# The Real Effects of Financial Technology: Marketplace Lending and Personal Bankruptcy*

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**ABSTRACT**

We examine how financial technology affects household hardship in terms of personal bankruptcy. We exploit an exogenous source of variation in marketplace lending, a court verdict that renders any above-usury loans issued by banks to Connecticut and New York residents null and void if the loans are sold outright to non-banks. We document a persistent rise in personal bankruptcies following the verdict and a severe decline in marketplace lending, particularly among low-income households. Marketplace loan defaults and consumer credit by banks and finance companies remain unaffected, suggesting that increases in personal bankruptcy arise principally from reversing access to new lending technology.

JEL Codes: D14, G21, G23.

Keywords: *Credit supply, marketplace lending, alternative finance, financial technology, bankruptcy.*

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## I. INTRODUCTION

The start of the 21st century has been marked by the rise of new financial technology (fintech), ranging from online banking and mobile payments to distributed ledger technology and marketplace lending. The technological advancements make it easier to control finances, provide alternative payment instruments and enhance access to funding. However, little is known about the potential risks and benefits of these new technologies in terms of affecting household financial health. There is a concern that increasing the availability of credit will push individuals to over-indebtedness, default and bankruptcy. In this paper, we investigate the effect of new financial technology on personal bankruptcy focusing on a relatively new type of credit, marketplace loans.

A marketplace loan is a form of fixed-rate unsecured consumer debt issued by an online lending platform connecting borrowers with investors. Investors supply funds directly to borrowers via the platform. Alternatively marketplace lenders may partner with a bank to originate loans.[1] As of 2017, $21 billion in marketplace loans are outstanding in the U.S.[2] Marketplace loans are predominantly used for debt consolidation, small businesses, mortgage and education financing, as well as medical expenses, and are an important source of funds to previously credit rationed borrowers (De Roure, Pelizzon, and Tasca, 2016; Jagtiani and Lemieux, 2017; Schweitzer and Barkley, 2017). Marketplace credit is granted more quickly than traditional forms of finance (Fuster, Plosser, Schnabl and Vickery, 2018) and on average marketplace borrowers enjoy a lower cost of debt refinancing, particularly credit card debt (Balyuk, 2017).

Fintech lending offers potential benefits and risks for households in terms of affecting personal bankruptcy. Increasing credit card borrowing, as well as unforeseen income shocks and medical bills, are among the main determinants of personal bankruptcy (Domowitz and Sartain, 1999; White, 2007; Gross and Notowidigdo, 2011). To the extent that individuals prefer to avoid bankruptcy, rather than default strategically to discharge debt, marketplace lending has the potential to lower debt refinancing costs and provide households with liquidity in the face of income or expenses shocks, thus reducing the incidence of bankruptcy. However, the rapid expansion of marketplace credit, on the other hand, may increase the number of bankruptcy cases by increasing consumer debt (Gross and Souleles, 2002; Fay, Hurst, and White, 2002; Dick and Lehnert, 2010; Livshits, Macgee and Tertilt, 2007, 2010, 2016). Besides marketplace lending possibly throwing borrowers into a debt-trap of over-borrowing, the concern is that marketplace loans worsen the risk-composition of borrowers by providing credit to less credit-worthy households (Jagtiani and Lemieux, 2017).

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1. Upon receiving a loan application from the platform, the fronting bank originates the loan and sells it to the platform. Marketplace platforms finance the loan purchase by selling notes to investors who pledged to fund the loan.

2. Cambridge Centre for Alternative Finance (CCFAF, 2017) report available at https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/hitting-stride/, Federal Reserve G19 (2017) and TransUnion Industry Insights Report, Q4 2017, https://newsroom.transunion.com/consumer-credit-market-concludes-2017-on-a-high-note/.

To empirically test the *ex-ante* ambiguous relationship between marketplace lending and personal bankruptcy, we exploit the decision by the U.S. Second Circuit Court of Appeals in the case of *Madden vs Midland Funding LLC* (*Madden*). In May 2015, the court, whose jurisdiction covers Connecticut, Vermont and New York, ruled that loans originated to borrowers in those states with an interest rate above the borrower's state usury limit are null and void if the loans are held by non-bank financial institutions. While the case was unrelated to marketplace lending, it cast doubt on the enforceability of marketplace loans as the majority of these loans are originated by a fronting bank and immediately sold to marketplace platforms, which are non-bank financial institutions under current OCC rules.[3] The verdict primarily affected marketplace lending, as opposed to other non-bank and bank lending, as the court noted the limited scope and reach of its verdict. *Madden* only applies if a bank issues and immediately assigns a loan – an outright debt sale – to a non-bank and, ex-post loan assignment, the loan's interest rate is raised beyond the borrower's state usury limit and if the bank retains no ongoing economic interest in the loan. This is reflected in rating agency and industry reports, and legal briefs which singularly concentrated on *Madden*'s effect on marketplace lending.[4]

We identify the effect of marketplace lending on bankruptcy filing using difference-in-difference estimations. We compare changes in bankruptcy filings and marketplace lending in the treatment (Connecticut and New York) and control group (all other states), before and after the treatment event.[5]

We find that *Madden* triggers Lending Club and Prosper, the two largest U.S. marketplace lenders, to reduce lending in the states affected by the verdict. Consistent with classical price theory, the interest rate controls imposed by *Madden* result in credit rationing. Our treatment event thereby provides a quasi-natural experiment allowing us to derive novel insights into how price controls affect credit supply in financial markets augmented by new lending technology. The number of marketplace loans declines by 13.4%, a reduction from 900 to 780 marketplace loans for an average state. Marketplace lending volume per month declines by 10%, a reduction from $13 million to $11.7 million for the average state. Credit rationing intensifies in line with borrower credit risk. Loans with the best credit risk are left unaffected, while lending to the most risky borrowers falls by most.

Using monthly data from the U.S. Courts Administrative Office, we show that there are 8% more personal bankruptcy filings in Connecticut and New York relative to other states following *Madden*. In absolute terms, bankruptcy filings increase on average from 1,573 to 1,698 cases. While the magnitude of this result is smaller than estimates by related studies (Dick and Lehnert, 2010; Morgan, Strain and Seblani, 2012) the effect is economically significant.

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3. The Office of the Comptroller of the Currency (OCC) is considering special purpose bank charters for fintech lenders: https://www.occ.gov/topics/responsible-innovation/comments/special-purpose-national-bank-charters-for-fintech.pdf.

4. Fitch, "Challenges Linger as U.S. Marketplace Lending ABS Rises," Reuters, (Sep. 10, 2015); Moody's, "Denial of Madden appeal credit negative for marketplace loans and related ABS," Moody's Investor Service, (June 30, 2016); Jones Day, "Secondary Loan Markets Post-Madden: Solving Secondary Market Sales and Liquidity Issues," (Nov.1, 2016).

5. Above-usury loans extended to borrowers in Vermont, where only the interest in excess of the state usury limit is void, are treated differently from loans to borrowers in Connecticut and New York, where the complete interest and loan principal are void. The treatment group thus includes Connecticut and New York to preserve treatment group homogeneity.

We attribute the increase in the incidence of personal bankruptcy following *Madden* to the reduction in marketplace lending. This hypothesis is supported by a number of further results.

First, we find that the rise in personal bankruptcy is proportional to the reduction in marketplace lending across income groups. While high-income households neither experience marketplace credit rationing nor a hike in bankruptcy cases, low-income households experience the most severe rationing of marketplace credit (64%) and the largest rise in personal bankruptcy (8.5%) following the verdict.

Second, we observe an economically and statistically significant decline in marketplace loans for medical cost and debt refinancing, including for refinancing credit card debt. Medical expenses are known to be an important determinant of personal bankruptcy, particularly for low-income households (Gross and Notowidigdo, 2011) and, at the margin, the cost of high credit card debt is the single largest factor contributing to bankruptcy (Domowitz and Sartain, 1999). Our findings suggest that the reduction in marketplace credit for medical expenses and debt refinancing are key channels via which the rationing of marketplace credit increases personal bankruptcy filings.

Third, we strongly reject plausible alternative explanations for the increase in bankruptcy following *Madden* other than the reduction in marketplace lending. We document that the volume of lending by banks and other non-bank lenders is left unaffected by *Madden.* This formally confirms the point raised above that the consequences of *Madden* are limited to the enforceability of marketplace loans and suggest that the increase in bankruptcy rates following *Madden* arises predominantly from changes in marketplace lending. Further, we show that the estimated effect of *Madden* on precipitating bankruptcy is robust to controlling for a wide variety of consumer credit, including (i) credit card lending from banks, bankcard companies, national credit card companies, credit unions as well as savings and loan associations, (ii) student loans from banks, credit unions and other financial institutions and federal and state governments, as well as (iii) auto loans from banks, credit unions, savings and loan associations, as well as automobile dealers and automobile financing companies.

We also rule out that the increase in bankruptcy is due to borrowers switching to forms of high-interest credit, such as payday loans, which, next to credit card debt, are strongly associated with household hardship. We exploit the fact that payday lending is illegal in New York but permitted in Connecticut. If the rise in bankruptcies were due to payday lending, the increase in bankruptcy would be higher in Connecticut where payday lending is legal. However, we observe a larger increase in bankruptcy filings in New York.

