zinman (2010)). On the other hand, a large body of theoretical and empirical work argues that credit access may prompt some consumers to borrow too much, which may be due to behavioral biases including limited self-control and limited foresight (e.g., Laibson, Repetto, and Tobacman (2007); Bar-Gill and Warren (2008); Heidhues and Kőszegi (2010); Campbell, Jackson, Madrian, and Tufano (2011); Melzer (2011); Nakajima (2013)). This is especially relevant for consumers with low financial sophistication, which can lead to borrowing at excessively high interest rates (Lusardi and Tufano (2009); Hastings, Madrian, and

Skimmyhorn (2013)). Thus, the welfare effects of regulations that affect credit availability depends on the characteristics of borrowers whose access to credit is affected by these regulations. It may therefore be that some regulations that reduce credit access, such as stricter debt collection laws, can improve consumer welfare. Separately, the debt collection process may impose utility costs on borrowers, and the ability of debt collection laws to reduce such costs may also affect consumer welfare.[42]

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[42] One aspect of consumer welfare that can potentially be related to debt collection regulations are consumer complaints against debt collectors. However, the disaggregated data on consumer complaints provided by the Consumer Financial Protection Bureau are available only starting from July 2013. Because only one full year of data is currently available, it is impossible to estimate the effect of debt collection regulations on consumer complaints in a difference-in-differences framework at this time.

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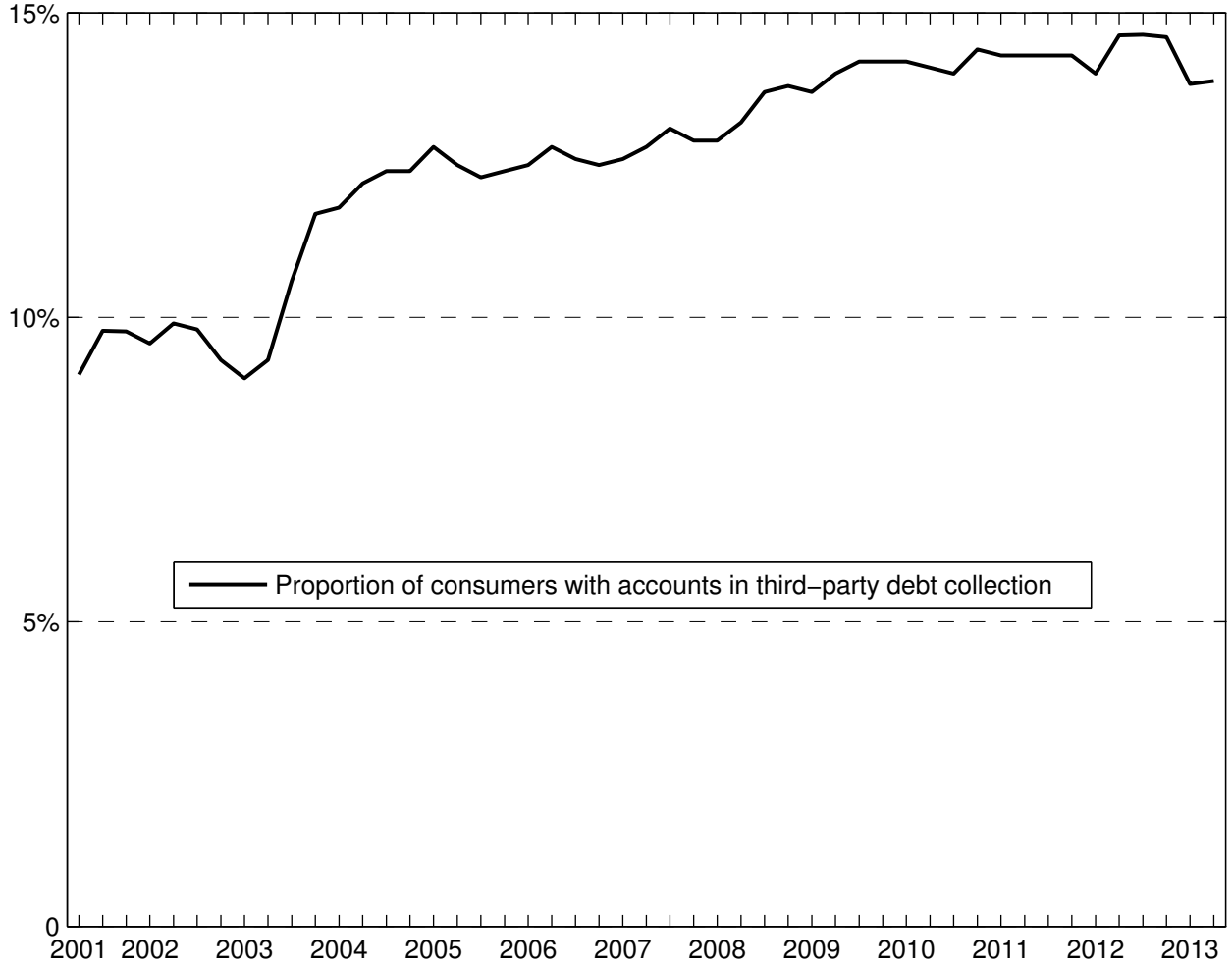
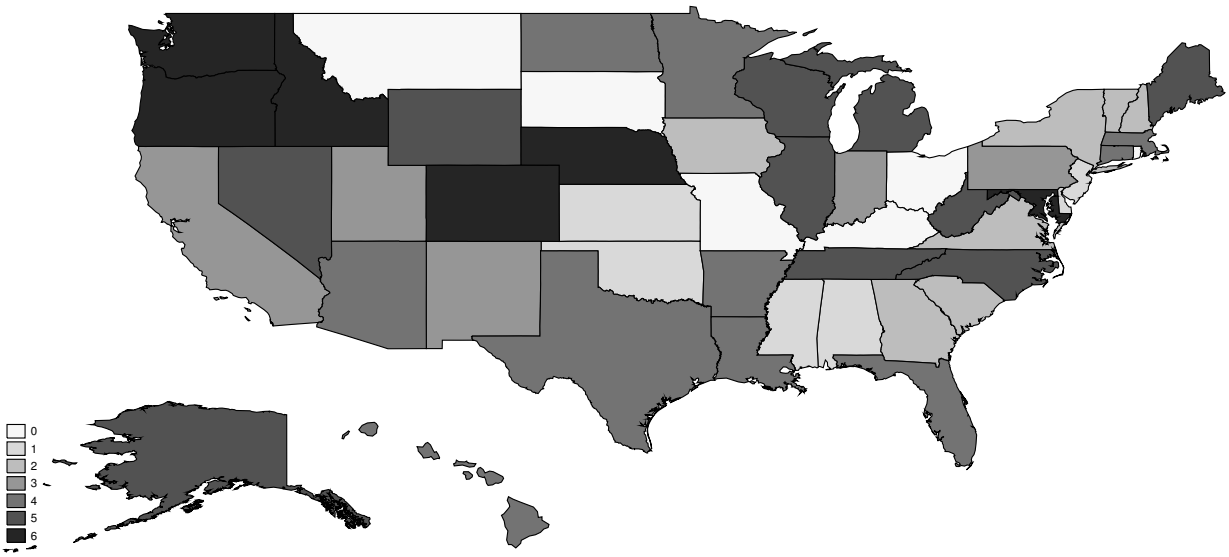
Figure 1: Proportion of consumers with accounts in third-party debt collection



This figure depicts the percentage of U.S. consumers with at least one account reported as being collected by third-party debt collectors. Source: *The Quarterly Report on Household Debt and Credit*, Federal Reserve Bank of New York, various editions.

Figure 2: Strictness of debt collection laws in 1999



This map depicts the value of the index of debt collection restrictions as of January 1, 1999 (with Alaska and Hawaii placed below the contiguous U.S.). Darker areas represent stricter debt collection laws (imposing more restrictions on third-party debt collectors). This map is not drawn to scale.

Table 1: Index of debt collection restrictions

Panel A shows the number of changes in debt collection laws in each year between 1999 and 2012. Panel B shows the value of the index of state debt collection restrictions for each state in 1999 and 2012. The following 22 states changed their debt collection laws between 1999 and 2012: Arkansas, Colorado, Connecticut, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Louisiana, Maine, Maryland, Minnesota, Nevada, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, and Washington. The value of the index in Florida and Maine is the same in 1999 and 2012 because each of these states adopted two changes in their debt collection laws, one of which loosened restrictions on debt collectors and one of which tightened restrictions on debt collectors (see Appendix C for details).

Panel A: The number of changes in debt collection laws by year

Year	Number of changes	Year	Number of changes
1999	3	2006	3
2000	2	2007	4
2001	3	2008	1
2002	2	2009	4
2003	2	2010	1
2004	2	2011	3
2005	2	2012	1

Panel B: The value of the index of debt collection restrictions by state

State	Index value in 1999	Index value in 2012	State	Index value in 1999	Index value in 2012
Alabama	1	1	Montana	0	0
Alaska	5	5	Nebraska	6	6
Arizona	4	4	Nevada	5	7
Arkansas	4	5	New Hampshire	2	2
California	3	3	New Jersey	1	1
Colorado	6	4	New Mexico	3	3
Connecticut	4	6	New York	2	2
Delaware	1	1	North Carolina	5	7
Florida	4	4	North Dakota	4	6
Georgia	2	3	Ohio	0	0
Hawaii	4	5	Oklahoma	1	1
Idaho	5	8	Oregon	5	7
Illinois	5	6	Pennsylvania	3	4
Indiana	3	4	Rhode Island	0	1
Iowa	2	2	South Carolina	2	2
Kansas	1	1	South Dakota	0	0
Kentucky	0	0	Tennessee	5	4
Louisiana	4	3	Texas	4	4
Maine	5	5	Utah	2	3
Maryland	6	7	Vermont	2	2
Massachusetts	4	4	Virginia	2	2
Michigan	5	5	Washington	6	7
Minnesota	4	6	West Virginia	5	5
Mississippi	1	1	Wisconsin	5	5
Missouri	0	0	Wyoming	5	5