Finally, we rule out that the rise in bankruptcy following the verdict could be the result of an increase in defaults by marketplace borrowers in the affected states. This may occur if marketplace borrowers are over-indebted and default after being unable to obtain additional marketplace loans in the affected states. If this were the case, *Madden* constraining the high-risk above-usury segment of the marketplace lending industry would have positive welfare effects. Yet, we find that *Madden* leaves the number of non-performing marketplace loans unaffected, suggesting that existing marketplace borrowers are not contributing to the rise in bankruptcy following the treatment event.

In sum, our findings suggest that restrictions on marketplace lending have adverse welfare effects in terms of raising the incidence of personal bankruptcy. Moreover, we document that bankruptcy filings remain persistently higher in the affected states instead of being merely a temporary adjustment of households in response to the abrupt compression of marketplace lending.

Our estimation model controls for a variety of factors affecting marketplace lending and personal bankruptcy filings, including marketplace loan demand and macroeconomic conditions, as well as any unobserved differences over time and across states. The results hold across an array of econometric specifications, variable and treatment group definitions, as well as being robust to alternative clustering and bootstrapping of standard errors, and matched sampling. Importantly, we control for access to other forms of non-bank lending besides marketplace lending, such as payday loans, and the availability of other consumer credit, including credit card loans.

Bankruptcy is important and affects households' welfare. Following bankruptcy, an individual's credit record is tarnished for up to ten years, leading to difficulties with borrowing, renting housing and finding employment (Han and Li, 2011). Even when a filing is unsuccessful, bankruptcy depresses annual earnings and increases rates of foreclosure and individual mortality (Dobbie and Song, 2015). Aside from households, there are large macroeconomics costs. 750,000 people in the U.S. filed for bankruptcy in 2016. This wiped out $118 billion in debt and makes bankruptcy more costly in per capita terms than health insurance (Mahoney, 2015; Fisher, 2017).[6] Credit losses impose costs on taxpayers, given that bankruptcy-related losses are tax-deductible[7], and on future borrowers by raising risk-adjusted interest rates (Gropp, Scholz, and White, 1997; Berkowitz and White, 2004).

We contribute to a pressing policy debate about the effects of fintech lending. While *Madden* only directly applies to New York, Connecticut, and Vermont, other districts, such as Colorado, may follow the reasoning of the verdict.[8] Legislative efforts seek to overrule the *Madden* verdict. The H.R.3299 bill pending currently in the U.S. Senate argues that the ruling led to a "lack of access to safe and affordable financial services" for the poorest households.[9] Our study provides detailed material evidence to inform this claim.[10] Our findings moreover suggest that, in the absence of a clear regulatory framework for fintech lending, the verdict also had the unintended consequence of raising personal bankruptcies. Understanding the real effects of financial technology helps to inform the intense regulatory deliberations on the wider fintech industry currently taking place at the OCC, FDIC, Federal Reserve, Treasury, and the Basel Committee on Banking Supervision.

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6. US Courts, 2016 Report of Statistics Required by the *Bankruptcy Abuse Prevention and Consumer Protection Act of 2005*, http://www.uscourts.gov/statistics-reports/bapcpa-report-2016.

7. Congressional Budget Office, Personal Bankruptcy: A Literature Review, https://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/24xx/doc2421/bankruptcy.pdf.

8. See the action brought by Colorado's Attorney General in defence of the state's Uniform Consumer Credit Code against other major non-bank online lenders in *Mead v. Marlette Funding LLC* and *Mead v. Avant of Colorado LLC*.

9. H.R.3299 Act, https://www.congress.gov/bill/115th-congress/house-bill/3299.

10. It is beyond the scope of this paper to comment on the efficacy of the bill as a regulatory response to *Madden*.

Our research builds on and substantially extends Rigbi (2013) and Honigsberg, Jackson and Squire (2018) who offer a preliminary analysis of marketplace lending restrictions complementary to this paper. We depart from these papers by analyzing how marketplace credit availability affects household welfare. Honigsberg et al. (2018) show using regression models how the verdict affects secondary-market trading prices, borrower quality, loan default probability and marketplace *loan size*. Yet Honigsberg et al. (2018) do not provide an econometric analysis of how the verdict affects the *number* and *total volume* of marketplace loans which we supply.[11]

Our paper offers an econometrically robust analysis of how *Madden* affects the number and volume of marketplace credit, in addition to being the first study of marketplace lending's impact on personal bankruptcy. Showing that marketplace lending seems to have an impact on household welfare that is qualitatively different from other forms of unsecured consumer lending, this paper adds to the burgeoning literature on the effects of traditional and alternative finance on economic hardship. We find that marketplace lending seems to be inversely related to personal bankruptcy, in contrast to other forms of consumer credit, including bank credit (Dick and Lehnert, 2010), credit card debt (Domowitz and Sartain, 1999; Gross and Souleles, 2002; Fay, Hurst, and White, 2002; and Livshits, Macgee and Tertilt, 2016) and payday loans.[12] We also contribute to the promising but still nascent literature on the effects of technological progress in financial markets (Livshits, Macgee and Tertilt, 2010; Athreya et al., 2012; Einav, Jenkins, and Levin, 2012; Narajabad, 2012; and Drozd and Serrano-Paul, 2017). Similar to our paper, the prior literature focuses on credit markets, given the industry's intense use of information technology.

In further contrast to prior work, our study focuses on marketplace lending, which differs from other forms of alternative finance and traditional consumer credit. Relative to credit card debt, marketplace platforms allow for more in-depth screening (Fuster, Plosser, Schnabl and Vickery, 2018) and, relative to payday loans, marketplace loans tend to carry lower interest rates. Our finding that marketplace lending helps lower personal bankruptcies among low-income households provides empirical evidence for theoretical models (Vallee and Zeng, 2018) showing that the technology behind marketplace lending may improve the efficiency of financial intermediation. While our paper suggests that the lending technology associated with marketplace credit may have some positive welfare effects compared with other forms of costly credit, how marketplace lending affects household hardship along other dimensions, aside from bankruptcy, is left for future research.

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11. Honigsberg et al. (2018) present histograms graphically depicting the number of loans provided to borrowers in the affected states before and after *Madden* but aside from histograms do not provide an econometric analysis of this issue.

12. The adverse effects of costly credit range from more checking account overdrafts (Zinman, 2010), involuntary bank account closure (Campbell, Tufano and Martinez-Jerez, 2012), poor job performance (Carell and Zinman, 2014), late bills for mortgages, rent and utilities (Melzer, 2011), missed child support payments and food stamp use (Melzer, forthcoming). Carter and Skimmyhorn (2017) dispute Carell and Zinman (2014). Few studies find positive effects which are often limited to developing countries or natural disasters. See Karlan and Zinman (2010), Morse (2011) and Dobridge (2018).

The following section discusses the institutional setting. Section III develops testable hypotheses. Section IV covers the data and empirical strategy. Section V presents results and Section VI offers concluding remarks.

## II. BACKGROUND: PERSONAL BANKRUPTCY, USURY LAWS, MARKETPLACE LENDING AND THE *MADDEN* COURT CASE

This section discusses the institutional background covering the bankruptcy code (Section A), relevant usury laws (Section B), and the marketplace lending industry in the U.S. (Section C) as well as details of the *Madden* court case (Section D).

### *II.A. Personal Bankruptcy in the U.S.*

Filing for bankruptcy allows a household to discharge debt, either immediately or over time with a repayment plan. A debtor starts the process by filing with a bankruptcy court.

There are different chapters (7, 11, 12 or 13) that can be filed for in the U.S.[13] Chapter 7 wipes out the dischargeable debt after any non-exempt assets have been sold. However, many creditors filing under this chapter do not have any or little non-exempt property. Under Chapter 13 the borrower agrees with the debtor to a repayment plan that restructures the debt, typically over three to five years. Chapter 13 wipes out more debt than a Chapter 7 filing. Similar to Ch.13, Chapter 11 allows individuals to restructure their debt, but debtors are not required to turn over their disposable income as is required under Ch. 13. Bankruptcy cases under Ch. 11 are substantially more complex and expensive than Ch. 7 and Ch. 13 cases and are usually filed by corporates rather than individuals or personal businesses. Chapter 12 allows certain agricultural businesses, such as farmers and commercial fishermen, to file for personal business bankruptcy.

Bankruptcy filings in the U.S. in recent years have been in decline. 97% of cases are consumer filings and, prior to 2014, there were generally over 1 million consumer bankruptcies per year, two-thirds of which filed under Ch. 7. Since 2014, the number of filings has steadily fallen to about 750,000 per year by the end of 2017, a low last seen in 1994. Personal business bankruptcies have also fallen and now there are about 25,000 business filings per year, down from about 45,000 filings per year prior to 2014.[14] The nationwide trend is also reflected in the decline in personal bankruptcies in the states affected by *Madden*. In this paper we examine if placing restrictions on marketplace lending is contributing to or hindering the downward trend in the number of bankruptcy filings in the affected states relative to the states left unaffected by *Madden*.

13. US Courts Basics: www.uscourts.gov/services-forms/bankruptcy/bankruptcy-basics/process-bankruptcy-basics.
14. American Bankruptcy Institute (2018): https://www.abi.org/newsroom/bankruptcy-statistics.

*II.B. Usury Laws in the U.S.*

The Code of Laws of the United States states that for national banks the interest rate on a loan deemed usurious is forfeited. If some of the interest has already been paid, the borrower can recover up to twice the amount of the above-usury interest. According to U.S. Code 12 §86, the usury limit for loans originated by national banks is determined by the "interest at the rate allowed by the laws of the State, Territory, or District where the bank is located."[15]

Usury limits and penalties vary by state, borrower type, and loan term.[16] Some states like Utah have no usury limit, while others have high interest caps and harsh penalties. In New York, any loan carrying an interest exceeding 16% constitutes civil usury, and loans surpassing 25% of interest are considered criminal usury, a class E felony. The owner of a usurious loan in New York forfeits any interest as well as the complete principal of the loan.[17]

Usury laws in the U.S. have evolved over time. Starting in 1833, the idea was established that a loan is *valid when made*, i.e. a non-usurious loan cannot be made usurious by a subsequent transaction. In addition, the 1863 National Bank Act included the *federal pre-emption* doctrine meaning that federal laws trump state usury laws for state-chartered and national banks. Subsequently, in the first half of the 20th century, the Russell Sage Foundation engaged in an effort to improve credit conditions for poorer households and advocated the adoption of Uniform Small Loan Laws (USLL) which allows lenders to charge interest rates exceeding the state usury limit if the lenders obtain relevant state licenses. The USLL are credited with establishing the focal 36% as the maximum APR still found today on many types of loans, including marketplace loans (Saunders, 2013). Subsequently, a momentous decision by the Supreme Court in *Marquette National Bank v. First of Omaha Serv. Corp* in 1978 confirmed that national banks can charge interest up to the rate in which the bank is headquartered, irrespective of borrower's state of residence. Combined with advances in information technology and credit scoring models, this proved to be a fillip for the emergence of a nationwide credit card industry and secondary debt markets in the 1980s (Staten, 2008).

In the 21st century, the permissive legal environment combined with the Internet and ever more widespread ICT adoption among U.S. households in the 2000s paved the way for the rise of new financial technologies, including marketplace lending. In the early stage of the industry, online lenders were observing the usury laws of borrowers' states of residence. But platforms thereafter decided to let the overall interest rate cap for marketplace loans approach 36 percent, irrespective of a borrower's home state usury limit (Rigbi, 2013).[18] Lending Club and Prosper achieved this by partnering with WebBank, an FDIC-insured bank chartered in a state with no usury ceiling. When the

15. US Code (2018) http://uscode.house.gov/browse/prelim@title12/chapter2/subchapter4&edition=prelim.
16. The discussion is based on Marvin (2016).
17. N.Y. Penal Law 190.40. New York State Senate, https://www.nysenate.gov/legislation/laws/PEN/190.40.
18. Lending Club went national in December 2007. Prosper started offering 36% loans to borrowers in all states, except Texas, from April 2008.

partnering bank receives a loan application for instance from Lending Club, the bank originates the loan and sells it to the lending platform which then sells notes to investors pledging to fund the loan. This model allows marketplace lending platforms to 'export' the no-usury limit of Utah, WebBank's home state, to borrowers residing in virtually any state in the U.S. by relying on the aforementioned federal pre-emption of state usury laws and the valid-when-made doctrine.

However, in May 2015, the verdict in *Madden vs. Midland Funding LLC*, a court case not directly related to the marketplace industry at all, precipitously cast doubt upon the enforceability of above-usury marketplace loans issued to borrowers in Connecticut and New York, thereby threatening the loan origination model of marketplace lenders.

*II.C. Marketplace Lending in the U.S.*

The growth of the marketplace lending industry has been rapid.[19] Within five years, Lending Club, the largest platform in the U.S., rose from holding a 1% share of all outstanding personal loan balances in 2012 to issuing one of every ten personal loans in 2017.[20] The industry has evolved from peer-to-peer lending into what is now described as 'marketplace lending'. Self-directed retail investors have come to play a small role in the provision of funds for these platforms relative to institutional investors such as banks, asset managers, insurance companies, hedge funds and other large non-bank investors.[21] While there is a large number of marketplace platforms, the two largest platforms, Lending Club and Prosper hold a significant market share, with Lending Club accounting for 45% of all marketplace lending in the U.S in 2017. Although it is based entirely online, the industry is still heavily geographically concentrated and most of the alternative financing comes from investors in and goes to borrowers residing in California, New York and Texas (CCFAF, 2017).

To obtain a marketplace loan, a borrower makes a proposal for a loan by posting a listing, indicating the purpose and amount of the loan and the feasible maximum interest rate, besides providing other application information to the platform. Investors choose which proposals to fund and whether to fund a portion or the full amount requested. Once sufficiently funded, the loan is originated. Interest rates ranges between 5.8%–36% and loans are amortized via monthly payments over 3–5 years. Lending Club's personal loans range up to $40,000 and Proper's range between $2,000–$35,000. Marketplace borrowers have on average $62,000 in annual income.[22] The speed, automation and sophistication of fintech credit scoring models as well as the use of alternative information normally ignored by traditional lenders, makes marketplace lending an innovative financial technology.

19. See aforementioned CCFAF (2017), Federal Reserve G19 (2017) and TransUnion (2017).
20. Lending Club, Investor Day Presentation (2017), http://ir.lendingclub.com/Cache/1001230258.pdf.
21. Lending Club, ibid.
22. Lending Club, ibid.

When lending through marketplace platforms takes the form of a traditional peer-to-peer (P2P) transaction, the investors directly supply the funds to borrowers via the lending platform. However, the common model of the largest platforms is to co-operate with a fronting bank in facilitating loans. The bank issues the loan to the borrower but immediately sells and assigns the loan to the lending platform, which permanently retains ownership of the debt. The price is the loan's principal amount. In a separate second transaction, the marketplace platform receives the principal of the loan from the investors that selected to fund the loan. Innovative in this origination process is the creation not of a single but of two promissory notes: first, the liability between the borrowers and the marketplace platform and, second, the liability between the marketplace platform and the investors funding the loan (Mason, 2016). Investors financing the loan become creditors of the marketplace platform. The fronting bank has no obligation to the loan's investors. In case of delinquency or default, as the owner of the loan, the marketplace platform is responsible for any necessary debt collection (Verstein, 2012).

*II.D. Treatment Event: Madden vs. Midland Funding LLC*

The marketplace lending model came under scrutiny when *Madden* suddenly raised the question whether the marketplace platform, instead of the fronting bank, is the 'true lender'. The treatment event poses the issue whether marketplace lenders, by partnering with a bank in a state with no usury laws, may rely on the federal preemption of state usury laws, which under the *National Bank Act* and the subsequent *Federal Deposit Insurance Act* has been reserved for national and state-charted banks, including their agents and subsidiaries.[23] The marketplace lenders became vulnerable to regulatory action as well as private civil litigation, as evinced by *Madden*.

The following describes the sequence of events relating to the court case *Madden vs. Midland Funding LLC*, the treatment event.[24]

In 2005, Ms. Saliha Madden, a New York resident, opened a credit card account with Bank of America (BoA). Ms. Madden accrued debt using the card for purchases. In the following year, BoA, a national bank headquartered in North Dakota, sold its credit-card program to FIA Card Services N.A. (FIA), a national bank in Delaware. Alongside the transfer came an amendment in the loan terms, as allowed for in the terms and conditions of the credit card agreement, determining Delaware as the jurisdiction to be applied in case of a lawsuit. In 2008 Ms. Madden became delinquent on the loan payments. FIA considered the debt to be uncollectable. It charged off Madden's debt and sold it to Midland Funding LLC (Midland), one of the US's largest purchases of unresolved consumer debt.[25]

Neither Midland nor the affiliated Midland Funding Credit Management Inc. are chartered national banks, unlike Bank of America and FIA. In November 2010, Midland attempted to collect payments from Ms. Madden at 27 percent interest as permitted by Delaware usury law. In response

23. Under the FDIC Act, state-chartered banks enjoy the same federal pre-emption as national banks under the NBA.
24. The exposition is based on Mason (2016), Marvin (2017), and Honigsberg, Jackson and Squire (2018).
25. Midland (2018) https://www.midlandcreditonline.com/who-is-mcm/midland-credit-management-real-company/.

Ms. Madden filed a lawsuit against Midland alleging in the ensuing 2011 class-action suit that the debt collector violated New York's criminal usury law prohibiting interest rates exceeding 25 percent. Midland objected maintaining that 27 percent can be charged as the loan was obtained from a national bank (FIA) in Delaware which permits such an interest rate. In September 2013, the *District Court for Southern New York* ruled in favor of Midland based on the National Bank Act's preemption of federal law over state usury laws for national banks. The court held that 27 percent was permitted as the loan was governed by the usury laws in Delaware, the state where the bank from which Midland bought the loan, is chartered.