Table 2: Summary statistics

Panel A reports statistics for the variables that describe debt collection regulations and related laws, Panel B reports statistics for the variables that describe the amount of credit and borrower characteristics, Panel C reports statistics for the other variables. All nominal variables are converted to 2010 dollars using the CPI. Index is the index of state debt collection restrictions; Garnishment is the percentage of income exempt from garnishment (%); Exemption is the real homestead bankruptcy exemption plus real nonhome bankruptcy exemption ($10,000); New revolving lines is the number of new revolving lines of credit, per 1,000 consumers; New revolving balance is the average real balance (the amount borrowed) of new revolving lines of credit ($); New auto loans is the number of new auto loans, per 1,000 consumers; New mortgage loans is the number of new mortgage loans, per 1,000 consumers; Credit score is the average TransUnion credit score; Inquiries is the normalized measure of of credit inquiries provided by TransUnion; Recovery rate is the average recovery rate on charged-off unsecured credit card loans by credit unions (%); Interest rate is the average interest rate charged by credit unions on unsecured credit card loans (%); Debt collector density is the number of third-party debt collectors per 1 million people; Unemployment rate is the percentage of the labor force that is unemployed (%); Personal income is real personal income per capita ($1,000); Income growth is real personal income per capita in a given year minus real personal income per capita in the previous year, all divided by the real personal income per capita in the previous year (%); Graduation rate is high school graduation rate (%); and Infant mortality rate is the number of infant deaths per 1,000 live births. There are 568 observations for the variables available at annual frequency, which include data for 48 states (Delaware and South Dakota excluded) from 2000 to 2012 and exclude years with missing data on debt collectors and years in which debt collection laws were changed. Corresponding to these 568 annual observations, there are 2,272 observations for the variables available at quarterly frequency. Some variables in Panel C have fewer than 568 observations because of additional missing data for those variables.

Variable	N	Mean	Median	Std. deviation
Panel A: Variables describing debt collection regulations and related laws				
Index	568	3.43	4.00	2.01
Garnishment	568	78.88	75.00	7.47
Exemption	568	21.32	5.38	36.43
Panel B: Variables describing the amount of credit and borrower characteristics				
New revolving lines	2,272	119.33	118.00	28.57
New revolving balance	2,272	1,941.10	1,762.47	807.90
New auto loans	2,272	6.92	6.50	2.85
New mortgage loans	2,272	9.20	8.20	4.71
Credit score	2,272	659.96	663.94	22.94
Inquiries	2,272	105.24	104.27	25.22
Panel C: Other variables				
Recovery rate	568	12.66	12.20	4.42
Interest rate	568	10.70	10.72	1.10
Debt collector density	568	421.61	387.90	214.75
Unemployment rate	568	5.94	5.45	2.12
Personal income	568	38.40	37.03	5.81
Income growth	568	0.89	1.00	2.45
Graduation rate	539	77.12	77.90	7.57
Infant mortality rate	478	6.79	6.79	1.39

Table 3: Effect of debt collection restrictions on debt collector density and on recovery rates
In columns 1 and 2, the dependent variable is the number of third-party debt collectors per 1 million people. In columns 3 and 4, the dependent variable is the average recovery rate on charged-off unsecured credit card loans by credit unions. All variables are as described in the text and in Table 2. All regressions are estimated using the main annual sample of 568 observations, with Trend Data control variables converted to annual frequency by calculating the average of the four quarterly observations every year. Standard errors clustered by state are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Debt collector density		Recovery rate	
Variable	(1)	(2)	(3)	(4)
Index	-73.136***	-68.564***	-1.562***	-1.094**
	(21.171)	(23.967)	(0.551)	(0.517)
Credit score		-3.371		0.111*
		(2.697)		(0.065)
Inquiries		1.084		0.052***
		(0.666)		(0.017)
Unemployment rate		-11.380		-0.671**
		(14.205)		(0.298)
Personal income		-5.624		-0.328**
		(8.471)		(0.152)
Income growth		3.796		0.185**
		(2.436)		(0.077)
Garnishment		12.060***		-0.253***
		(3.481)		(0.067)
Exemption		-0.328		-0.028
		(1.125)		(0.029)
Frequency	Annual	Annual	Annual	Annual
State fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	568	568	568	568
Adjusted R-squared	0.820	0.823	0.572	0.617

Table 4: Effect of debt collection restrictions on revolving credit

In columns 1 and 2, the dependent variable is the number of new revolving lines of credit per 1,000 consumers. In columns 3 and 4, the dependent variable is the average balance on new revolving lines of credit. In columns 5 and 6, the dependent variable is the average interest rate charged by credit unions on unsecured credit card loans. All variables are as described in the text and in Table 2. Regressions in columns 1 to 4 are estimated using the main quarterly sample of 2,272 observations. Regressions in columns 5 and 6 are estimated using the main annual sample of 568 observations, with Trend Data control variables converted to annual frequency by calculating the average of the four quarterly observations every year. Standard errors clustered by state are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	New revolving lines		New revolving balance		Interest rate	
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Index	-2.410**	-2.363**	-152.081**	-33.812	-0.031	-0.119
	(1.039)	(0.925)	(65.108)	(54.968)	(0.105)	(0.096)
Credit score		0.593***		21.606***		-0.009
		(0.110)		(7.036)		(0.012)
Inquiries		0.113***		9.869***		-0.005
		(0.025)		(2.368)		(0.004)
Unemployment rate		0.807*		-91.299***		0.050
		(0.456)		(25.190)		(0.047)
Personal income		-0.678**		30.584*		0.024
		(0.262)		(15.607)		(0.026)
Income growth		0.111		15.790		-0.005
		(0.159)		(15.896)		(0.015)
Garnishment		-0.626***		11.016		0.032**
		(0.114)		(7.871)		(0.016)
Exemption		-0.057		-1.109		0.021**
		(0.070)		(2.774)		(0.009)
Frequency	Quarterly	Quarterly	Quarterly	Quarterly	Annual	Annual
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	—	—	—	—	Yes	Yes
Year×quarter fixed effects	Yes	Yes	Yes	Yes	—	—
Observations	2,272	2,272	2,272	2,272	568	568
Adjusted R-squared	0.949	0.955	0.784	0.845	0.800	0.815