In May 2015, however, after Ms. Madden filed an appeal against the initial decision by the lower New York district court, the U.S. *Court of Appeals for the Second Circuit*, which covers all of New York, Connecticut and Vermont, ruled in favor of Ms. Madden. The ruling reversed the earlier decision by the lower court. The court held that the borrower's state usury laws cannot be circumvented in this case because Midland, the debt collector:

> *"neither is a national bank nor a subsidiary or agent of a national bank or is otherwise acting on behalf of a national bank, and because application of [New York's] state law on which Madden's claim relies would not significantly interfere with any national bank's ability to exercise its powers under the National Bank Act."*[26]

In other words, the *Madden* ruling indicates that exemption from state usury laws enjoyed by national banks and their subsidiaries no longer applies to loans once they are sold to non-bank financial institutions. Interest and principal of such loans are null and void in New York and Connecticut, while in Vermont only the interest above the usury level is to be considered null. While *Madden* did not relate to marketplace lending directly, the decision has created legal uncertainty about the enforceability of any marketplace loans whose interest rate exceeds the usury limit in New York, Connecticut and Vermont. That is because the loan origination model behind marketplace platforms consists in loans being facilitated by a bank but immediately sold outright to marketplace platforms, which are currently designated as non-bank financial institutions by the OCC.

We focus on the rationing of marketplace lending, as opposed to other forms of non-bank lending as well as bank lending, as the transmission channel via which *Madden* affects personal bankruptcies. The reason is that the effect of the *Madden v Midland Funding LLC* case is limited to a specific set of loans. In reaching its verdict, the Second Circuit court noted the scope and reach of its decision by distinguishing its case from three separate previous legal precedents (Jones Day, 2016). First, any revolving loans, such as credit cards, in which the bank retains an interest is left unaffected by *Madden* (see *Krispin v May*). Second, *Madden* does not apply to any closed-end loans, such as mortgages, if the bank charges the interest rate (see *Phipps v FDIC*). Third, *Madden* does not affect

26. Case at https://cases.justia.com/federal/appellate-courts/ca2/14-2131/14-2131-2015-05-22.pdf?ts=1432305005.

any loans where the non-bank acts as the agent or subsidiary of a national or state chartered bank (see *FDIC. v. Lattimore Land Corp*). In other words, *Madden* only applies if a bank issues and immediately assigns a loan – an outright debt sale – to a non-bank and if the bank retains no ongoing economic interest in the loan, and when the loan's interest rate is raised beyond the usury limit of the borrower *ex-post* loan assignment. In other words, in the view of expert legal opinion by Horn and Hall (2017), "*Madden* should have no material relevance to […] banks and loan originators and servicers that work in cooperation with one another on loan origination and servicing activities." This is also reflected in the response by rating agencies, industry reports and legal briefs which have singularly concentrated on the verdict's effect on marketplace lending.[27]

Both Lending Club and Prosper have attempted to cushion the impact of the verdict by restructuring their business model. The restructuring involves letting the fronting bank originating loans retain an interest in the loan after it was sold to the marketplace platform. Had the national bank that originated the loan retained some interest in Ms. Madden's loan after assigning it to the debt collector, Midland could be considered as a 'subsidiary' or 'agent' of the national bank and, thereby, circumvent the borrower's state usury laws. Despite restructuring their origination model by having the originating bank retain an interest in the issued marketplace loans, the regulatory uncertainty remains. Lending Club and Prosper continue to point out in their investment prospectus, as filed with the Securities and Exchange Commission (SEC), that *Madden* poses risks to the loan origination model of marketplace lenders.[28]

Since May 2015, policy uncertainty continues regarding the enforceability of above-usury marketplace loans in New York, Connecticut and Vermont. A request by Midland to reopen and rehear the case was rejected by the Second Circuit court and the U.S. Supreme Court also declined to consider an appeal of the case. In February 2018, the U.S. Congress passed the 'Protecting Consumers' Access to Credit Act' which would overturn the *Madden* ruling. But the law has to yet be passed by the Senate and signed by the President before becoming effective law.

In sum, the *Madden* case cast a significant shadow on fintech lending by suddenly rendering marketplace loans subject to a borrower's state usury ceilings.

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27. Fitch, "Challenges Linger as U.S. Marketplace Lending ABS Rises," Reuters, (September 10, 2015); Moody's, "Denial of Madden appeal credit negative for marketplace loans and related ABS," Moody's Investor Service, (30 June 2016); Jones Day, "Secondary Loan Markets Post-Madden: Solving Secondary Market Sales and Liquidity Issues," (November 1, 2016); and Chapman and Cutler LLP, "The Regulation of Marketplace Lending: A Summary of the Principal Issues" (April 2018).

28. See Appendix B for the Lending Club Prospectus (2017) and Prosper Prospectus (2018). For instance, Lending Club notes: "If a borrower were to successfully bring claims against us for state usury law violations, and the rate on that borrower's personal loan was greater than that allowed under applicable state law, we could be subject to fines and penalties, including the voiding of loans and repayment of principal and interest to borrowers and investors."

## III. HYPOTHESES DEVELOPMENT

### *III.A. The Effect of Madden on Marketplace Lending*

Economic theory on the effects of usury laws and interest rate controls informs our prior expectations about how *Madden* affects marketplace loan availability. [29] As early as Locke (1691) it was recognized that usury limits can trigger credit rationing. *Madden* provides a quasi-natural experiment which allows us to derive novel insights into how interest rate controls affect credit supply in modern financial markets augmented by new lending technology.

A price ceiling set below the equilibrium level leads to rationing, with the fall in the quantity supplied depending on the price-elasticities of demand and supply as well as the structure of the credit market. Distinguishing credit from other types of goods is the presence of asymmetric information in the form of moral hazard (hidden action) and adverse selection (hidden information). The seminal models by Jaffee and Russell (1976), Stiglitz and Weiss (1981), and Bester (1985), suggest that, first, that there are several segments to the credit market based on the risk rating of the borrower and, second, that supply is non-monotonic in that, above the risk-adjusted profit maximizing level, a rise in interest rates can lead to a fall in credit supply. The more elastic the loan supply, the more any reductions in the price of credit will be offset by credit rationing.

The supply of marketplace credit is likely to be particularly elastic due to the use of sophisticated computer-based credit score and risk models which allow marketplace lenders to separate their customers into finer market segments and tailor loan's terms more specifically to borrower characteristics (Hynes and Posner, 2002; Staten, 2008). Marketplace lenders can reduce lending to borrowers, in particular high risk borrowers, which would have been offered above-usury interest loans and, instead, supply the capital to other risk buckets or divert the funds to altogether other investment opportunities in a different part of the credit market. We formulate the following two hypotheses related to *Madden's* effect on marketplace lending:

**Hypothesis I:** *Following Madden, the volume and number of marketplace loans decrease.*

**Hypothesis II:** *The marketplace credit rationing effects of Madden are more severe for borrowers with a poor credit rating.*

29. The first formal model of the effects of usury ceilings was proposed by Blitz and Long (1965) and there are many empirical studies of how usury laws affect the volume, risk and price of credit. E.g. Greer (1975), Wolkin and Navratil (1981), Villegas (1982), Peterson (1983), and more recently Temin and Voth (2007) and Benmelech and Moskowitz (2010).

*III.B. The Effect of Marketplace Lending Restrictions on Bankruptcy Filing*

Households may file for bankruptcy due to an unwillingness to pay debts. An individual may decide to file for bankruptcy if this yields net balance sheet benefits in terms of the filer's net asset position. Bankruptcy filings may increase if the financial costs of filing fall.[30] Bankruptcy filings may also rise if the benefits of filing, most importantly the amount of debt discharged, increase.

Households may also file for bankruptcy due to an inability to pay debts. To the extent that individuals prefer to avoid bankruptcy, marketplace loans could ease financial distress by allowing household to refinance existing debt carrying a higher interest rate. Marketplace loans may help to smooth adverse and possibly unforeseen shocks to income or expenses pushing households towards bankruptcy. Adverse health shocks are as a prominent factor for precipitating bankruptcy, particularly among low-income households (Domowitz and Sartain, 1999; Gross and Notowidigdo, 2011).

One plausible hypothesis is that a reduction in marketplace lending will lead to a higher number of personal bankruptcies in the affected states due to the benefits that marketplace loans provide to borrowers. Marketplace platforms provide quickly accessible consumer loans (Fuster, Plosser, Schnabl and Vickery, 2018) which are cheaper than credit cards (Balyuk, 2017) and serve previously underserved borrowers (De Roure, Pelizzon, and Tasca, 2016; Jagtiani and Lemieux, 2017; Schweitzer and Barkley, 2017; Tang, 2018). Marketplace loans are predominantly used for debt refinancing, especially credit card bills, or paying medical bills, thereby allowing borrowers to cover expenses that would otherwise contribute to household hardship and bankruptcy. In light of these considerations, marketplace lending restrictions may increase personal bankruptcy filings.

**Hypothesis III (A):** *Restricting marketplace lending increases personal bankruptcy filings.*

Marketplace loans may, however, at the same time impose an additional debt burden on households which is associated with higher bankruptcy (Domowitz and Sartain, 1999; Gross and Souleles, 2002; Fay, Hurst, and White, 2002; Dick and Lehnert, 2010; Livshits, Macgee and Tertilt, 2007, 2010, 2016). In addition, Ausubel (1991) documents that individuals underestimate their ability to repay loans. Therefore, bankruptcy filing may decrease following *Madden* as the ruling reduces access to marketplace loans for less credit-worthy households.

**Hypothesis III (B):** *Restricting marketplace lending decreases personal bankruptcy filings.*

30. Financial costs include the amount of non-exempt assets that are sold to pay creditors (Gropp, Scholz and White, 1997; Fay, Hurst, and White, 2002; White, 2007) and filing costs (Gross, Notowidigdo, and Wang, 2014).

## IV. DATA AND IDENTIFICATION STRATEGY

*IV.A. Data*

The marketplace lending data were obtained from the two leading marketplace lending platforms, Lending Club and Prosper. These datasets include detailed information on loan requests placed on each platform. We identify the borrower's state of residence and the loan listing start date, loan origination date, loan purpose, as well as the amount of money requested, the amount of funds granted, and the internal risk rating of the applicant. The loan-level data also allows us to calculate the monthly number of non-performing loans per state.

On average, 900 marketplace loans are outstanding in each state every month. The average marketplace borrower in our sample applies for a loan of $14,367. The average marketplace loan default rate is 7.8% at an interest rate of 9.32%. Differentiating borrowers by credit risk, these figures range from an average loan size of $10,385 at 10% interest with default rates of 10% for the riskiest borrowers to an average loan size of $14,077 at 6% interest with default rates of 2.7% for the least risky marketplace borrower group. Many loans are requested for debt refinancing (69.84%), small personal business loans (9.56%) and medical expenses (7.64%).[31]

Bankruptcy filing data were obtained from the Administrative Office of the U.S. Courts. This dataset provides information on the number of bankruptcy cases filed per month in every state since 2013 and allows us to distinguish between various chapters under which petitions were filed as well as between personal business and consumer bankruptcies. We obtain information on the number of filings differentiated by the annual income of each filer and the total amount of assets held by individuals filing in each state per month.

On average, 4.56 individuals file for personal bankruptcy for every 10,000 people of working age in each state every month. In absolute terms, 1,573 people file for personal bankruptcy in each state every month, of which 1,017 cases and 542 cases are Chapter 7 and Chapter 13 filings respectively. Of the total number of bankruptcy filings, the share of consumer bankruptcy and personal business bankruptcies is, respectively, 96.18% and 3.82%. Filers have an average income of $37,000, with income for Ch. 7 filers ($36,000) being lower than Ch.13 filers ($40,000). Households filing for consumer bankruptcy have a higher income ($37,500) relative to those filing for personal business bankruptcy ($26,200).

The New York Federal Reserve Center for Microeconomic Data provides us with information on the annual volume of consumer lending in each state differentiated by credit card lending (revolving accounts from banks, bankcard companies, national credit card companies, credit unions and savings & loan associations), student loans (from banks, credit unions and other financial institutions as well

31. Other popular uses of credit are: financing cars, RVs, motorcycles, boats, vacation, engagement rings, weddings or cosmetic procedures (not included in the medical expenses category). See Table A.1 in Appendix A for statistics based on funds channeled through Lending Club and Prosper.

as federal and state governments) and auto loans (from banks, credit unions, savings and loan associations, as well as automobile dealers and automobile financing companies). We supplement our bankruptcy filings and marketplace lending data with monthly U.S. Bureau of Labor Statistics unemployment rates and labor force data.

The sample period covers the 60-month period from January 2013 to December 2017 for all U.S. states. We remove states from the sample whose residents were or still are unable to raise funds through Prosper and Lending Club. Based on our loan-level dataset, these states are Iowa, Maine, Mississippi, Nebraska, North Dakota, and West Virginia.[32] Our final sample includes 2,700 observations for 45 states. Table I presents summary statistics for the variables used in our regressions. Appendix A, Table A.1 presents important further summary statistics.

[TABLE I - SUMMARY STATISTICS]

*IV.B. Main Outcome Variables*

The volume of marketplace lending and bankruptcy filings per month in each state are the main outcome variables of interest.

To examine how *Madden* affects the intensive and extensive margin of marketplace credit supply, we analyze the verdict's effect on the dollar volume and number of marketplace loans. Second, we estimate how the treatment event affects marketplace borrowers across different risk profiles. Third, to measure how the treatment event affects marketplace credit supply across loans for different purposes, we calculate the dollar amount of marketplace loans requested for debt refinancing, medical bills and small business expenses, all of which ought to help households avoid filing for bankruptcy. We estimate the effect of *Madden* on the total volume of these loan categories and the volume of loans borrowed for all other purposes.

To test the effect of *Madden* on bankruptcy filing rates, we, fourthly, calculate the total number of bankruptcies filed per month scaled by the size of the workforce in each state, measured in 10,000s residents of working age. Fifth, we differentiate the total number of filings into personal business and consumer bankruptcy filings in each state per month and by the chapter of the bankruptcy filing. Finally, we calculate the number of all different chapter filings scaled by the workforce for total bankruptcy cases as well as for personal business and consumer filings separately.[33] All our dependent variables (denoting marketplace lending and bankruptcy filings) enter the regressions as a log of one plus the value of the variable.[34]

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32. For the current data on borrower eligibility by state for Prosper see https://www.prosper.com/plp/legal/compliance/ and for Lending Club see https://help.lendingclub.com/hc/en-us/articles/213706208-Qualifying-for-a-personal-loan.

33. Chapter 12 bankruptcy is available to family farmers and family fishermen, and is classified as business bankruptcy. Therefore, we are not able to use Ch. 12 for non-business bankruptcies.

34. We scale bankruptcy rates by the workforce to account for the size of the state population and to make our results comparable with existing studies. Since monthly population data are not available we use the number of the workforce as

*IV.C. Identification Strategy*

We test the hypotheses linking marketplace lending restrictions to personal bankruptcy using difference-in-differences estimations exploiting the *Madden* court verdict as an exogenous source of variation in marketplace lending. We compare the evolution of the volume and the number of marketplace loans and bankruptcy filings between the treatment (Connecticut and New York) and control group (all other states) before and after the verdict. We estimate specifications of the following form:

$$(1) \qquad Ln(Y)_{sm} = \beta_1 Madden_m * State_s + \beta_2 State_s + \beta_3 * Madden_m + \varepsilon_{sm}.$$

*Y* denotes our outcome variables for state *s* in month *m*. *Madden* is a dummy variable equal to 1 for all months following the decision by the U.S. Court of Appeals for the Second Circuit in the case of *Madden vs Midland Funding LLC* in May 2015, and zero for months preceding the verdict. *State* is a dummy variable equal to 1 for Connecticut and New York, and zero for all other U.S. states.[35]

*Madden* has implications for Connecticut, Vermont and New York. However, the treatment group only includes Connecticut and New York because borrowers in these two states are relieved from paying the principal amount and interest of above-usury marketplace loans. In contrast, borrowers in Vermont are only relieved from paying the interest above the borrower's state usury limit. Vermont borrowers are obliged to pay back the principal amount and interest up to usury limit. The treatment of marketplace loans extended to borrowers residing in Vermont significantly differs from the two other states in the Second Circuit such that we only include Connecticut and New York. This preserves homogeneity within the treatment group.[36]

The economic interpretation of the regression coefficients is as follows. $\beta_1$ measures the effect of *Madden* on our dependent variables. It captures the change in the volume or number of marketplace loans and bankruptcy filings in New York and Connecticut relative to the change in those variables in all other states. $State_s$ controls for permanent differences between states in the treatment and control groups. Therefore, $\beta_2$ captures time-invariant differences in the volume of marketplace loans and number of bankruptcy filings. $Madden_m$ controls for trends common to all states in the sample. In this case, $\beta_3$ absorbs any time trend in the volume of marketplace loans and bankruptcy filings.

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provided by the Bureau of Labor Statistics. For robustness, Appendix A, Table A.4 presents alternative measures of bankruptcy rates. In Panel A bankruptcy rates are scaled by workforce but not expressed in logarithm. In Panel B bankruptcies are not scaled by workforce and expressed as log *(1+x)*. In Panel C bankruptcies are not scaled by workforce and expressed as log *(x)*. All these regressions yield results similar to our baseline results.

35. Additionally, we estimate our results using a matched sample. Our matching procedure follows Lemmon and Roberts (2010) nearest neighbor matching method. We match states based on the marketplace lending volume prior to treatment event. We use a *probit* model to estimate the effect of the average pre-treatment marketplace lending volume in each state on the probability of a state being in the treatment group. We then compute propensity scores using the estimates obtained from the *probit* regressions. States' nearest neighbors are states with the most similar propensity score. For each treated state we choose four nearest neighbor states from the control group. The results, presented in Table A.2, are in line with our main results. We also match treatment group states with two control group states. The results remain unchanged and are available upon request.