Table 5: Sensitivity to alternative samples and specifications, placebo tests

Panel A reports variations on the baseline specification as indicated. All variables are as described in the text and in Table 2. Regressions for Debt collector density and Recovery rate are estimated at annual frequency, with Trend Data control variables converted to annual frequency by calculating the average of the four quarterly observations every year; regressions for New revolving lines are estimated at quarterly frequency, with the exception of specification in row (8), which is estimated at annual frequency as indicated. The number of observations in each specification is as follows: (1) 568 for annual regressions, 2,272 for the quarterly regression; (2) 568 for annual regressions, 2,272 for the quarterly regression; (3) 436 for annual regressions, 1,744 for the quarterly regression; (4) 592 for annual regressions, 2,368 for the quarterly regression; (5) 597 for annual regressions, 2,388 for the quarterly regression; (6) 594 for annual regressions, 2,376 for the quarterly regression; (7) 563 for the annual regression, no quarterly regressions; (8) 568 for the annual regression, no quarterly regressions; (9) 568 for the annual regressions, 2,272 for the quarterly regression. Panel B reports estimates from regressions that use Graduation rate and Infant mortality rate as the dependent variables. Standard errors clustered by state are reported in parentheses next to the coefficients in Panel A and below the coefficients in Panel B. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

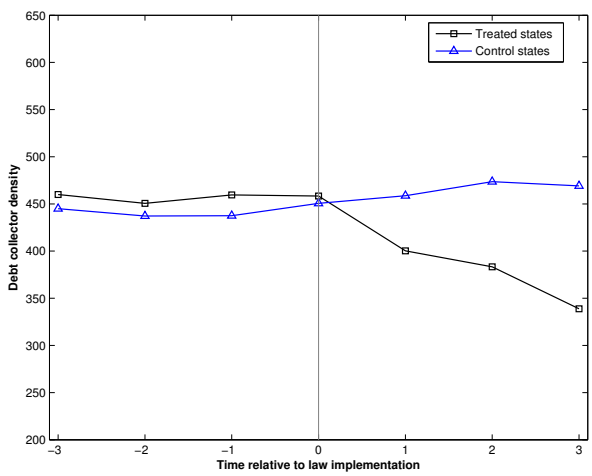
Panel A: Sensitivity to alternative samples and specifications

	Coefficient on the index of state debt collection restrictions when the dependent variable is					
	Debt collector density		Recovery rate		New revolving lines	
Specification	(1)	(2)	(3)	(4)	(5)	(6)
(1) Baseline specification	-68.564***	(23.967)	-1.094**	(0.517)	-2.363**	(0.925)
(2) Incl. state×time trends	-19.995	(24.714)	-1.768**	(0.812)	-2.288**	(0.936)
(3) Excl. 2007–2009	-69.440***	(23.349)	-1.087*	(0.588)	-2.083**	(0.956)
(4) Incl. Delaware and South Dakota	-61.311**	(25.346)	-1.110**	(0.522)	-2.371**	(0.948)
(5) Incl. years in which laws changed	-62.317***	(21.338)	-0.912**	(0.442)	-1.929**	(0.835)
(6) Incl. years with no data on debt coll.	—	—	-1.201**	(0.532)	-2.483**	(0.976)
(7) Excl. credit unions in border counties	—	—	-1.059*	(0.591)	—	—
(8) Use annual freq. for New rev. lines	—	—	—	—	-2.394**	(0.954)
(9) Use placebo law changes	28.825	(23.175)	-0.056	(0.372)	-1.073	(1.303)

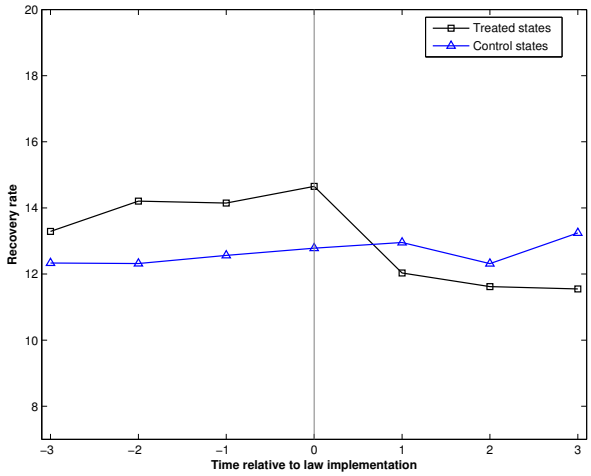
Panel B: Placebo outcomes

	Graduation rate		Infant mortality rate	
Variable	(1)	(2)	(3)	(4)
Index	-1.044	-0.952	-0.147	-0.180
	(0.780)	(0.687)	(0.136)	(0.136)
Control variables	No	Yes	No	Yes
Frequency	Annual	Annual	Annual	Annual
State fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	539	539	478	478
Adjusted R-squared	0.870	0.871	0.872	0.872