36. Table A.3 in Appendix A presents the results of tests that include Vermont in the treatment group.

We augment the baseline specification (Eq. 1) with a set of control variables, state and month fixed effects, which absorb *State* and *Madden*, to render our estimations robust against unobserved differences across states and time as well as to account for any changes in the macroeconomic environment and marketplace loan demand. The resulting auxiliary specification takes the form:

$$(2) \qquad Ln(Y)_{sm} = \alpha_s + \beta Madden_m * State_s + \delta Controls_{sm} + \gamma_m + \varepsilon_{sm}.$$

The control variables included are unemployment rates for each state and month (*Unemployment*), the total value of assets of individuals filing for bankruptcy (*Total assets*) and the volume of funds requested by borrowers through both marketplace platforms (*Requested funds*) as well as state and month fixed effects ($\alpha_s$ *and* $\gamma_m$). We cluster heteroscedasticity-adjusted standard errors at the state-level to account for serial correlation (Bertrand, Duflo, and Mullainathan, 2004).[37]

*IV.D. Difference-in-Difference Assumptions*

The quality of statistical inference from difference-in-difference estimations relies on the strength of the underlying identifying assumptions.

The first assumption requires the treatment event to be exogenous. Section II.D established that the *Madden* ruling provides an exogenous event to study the effect of marketplace lending restrictions on bankruptcy rates. The case involved credit card debt sold by FIA, a national bank in Delaware to Midland, a purchaser of unresolved consumer debt, and the case was in no way related to the marketplace industry. There is also no evidence that the court took into consideration conditions related to bankruptcy rates prevailing in the states of the Second Circuit when making the decision.

The second assumption of a difference-in-difference estimation requires the treatment and control groups to be observationally similar. States outside the jurisdiction of the Second Circuit need to constitute a valid counterfactual for the treated states. To establish this, we compare the trends in the evolution of the key outcome variables. Figure 1 shows that, prior to the court ruling, both marketplace lending and bankruptcy rates in the control and treatment group states evolve in a parallel manner for the 12-month period preceding the treatment event. In Appendix A, Table A.10 we also find that the relevant differences in marketplace lending volume and bankruptcy rates between the affected and unaffected states in the pre-treatment period are marginal. For this purpose, recall that difference-in-difference estimations do not require identical levels of the variables between the treatment and control group as any level differences are removed by the inclusion of fixed effects (Lemmon and Roberts, 2010; Roberts and Whited, 2013). These tests suggest that the control group is observationally similar to the treatment group in terms of our main outcome measures.

[FIGURE I - PARALLEL TRENDS]

37. Alternatively, Table A.5 in Appendix A shows tests with bootstrapped standard errors from which we obtain similar inferences as the baseline regressions. Table A.6 presents results with standard errors clustered at the state-quarter level.

## V. EMPIRICAL RESULTS

In the following, we discuss the effect of *Madden* on marketplace lending (Section A) and personal bankruptcy filing (Section B) and analyze these effects across different income groups (Section C). We evaluate plausible alternative explanations for the observed rise in bankruptcy filings following the verdict (Section D). Finally, we analyze the persistence of the effects from marketplace lending restrictions on precipitating personal bankruptcy (Section E).

### *V.A. Does the Madden Verdict Affect Marketplace Lending?*

First we present *Madden*'s effect on marketplace lending. Table II reports the estimates obtained using Eq. (1) and (2). To preview the findings, our results support Hypotheses I and II suggesting that *Madden* leads to marketplace credit rationing, in particular for less credit-worthy borrowers which are typically in greater need of funds to overcome financial hardship.

Table II, Panel A shows the marketplace credit rationing following *Madden* on the intensive margin, i.e. the volume of marketplace lending. Marketplace lending volume in Connecticut and New York declines between 10% (*t*-statistic -7.64) and 14.6% (*t*-statistic -4.63) following *Madden*.[38]

There is significant heterogeneity in the magnitude of this effect across different risk classes of borrowers. Using borrowing ratings by Prosper and Lending Club, we construct seven borrower credit risk rating categories.[39] The lowest (Rating 1) denotes the riskiest borrowers, while the highest (Rating 7) denotes the least risky borrowers. We find statistically significant reductions in the lending provided to borrowers with the four lowest ratings for which lending volume falls between 28% (borrower Rating 4) and 82% (borrower Rating 1).[40] In contrast, lending volume increase between 3.8% and 2.1% for more credit-worthy borrowers (ratings 6 and 7), respectively. However, only the effect on borrowers with Rating 6 is statistically significant.

Our finding that the magnitude of marketplace credit rationing is larger in market segments with higher credit risk is intuitive. The riskiest loan applicants are most likely to borrow at above usury rates and are most likely to be affected by *Madden* given that the verdict rendered state usury ceilings binding for marketplace loans in the treated states. Appendix A, Table A.1 reports the maximum values of interest rates per credit rating. Along the lower spectrum of the credit risk scale (1—5) they are respectively: 31%, 30.75%, 25.9%, 19.9% and 16.3%.[41] All these exceed the statutory civil usury

38. To calculate the % change in the dependent variable we use the following formula: $\Delta y = 100 * \left(exp^{\beta} - 1\right)$. For instance, a coefficient of -0.172 on the interaction term between *Madden* and *State* (Panel A of Table 2) suggests that, following the court ruling, marketplace lending dropped in Connecticut and New York by $100 * (exp^{-0.158} - 1) = 14.6\%$.

39. Lending Club ratings vary from A(1) to G(7) while Prosper from HR(1), E(2), D(3), C(4), B(5), A(6) to AA(7).

40. We non-statistically significant 1% reduction in marketplace lending volume to borrowers with a rating of 5.

41. Since we are interested in examining the impact of marketplace lending restrictions on bankruptcy rates we use borrower ratings instead of looking at the effect on loans with above-usury interest rates. Interest rates reflect not only the riskiness of the borrower but also loan conditions, including maturity and loan volume.

limit in Connecticut (12%) and New York (16%) meaning that borrowers with the lowest credit ratings are most likely to feel the credit rationing effect.

[TABLE II - THE EFFECT OF *MADDEN* ON MARKETPLACE LENDING]

Table II, Panel B reports the marketplace credit rationing effect of *Madden* on the extensive margin in terms of reductions in the number of marketplace loans. The court ruling has a statistically significant negative effect on the number of marketplace loans, which fall by 16% (13%) in specification 1 (2). Analyzing the evolution of the number of loans by borrower riskiness we observe significant reductions in marketplace loans only for the riskier borrowers.

Table II, Panel C shows the marketplace credit rationing effect differentiated by loan purpose. We are particularly concerned with loans which may help individuals avoid filing for bankruptcy. Out-of-pocket medical bills cause one quarter of personal bankruptcies, particularly among low-income households (Gross and Notowidigdo, 2011). High credit card debt is the single largest factor contributing to bankruptcy at the margin (Domowitz and Sartain, 1999). Thus, the inability to obtain marketplace funds, for either (i) debt financing or (ii) paying medical bills, may significantly increase the probability of filing for bankruptcy. In addition, loans for small personal businesses might be relevant for bankruptcy as (iii) personal business loans are often requested for financing equipment purchases or covering unexpected business expenses required for continuing operating a personal business. Significant reductions in this type of marketplace lending may help to explain the observed changes in personal business bankruptcy filings.[42]

Results in Table II, Panel C show that the total volume of these three types of loans together (*Relevant loans*) falls by 10% in Connecticut and New York relative to all other U.S. states following *Madden*. We observe a large drop in the volume marketplace loans for debt refinancing (15%), small businesses loans (33%) and, in particular, loans for medical procedures (68%). The volume of loans acquired for all other purposes declines by 15%.[43]

In sum, there is a significant reduction in the volume and number of marketplace loans. We find that rationing of marketplace credit is particularly severe for borrowers at the lower end of the credit rating spectrum, which confirms results by Honigsberg, Jackson and Squire (2018). The least risky borrowers are left unaffected by the court verdict. We furthermore find that the types of marketplace loans relevant for staving off bankruptcy, such as credit card financing and small business loans, experience a drop and loans for medical expenses record the largest decline.

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42. As for the controls, lending volume is negatively correlated with the total amount of assets of bankruptcy filers and the unemployment rate, although the coefficients on the former are not significant. The volume of marketplace funds requested rises with the volume of granted funds.

43. Other loans category includes loans acquired for home improvements, student use, auto purchase, baby & adoption expenses, boat purchase, cosmetic procedures, engagement ring and wedding financing, and vacations.

*V.B. Does Restricting Marketplace Lending Affect Bankruptcy Rates?*

We now analyze how restrictions on marketplace lending affect the number of individuals filing for bankruptcy. We continue using estimations in the form of specifications (1) and (2). We let the dependent variable represent the number of bankruptcy cases filed per month in each state and scale it by the size of the state workforce.

Table III, Panel A presents *Madden*'s effect on the total number of bankruptcies, including personal business and consumer (non-business) bankruptcies. Following the verdict, the total number of bankruptcy filings, irrespective of the chapter under which bankruptcy is filed, is 8% higher in Connecticut and New York (*t*-statistic 2.60) relative to the states in the control group. The estimated coefficient on the interaction term between *Madden* and *State* is positive and statistically significant in regressions where the dependent variable denotes Chapter 7 and Chapter 13 bankruptcy filings. Chapter 7 filings increase by 6% (*t*-statistic 3.87) and Chapter 13 cases jump by 11% (*t*-statistic 2.58). Chapter 11 and Chapter 12 bankruptcy filings are unaffected.[44]

Table III, Panels B and C present, respectively, the number of personal business and consumer bankruptcy filings separately. Personal business bankruptcy petitions surge by 2.3% (*t*-statistic 1.48) and consumer bankruptcy cases increase by 7.6% (*t*-statistic 2.84). Table III, Panel B shows that, among personal business bankruptcy cases, only Chapter 7 filings record a statistically significant increase of 1.8%. Table III, Panel C indicates that the rise in consumer bankruptcy filings following the treatment event is driven by a statistically significant 5.6% increase in Chapter 7 filings and an 11% rise in Chapter 13 filings.[45]

Overall, the results in Table III suggest that restricting marketplace lending increases personal bankruptcy filings, which is evidence in support of Hypothesis III(A).

[TABLE III - THE EFFECT OF *MADDEN* ON PERSONAL BANKRUPTCY]

*V.C Difference in Marketplace Credit Rationing and Rise in Bankruptcy across Income Groups*

We use data on the annual income of bankruptcy filers and marketplace borrowers and re-estimate the auxiliary specification (Eq. 2) for different income ranges. We split borrowers and bankruptcy filers into five income groups: with an annual income <$25,000 (range 1), $25,000-$49,999 (range 2), $50,000-$74,999 (range 3), $75,000-$100,000 (range 4), and finally with an annual income >$100,000 (range 5).[46] Table IV shows the effect of *Madden* on the volume and number of marketplace loans (Panel A) and bankruptcy filings (panel B) across different income groups.

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44. Recall that Chapter 11 bankruptcy cases are usually filed by corporate businesses rather than individuals or personal businesses. Bankruptcy under Chapter 12 is available to farmers and commercial fishermen.

45. Table III, Panel C excludes estimations for Ch. 12 bankruptcy filings since these are business bankruptcies.

46. Specification (1) yields materially equivalent results. We report tests only for specification (2) to preserve space.

Table IV, Panel A shows that borrowers on lower incomes experience significantly more credit rationing. The lending volume to Connecticut and New York borrowers with an annual income of less than $25,000 (range 1) declines by 64% following the court ruling (coefficient -1.022), relative borrowers in all other states. The fall in marketplace credit supply is smaller for groups with higher annual income. Relatively high income borrowers (range 4) observe only a small fall in marketplace lending volume of 6.2%. No credit rationing effect of *Madden* can be observed for borrowers with the highest annual income (range 5).

Table IV, Panel B shows a complementary pattern for bankruptcy filings. Connecticut and New York residents on low incomes file significantly more for bankruptcy following *Madden* relative to residents with higher annual income. We observe no effect of *Madden* increasing personal bankruptcy among individuals with the highest income. The biggest hike in bankruptcy filings occurs for the population on the lowest income. The size of the increase in bankruptcy filings falls proportionally to an increase in annual income. Increases in the incidence of bankruptcy among individuals in the lowest three income brackets are 8.5%, 7.3% and 4.7% respectively.

In sum, individuals are more likely to experience personal bankruptcy the larger the contraction in marketplace lending to that income group. Households which experience no reduction in marketplace lending do not exhibit increases in bankruptcy filings. These results further corroborate Hypothesis III(A) that marketplace lending restrictions lead to an increase in personal bankruptcy filings across different income groups, with lower income groups experiencing more marketplace credit rationing and a larger increase in personal bankruptcy.

[TABLE IV - THE EFFECT OF *MADDEN* ACROSS DIFFERENT INCOME GROUPS]

Overall, our results suggest that marketplace lending may help households, particularly those on low incomes, avoid bankruptcy and suggest that the screening and lending technology behind marketplace credit may have some positive welfare effects compared with other forms of costly credit, such as payday loans and credit card debt, associated with worsening personal bankruptcy.

Our results are in contrast to prior work on credit card and payday lending which tends to increase personal bankruptcy (Domowitz and Sartain, 1999; Gross and Souleles, 2002; Fay, Hurst, and White, 2002; Dick and Lehnert, 2010; Skiba and Tobacman, 2015; Livshits, Macgee and Tertilt, 2007, 2010, 2016). Marketplace lending reducing the incidence of personal bankruptcy among low-income households may be explained by the fact that, relative to traditional lenders, marketplace platforms use information previously ignored by traditional lenders (Jagtiani and Lemieux, 2017) allowing for more in-depth screening of borrowers (Fuster, Plosser, Schnabl and Vickery, 2018) and, relative to payday loans, marketplace loans tend to carry lower interest rates. This suggests that the financial technology behind marketplace lending may improve the efficiency of financial intermediation (Vallee and Zang, 2018).

*V.D. Rejecting Alternative Explanations for the Increase in Bankruptcy Filings*

In this section we test and reject plausible alternative explanations tracing the increase in personal bankruptcy following *Madden* to factors other than marketplace credit rationing. It is possible that *Madden* might have an effect on lending by other non-bank financial institutions as well as bank loans that are intended to be sold outright to non-banks. *Madden* may reduce the liquidity and secondary market value of such loans leading to a reduction in their origination volume. It is alternatively also possible that *Madden* coincides with increases in other types of consumer credit which may explain the rise in bankruptcy rates.

First, to test whether *Madden* affects other types of consumer credit we turn to data provided by the New York Federal Reserve's Consumer Credit Panel.[47] These data provide us with the year-end volume of credit card loans, auto loans and student loans originated in each U.S. state. Figure II provides a graph illustrating the effect of *Madden* on marketplace loans and other consumer loans. As these data on non-marketplace loans are available at an annual frequency, we annualize marketplace loan volume to provide a better comparison. Figure II shows that, apart from marketplace lending, other types of consumer loans are not significantly affected by *Madden*.

To provide a formal test, we modify specification (2) and let the dependent variable be, respectively, the total annual volume of marketplace loans, credit card loans, auto loans and student loans. We replace month fixed effects with year fixed effects. The results are presented in Table V, Panel A. Apart from marketplace loans, *Madden* does not affect any other type of consumer credit. Next, we test whether controlling for these consumer loans affects the size of the estimated effect of *Madden* raising personal bankruptcies as presented in Table III. In Table V, Panel B we examine the effect of *Madden* on bankruptcy rates. We annualize bankruptcy rates by calculating the total of all, business bankruptcy and consumer bankruptcy rates. Here we also find that controlling for credit card debt, auto loans and student loans does not alter the results previously presented in Table III. [48]

[TABLE V - *MADDEN* AND NON-MARKETPLACE CONSUMER CREDIT]

47. The Federal Reserve Bank of New York's Center for Microeconomic Data provides household debt statistics by state in its *Quarterly Report on Household Debt and Credit*. See https://www.newyorkfed.org/microeconomics/databank.html.

48. In an additional robustness test, instead of year-end annual NY Fed data on consumer credit, we use quarterly data from SNL Financial covering consumer lending by traditional financial institutions operating in each state, including commercial and savings banks, credit unions as well as savings and loan associations. We document that *Madden* does not affect lending provided by traditional financial institutions in New York and Connecticut and find that controlling for this lending also does not our baseline results. This additional check further refutes the idea that the observed rise in the number of individuals filing for bankruptcy following *Madden* is due to credit rationing by traditional lenders. These results are presented in Table A.8 and A.9 in Appendix A. In the main tests, however, we use NY Fed data for two reasons. First, the SNL Financial data do not allow us to observe bank lending at the state level while the NY Fed data do allow for this identification. Second, the NY Fed data comprehensively cover consumer lending by both banks and non-banks, including financing companies, and are based on a nationally representative random sample from Equifax credit-report data.

Second, the increase in bankruptcy may be due to credit-rationed high-risk marketplace borrowers switching from marketplace platforms to high-interest credit such as payday loans, which are a well-known predictor of household hardship. To test this hypothesis, we exploit the fact that payday lending is illegal in New York state, while residents of Connecticut are able to obtain payday loans legally. We separately include New York (NY) and Connecticut (CT) in the treatment group. We first compare CT to all other states, excluding NY from the analysis, and, secondly, exclude CT from our sample in order to compare NY to all other states. Table VI presents the results. This test refutes the idea that an increase in payday lending may be responsible for the increase in bankruptcy rates. Importantly, we find that the effect of *Madden* on bankruptcy filings is statistically significant comparing CT (Panel A) and NY (Panel B) to other states. In fact, the effect of *Madden* on bankruptcy rates is stronger in NY than in CT. If consumers switching to other non-bank lending such as payday lending were responsible for the rise in bankruptcy following *Madden*, one would observe a stronger effect of the verdict on bankruptcy filings in CT where payday lending is legally available. However, we document that the treatment event raises bankruptcy rates more in NY compared to CT. This is attributable to the fact that the volume of marketplace lending as a share of the national total is much higher in NY than in CT. [49] This robustness test also shows that the rise in personal bankruptcy is proportional to the reduction in marketplace lending across states, further lending credence to interpreting changes in bankruptcy rates following *Madden* as arising primarily from changes in marketplace lending.