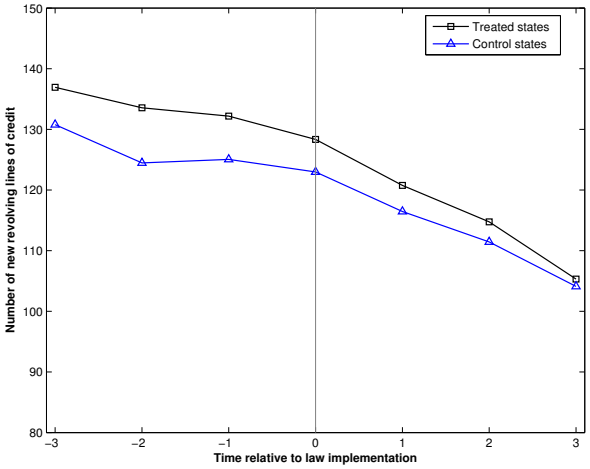
Figure 3: Evolution of outcome variables around tightenings of debt collection laws



(a) Debt collector density



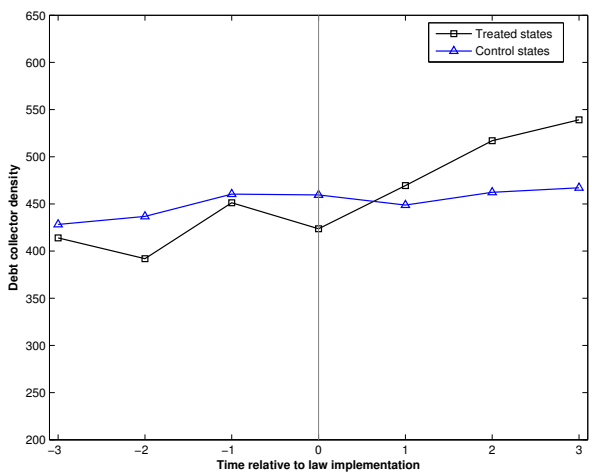
(b) Recovery rate



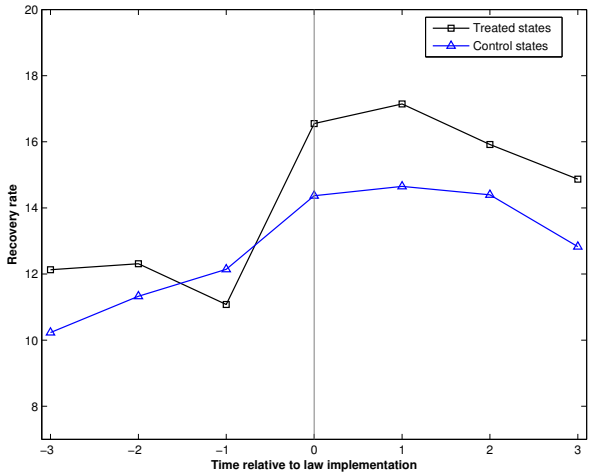
(c) New revolving lines

This figure depicts the evolution of Debt collector density, Recovery rate, and New revolving lines variables three years prior and three years after law changes that tightened debt collection regulations. For treated states, 11 law tightenings that do not overlap with other law changes in the same state and have no missing data in the three years before and three years after the change are included. Twenty-three control states that did not change their debt collection laws during the sample period and have no missing data in the years when treated states changed their laws are included. See text for details. The graphs depict average values of the outcome variables in event time. Vertical lines indicate the date when the law change became effective. Values for treated states are marked with black squares; values for control states are marked with blue triangles.

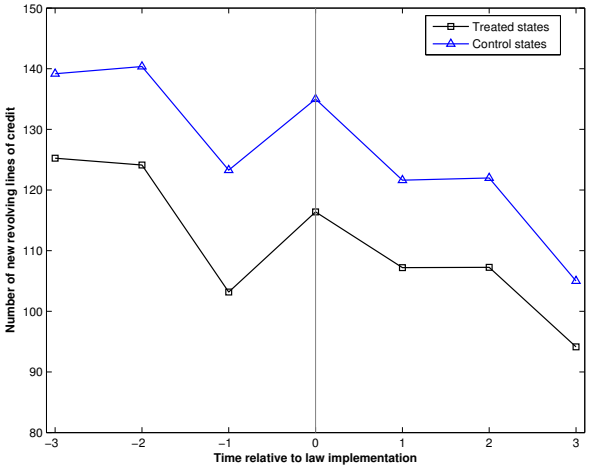
Figure 4: Evolution of outcome variables around loosenings of debt collection laws



(a) Debt collector density



(b) Recovery rate



(c) New revolving lines

This figure depicts the evolution of Debt collector density, Recovery rate, and New revolving lines variables three years prior and three years after law changes that loosened debt collection regulations. For treated states, 2 law loosenings that do not overlap with other law changes in the same state and have no missing data in the three years before and three years after the change are included. Twenty-three control states that did not change their debt collection laws during the sample period and have no missing data in the years when treated states changed their laws are included. See text for details. The graphs depict average values of the outcome variables in event time. Vertical lines indicate the date when the law change became effective. Values for treated states are marked with black squares; values for control states are marked with blue triangles.

Table 6: Sensitivity of the effect of debt collection restrictions to excluding individual states
This table reports regression estimates from the baseline specification presented in columns 2 and 4 of Table 3 and in column 2 of Table 4, after excluding individual states as indicated. All variables are as described in the text and in Table 2. For Debt collector density and Recovery rate, the regressions are estimated using the main annual sample of 568 observations, with Trend Data control variables converted to annual frequency by calculating the average of the four quarterly observations every year. For New revolving lines, the regressions are estimated using the main quarterly sample of 2,272 observations. Columns 1, 3, and 5 report point estimates of the coefficient on the index of state debt collection restrictions. The corresponding standard errors, clustered by state, are reported in parentheses in columns 2, 4, and 6. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Coefficient on the index of state debt collection restrictions when the dependent variable is					
	Debt collector density		Recovery rate		New revolving lines	
Excluded state	(1)	(2)	(3)	(4)	(5)	(6)
Arkansas	-71.261***	(24.172)	-1.108**	(0.524)	-2.576***	(0.950)
Colorado	-62.261**	(25.206)	-1.208**	(0.534)	-2.255**	(0.973)
Connecticut	-69.993***	(25.464)	-1.193**	(0.539)	-2.068**	(0.957)
Florida	-71.647***	(24.880)	-1.181**	(0.531)	-2.750***	(0.882)
Georgia	-66.251***	(24.038)	-1.133**	(0.540)	-2.171**	(0.950)
Hawaii	-70.055***	(23.341)	-1.141**	(0.527)	-2.380**	(0.925)
Idaho	-65.195**	(25.758)	-1.048*	(0.571)	-2.442**	(1.013)
Illinois	-70.150***	(24.529)	-1.124**	(0.538)	-2.613***	(0.932)
Indiana	-70.555***	(24.091)	-1.209**	(0.518)	-2.505**	(0.938)
Louisiana	-76.222***	(24.492)	-0.976*	(0.554)	-2.302**	(1.000)
Maine	-72.056***	(24.759)	-1.063*	(0.538)	-2.077**	(0.911)
Maryland	-66.381**	(24.906)	-0.888*	(0.487)	-2.141**	(0.947)
Minnesota	-59.002**	(23.875)	-0.926*	(0.530)	-1.983**	(0.908)
Nevada	-68.798***	(24.511)	-1.242**	(0.514)	-2.421**	(0.943)
North Carolina	-70.759***	(24.751)	-1.030*	(0.534)	-2.517**	(0.949)
North Dakota	-79.668***	(23.396)	-0.922*	(0.542)	-2.751***	(0.953)
Oregon	-70.733***	(24.457)	-1.106**	(0.542)	-2.265**	(0.965)
Pennsylvania	-70.247***	(23.968)	-1.075**	(0.516)	-2.307**	(0.925)
Rhode Island	-68.924***	(24.075)	-1.038*	(0.521)	-2.285**	(0.928)
Tennessee	-52.630**	(21.150)	-1.383***	(0.467)	-2.468**	(1.017)
Utah	-69.083***	(24.103)	-1.115**	(0.517)	-2.319**	(0.925)
Washington	-68.903***	(24.309)	-1.098**	(0.526)	-2.412**	(0.941)

Table 7: Sensitivity of the effect of debt collection restrictions to excluding individual years
This table reports regression estimates from the baseline specification presented in columns 2 and 4 of Table 3 and in column 2 of Table 4, after excluding individual years as indicated. All variables are as described in the text and in Table 2. For Debt collector density and Recovery rate, the regressions are estimated using the main annual sample of 568 observations, with Trend Data control variables converted to annual frequency by calculating the average of the four quarterly observations every year. For New revolving lines, the regressions are estimated using the main quarterly sample of 2,272 observations. Columns 1, 3, and 5 report point estimates of the coefficient on the index of state debt collection restrictions. The corresponding standard errors, clustered by state, are reported in parentheses in columns 2, 4, and 6. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Coefficient on the index of state debt collection restrictions when the dependent variable is					
	Debt collector density		Recovery rate		New revolving lines	
Excluded year	(1)	(2)	(3)	(4)	(5)	(6)
2000	-74.074***	(26.263)	-1.457***	(0.523)	-2.196**	(0.944)
2001	-64.589**	(25.151)	-1.049**	(0.514)	-2.484**	(0.971)
2002	-61.542**	(24.057)	-1.051*	(0.526)	-2.250**	(0.982)
2003	-64.286***	(22.775)	-1.186**	(0.531)	-2.352**	(0.975)
2004	-67.808***	(23.595)	-1.003*	(0.527)	-2.274**	(0.922)
2005	-71.617***	(25.180)	-0.919*	(0.512)	-2.399**	(0.930)
2006	-69.196***	(24.364)	-0.968**	(0.475)	-2.376**	(0.952)
2007	-72.809***	(24.536)	-1.029*	(0.526)	-2.451**	(0.988)
2008	-68.467***	(23.441)	-1.134**	(0.544)	-2.125**	(0.897)
2009	-64.841***	(23.145)	-1.092**	(0.525)	-2.308**	(0.933)
2010	-66.280**	(24.851)	-1.173**	(0.538)	-2.273**	(0.930)
2011	-73.526***	(25.299)	-1.060*	(0.548)	-2.480***	(0.908)
2012	-74.517***	(23.261)	-1.112*	(0.630)	-2.768***	(0.953)

Table 8: Effect of debt collection restrictions on secured credit

In columns 1 and 2, the dependent variable is the number of new auto loans per 1,000 consumers. In columns 3 and 4, the dependent variable is the number of new mortgage loans per 1,000 consumers. All variables are as described in the text and in Table 2. All regressions are estimated using the main quarterly sample of 2,272 observations. Standard errors clustered by state are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	New auto loans		New mortgage loans	
Variable	(1)	(2)	(3)	(4)
Index	-0.640	-0.441	-0.713	-0.177
	(0.413)	(0.395)	(0.456)	(0.338)
Credit score		0.017		0.124***
		(0.028)		(0.036)
Inquiries		0.001		0.068***
		(0.006)		(0.011)
Unemployment rate		0.120		0.068
		(0.200)		(0.142)
Personal income		0.312***		0.315***
		(0.115)		(0.101)
Income growth		0.023		0.001
		(0.042)		(0.057)
Garnishment		-0.108**		0.054
		(0.044)		(0.044)
Exemption		-0.025		-0.036*
		(0.022)		(0.018)
Frequency	Quarterly	Quarterly	Quarterly	Quarterly
State fixed effects	Yes	Yes	Yes	Yes
Year×quarter fixed effects	Yes	Yes	Yes	Yes
Observations	2,272	2,272	2,272	2,272
Adjusted R-squared	0.794	0.812	0.827	0.873

Appendix A: Variables

Table A.1: Definitions and data sources of variables

Variable	Definition	Source
Index	Index of state debt collection restrictions	State statutes and session laws
Garnishment	Percentage of income exempt from garnishment (%)	State statutes and session laws
Exemption	Real homestead bankruptcy exemption plus real non-home bankruptcy exemption ($10,000)	State statutes and session laws
New revolving lines	Number of new revolving lines of credit, per 1,000 consumers	Trend Data (data item rennc)
New revolving balance	Average real balance (the amount borrowed) of new revolving lines of credit ($)	Trend Data (data item reabn)
New auto loans	Number of new auto loans, per 1,000 consumers	Trend Data (data item bannc)
New mortgage loans	Number of new mortgage loans, per 1,000 consumers	Trend Data (data item mtnnc)
Credit score	Average TransUnion credit score	Trend Data (data item tmmean)
Inquiries	Normalized measure of of credit inquiries provided by TransUnion	Trend Data (data item itoinq180)
Recovery rate	Average recovery rate on charged-off unsecured credit card loans by credit unions (%)	Credit union Call Reports (account 681 divided by account 680)
Interest rate	Average interest rate charged by credit unions on unsecured credit card loans (%)	Credit union Call Reports (account 521)
Debt collector density	Number of third-party debt collectors per 1 million people	County Business Patterns, U.S. Census Bureau
Unemployment rate	Percentage of the labor force that is unemployed (%)	U.S. Bureau of Labor Statistics
Personal income	Real personal income per capita ($1,000)	U.S. Bureau of Economic Analysis
Income growth	Real personal income per capita in a given year minus real personal income per capita in the previous year, all divided by the real personal income per capita in the previous year (%)	U.S. Bureau of Economic Analysis
Graduation rate	High school graduation rate (%)	National Center for Education Statistics
Infant mortality rate	Number of infant deaths per 1,000 live births	Centers for Disease Control and Prevention (National Vital Statistics Reports)

Appendix B: The Debt Collection Process

Creditors turn to third-party debt 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. Such debt collection agencies are termed contingency collectors and do not legally own the debt. Contingency collectors receive a commission proportional to the amount they collect, and the average size of this commission was 28% in 2005.[1] Some debt collection firms purchase debt from original creditors, in which case, they obtain a legal title to the debt and retain all collection revenues they can generate on that debt. This activity is termed debt buying. Generally, creditors sell accounts to debt buyers after having tried (unsuccessfully) to collect on these accounts on their own and after hiring contingent debt collectors. This is reflected in the prices of the debt being sold, which average 4 cents on the dollar.[2]

The collection process is a human-intensive effort that requires debt collectors to constantly communicate with borrowers. This communication is usually established over the telephone and by mail. Sometimes collection may require face-to-face contact, but such cases are not common. Effective debt collection requires debt collectors to be familiar with the economic circumstances of the borrower, which is one of the reasons why the debt collection industry is geographically disperse and consists mostly of small firms, with 90% of debt collection firms having fewer than 50 employees.[3] The overall size of the debt collection industry, however, is significant. According to the latest industry survey available, the total amount collected in 2013 was $55.2 billion, $10.4 billion (or 19%) of which was retained as

[1]Source: Collecting Consumer Debts: The Challenges of Change. Workshop Report, Washington: Federal Trade Commission, February 2009, p.3.

[2]Source: The Structure and Practices of the Debt Buying Industry. Staff Report, Washington: Federal Trade Commission, January 2013, Table B1.

[3]Source: U.S. Census Bureau, Economic Census, 2007.

commissions.[4] As of March 2012, the industry employed 129,392 debt collectors.[5]

Debt collectors play an active role in retail credit markets by enforcing consumer credit contracts (primarily unsecured credit).[6] 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.[7] Further, third-party debt collectors generate more consumer complaints than any other industry. The Federal Trade Commission, which tracks consumer complaints, received 108,997 complaints about third-party debt collectors in 2010,[8] which represents 21% of all complaints received directly from consumers in 2010.[9] The amount of civil litigation against debt collectors is also significant. In 2009, there were 10,128 lawsuits filed by consumers against debt collection agencies,[10] which represents 5.4% of 185,900 original civil cases filed in the U.S. District Courts in 2009.[11] Thus, debt collectors are a visible presence in the lives of American households.

Debt collectors' compensation is customarily tied to the amount of collections they generate. Therefore, they have incentives to be persistent.[12] 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

[4]Source: The Impact of Third-Party Debt Collection on the National and State Economies. Technical Report, Ernst & Young, 2014. The 19% retained as commissions in 2013 is lower than the average commission rate of 28% reported in 2005, possibly due to the effects of the financial crisis.

[5]Source: U.S. Census Bureau, Economic Census, 2012.

[6]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.

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

[8]Note that while the Federal Trade Commission was administering consumer debt collection complaints during the sample period, the Dodd-Frank Wall Street Reform and Consumer Protection Act transferred this responsibility to the Consumer Financial Protection Bureau, which began accepting and compiling consumer debt collection complaints in July 2013.

[9]Source: Federal Trade Commission. Annual Report 2011: Fair Debt Collection Practices Act. Report to Congress, Washington: Federal Trade Commission, March 2011.

[10]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.

[11]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.

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

in the debt collection community.[13] Collection agencies are sued regularly by state attorneys general,[14] and those lawsuits bring high uncertainty owing to the potentially large penalties that can be imposed. In one 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 mental anguish damages. The initial debt that the agency was trying to collect was only $200.[15]

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:[16]

- 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;

[13] InsideARM.com, a leading online 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.

[14] Former New York attorney general (and now Governor of New York) 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.

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

[16] The information in the bulleted list comes from the 1992 Congressional Hearings, and it may be the case that industry practices have changed since then.

- 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; and
- Encouraging women to engage in prostitution and men to sell drugs to pay off a debt.[17]

It is therefore likely that debt collection regulations are binding, at least for some debt collectors.

[17]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, 102nd Congress, second session, September 10, 1992. Washington: U.S. Government Printing Office, 1993.

Appendix C: Changes in State Debt Collection Laws

I use three sources to identify the statutes that regulate third-party debt collection in each state: 1) the National Consumer Law Center's publication *Fair Debt Collection* (various years), 2) the 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 that introduced or amended those statutes. 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 affect particular statutes. For the remaining states, the list of relevant laws was obtained either by keyword search on the websites of those states' legislatures or via LexisNexis (whenever LexisNexis provides references to the legislative history).

The text of state session laws that introduced changes in debt collection regulations was obtained either from the websites of state legislatures or from the HeinOnline database. Technical changes such as renamings were discarded, with all remaining changes codified into the index of debt collection restrictions described previously. A brief summary of these changes is presented here.

1. ARKANSAS: 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: 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. 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: 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. 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: 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. Effective October 1, 2010, Florida increased administrative fines for debt collection violations from $1,000 in total to $10,000 per violation; it also added a requirement that debt collectors maintain records and present them to the office of financial regulation and authorized the attorney general to take action against debt collectors for violations involving debt collection.

5. GEORGIA: Effective May 1, 2004, Georgia explicitly authorized class action lawsuits against unlicensed debt collection activity.

6. HAWAII: 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: 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). 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 $1,000 to $2,500, and the director's authority to bring an action to enjoin certain violations was extended. Effective July 1, 2008, Idaho instituted licensing requirements and revised the 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: 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: 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: Effective June 22, 2006, Louisiana clarified that debts assigned to a debt collection agency 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: Effective February 22, 2006, Maine exempted licensed attorneys from bonding and licensing requirements for debt collection agencies. Effective June 3, 2009, and September 12, 2009 (via two separate bills), Maine increased license fees from $400 to

$600, instituted some additional fees, and specified that debt collectors cannot bring legal action in court unless represented by an attorney or unless the debt collector is an attorney.

12. MARYLAND: 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 the debt collection agency itself was covered). Further, the reasons for revoking a license were expanded.

13. MINNESOTA: 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. 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: 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. Effective June 13, 2007, Nevada specified a procedure for debt verification that requires debt collection agencies to send certain documents to the debtor 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 that the Commissioner of Financial Institutions was authorized to charge was eliminated (the upper bound had been $600 prior to this change).

15. NORTH CAROLINA: 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. Effective August 15, 2009, and October 1, 2009 (via three separate bills), North Carolina increased license application fees from $500 to $1,000, 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: 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 to felonies. 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: Effective October 23, 1999, Oregon made violations of debt collection laws a criminal offense. Effective January 1, 2006, Oregon authorized the Director of the Department of Consumer and Business Services to conduct investigations into debt collection violations and to serve orders.

18. PENNSYLVANIA: 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: 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: Effective July 1, 2004, Tennessee allowed collection agencies to take assignments of debts and to sue in their own name and specified procedural requirements as to how such suits can be initiated.

21. UTAH: Effective March 18, 1999, Utah introduced registration and registration fees for debt collection agencies.

22. WASHINGTON: 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.