[TABLE VI - THE EFFECT OF *MADDEN* ON PERSONAL BANKRUPTCY BY AFFECTED STATE]

Finally, the increase in bankruptcy may be due to borrowers defaulting on their marketplace loans. The premise behind this alternative explanation, which we reject, is that that high-risk marketplace borrowers find themselves in a debt-trap and default after being denied additional marketplace loans that would have staved off eventually filing for bankruptcy. We replace the dependent variable with the number of charged-off loans in order to test this. Table VII, Panel B shows that the coefficients on the interaction term between *Madden* and *State* are not statistically significant which evinces that existing marketplace borrowers are not contributing to the rise in personal bankruptcy induced by *Madden*.[50]

[TABLE VII - THE EFFECT OF *MADDEN* ON MARKETPLACE LOAN DEFAULTS]

49. Appendix A, Table A.1 shows that New York and Connecticut's share of total marketplace lending volume is 7.5% and 1.4% respectively.

50. This result is intuitive given that *Madden* leads to a contraction in lending to the riskiest borrowers. In Table A.7 in Appendix A we find that the average quality of borrowers (as measured using Prosper and Lending Club internal risk classifications) increases.

*V.E. The Persistence of Madden's Effects*

Our final test examines the persistency of the results presented in Tables II and III. We test whether the observed impact of *Madden* is merely a surprise effect and temporary adjustment by households in response to the unforeseen marketplace credit rationing in the first year following the court ruling, or if the effect on raising the incidence of personal bankruptcy is persistent.

To test the persistence of *Madden*'s effects we construct two new variables. The variable *SR-Madden* is equal to 1 for the twelve months following court ruling (June 2015 to May 2016), and zero otherwise, and captures the short-run effects of *Madden*. The variable *LR-Madden* is equal to 1 for the months from June 2016 to December 2017, and zero otherwise, and measures the long-run effect of restrictions on marketplace lending. We interact both terms with *State* and use it instead of the *Madden*State* interaction in specifications (1) and (2).

Table VIII documents that *Madden* leads to a persistent increase in the number of bankruptcies. In fact, the rationing of marketplace credit and the rise in personal bankruptcy intensifies over time. The marketplace lending volume drops by 7.3% in the short-run and by 12.1% in the long-run. The resulting effects on personal bankruptcy are proportional to the persistence and intensification of marketplace credit rationing over time. Following marketplace credit rationing, the number of bankruptcy cases increases by 6.8% in the first twelve months and by 9% in the months one year after the court verdict.[51] These estimates reveal that the increase in bankruptcy is not merely the result of a transitory adjustment of households in response to the abrupt pullback of marketplace credit following *Madden*. The results indicate that restricting marketplace lending increases personal bankruptcy filings persistently.

[TABLE VIII – *MADDEN*'S PERSISTENT EFFECT ON CREDIT RATIONING AND BANKRUPTCY]

## VI. CONCLUDING REMARKS

We assess the real effects of financial technology in terms of its impact on household hardship. We document that the suddenly binding constraint of statutory interest rate limits placed on marketplace loans by a court verdict leads to a significant pullback of marketplace lending and is associated with a rise in personal bankruptcy. Our results suggest that withdrawing access to new lending technology has adverse welfare effects in terms of raising the incidence of personal bankruptcy, particularly among households on low incomes.

51. The increase in Chapter 13 bankruptcies is less pronounced in the first year, while Chapter 7 cases increase homogenously in the short- and long-run, apart from Chapter 7 business bankruptcies.

While our paper suggests that marketplace lending may have some positive welfare effects compared with other forms of costly credit, such as payday loans and credit card debt, which are associated with worsening the incidence of personal bankruptcy, the next important step is to assess how marketplace lending affects other outcomes measuring household welfare aside from bankruptcy.

Our findings have urgent policy implications. While this paper does not imply that marketplace lending or the fintech industry is void of risks and should be left unregulated, our findings suggest that improving fintech lending regulations may improve access to marketplace funding and help alleviate financial hardship in terms of personal bankruptcy among low-income households.[52] Policymakers in the U.S. are debating whether to overturn the verdict of the Second Circuit Court of Appeals. The H.R.3299 bill currently pending in the U.S. Senate argues that *Madden* led to a "lack of access to safe and affordable financial services" for the poorest households. Our paper provides material evidence to inform this claim. Our results moreover suggest that, in the absence of a clear regulatory framework for fintech lending, the verdict also had the unintended consequence of persistently raising personal bankruptcies, particularly among low-income households. Understanding the real effects of financial technology therefore also informs the intense regulatory deliberations on the wider fintech industry currently taking place at the federal and international level.

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TABLE I
SUMMARY STATISTICS

| *Variable* | *N* | *Mean* | *St Dev* | *Min* | *Median* | *Max* |
|---|---|---|---|---|---|---|
| *Dependent variables* | | | | | | |
| LN(1+Volume of marketplace lending) | 2,700 | 15.66 | 1.28 | 8.29 | 15.77 | 18.89 |
| LN(1+Volume of marketplace lending) Borrower Rating 1 | 2,700 | 9.78 | 3.80 | 0.00 | 10.95 | 14.79 |
| LN(1+Volume of marketplace lending) Borrower Rating 2 | 2,700 | 12.09 | 1.94 | 0.00 | 12.38 | 15.55 |
| LN(1+Volume of marketplace lending) Borrower Rating 3 | 2,700 | 13.18 | 1.73 | 0.00 | 13.38 | 16.51 |
| LN(1+Volume of marketplace lending) Borrower Rating 4 | 2,700 | 13.95 | 1.46 | 0.00 | 14.11 | 17.18 |
| LN(1+Volume of marketplace lending) Borrower Rating 5 | 2,700 | 14.40 | 1.32 | 0.00 | 14.51 | 17.54 |
| LN(1+Volume of marketplace lending) Borrower Rating 6 | 2,700 | 14.26 | 1.39 | 0.00 | 14.36 | 17.53 |
| LN(1+Volume of marketplace lending) Borrower Rating 7 | 2,700 | 13.56 | 1.65 | 0.00 | 13.69 | 17.33 |
| LN(1+Number of marketplace loans) | 2,700 | 6.11 | 1.24 | 0.69 | 6.23 | 9.25 |
| LN(1+Number of marketplace loans) Borrower Rating 1 | 2,700 | 1.87 | 1.17 | 0.00 | 1.79 | 5.56 |
| LN(1+Number of marketplace loans) Borrower Rating 2 | 2,700 | 2.95 | 1.18 | 0.00 | 3.04 | 6.26 |
| LN(1+Number of marketplace loans) Borrower Rating 3 | 2,700 | 3.70 | 1.24 | 0.00 | 3.78 | 6.80 |
| LN(1+Number of marketplace loans) Borrower Rating 4 | 2,700 | 4.42 | 1.25 | 0.00 | 4.53 | 7.53 |
| LN(1+Number of marketplace loans) Borrower Rating 5 | 2,700 | 4.83 | 1.25 | 0.00 | 4.94 | 7.94 |
| LN(1+Number of marketplace loans) Borrower Rating 6 | 2,700 | 4.78 | 1.23 | 0.00 | 4.88 | 7.97 |
| LN(1+Number of marketplace loans) Borrower Rating 7 | 2,700 | 4.11 | 1.29 | 0.00 | 4.17 | 7.66 |
| LN(1+Relevant loans) | 2,700 | 15.52 | 1.26 | 8.29 | 15.63 | 18.73 |
| LN(1+Debt refinancing loans) | 2,700 | 15.27 | 1.27 | 8.29 | 15.37 | 18.45 |
| LN(1+Medical expenses loans) | 2,700 | 10.06 | 3.63 | 0.00 | 11.08 | 14.55 |
| LN(1+Small business loans) | 2,700 | 10.28 | 3.51 | 0.00 | 11.24 | 14.80 |
| LN(1+Other loans) | 2,700 | 13.57 | 1.53 | 0.00 | 13.69 | 17.09 |
| LN(1+Number of bankruptcies/workforce) | 2,700 | 1.63 | 0.42 | 0.38 | 1.66 | 2.64 |
| LN(1+Number of chapter 7 bankruptcies/workforce) | 2,700 | 1.32 | 0.37 | 0.30 | 1.35 | 2.31 |
| LN(1+Number of chapter 11 bankruptcies/workforce) | 2,700 | 0.04 | 0.11 | 0.00 | 0.03 | 2.00 |
| LN(1+Number of chapter 12 bankruptcies/workforce) | 2,700 | 0.00 | 0.01 | 0.00 | 0.00 | 0.08 |
| LN(1+Number of chapter 13 bankruptcies/workforce) | 2,700 | 0.80 | 0.46 | 0.05 | 0.76 | 2.19 |
| LN(1+Number of business bankruptcies/workforce) | 2,700 | 0.13 | 0.12 | 0.00 | 0.11 | 2.06 |
| LN(1+Number of chapter 7 business bankruptcies/workforce) | 2,700 | 0.08 | 0.04 | 0.00 | 0.08 | 0.64 |
| LN(1+Number of chapter 11 business bankruptcies/workforce) | 2,700 | 0.04 | 0.11 | 0.00 | 0.02 | 2.00 |
| LN(1+Number of chapter 12 business bankruptcies/workforce) | 2,700 | 0.00 | 0.01 | 0.00 | 0.00 | 0.08 |
| LN(1+Number of chapter 13 business bankruptcies/workforce) | 2,700 | 0.01 | 0.01 | 0.00 | 0.01 | 0.16 |
| LN(1+Number of consumer bankruptcies/workforce) | 2,700 | 1.60 | 0.43 | 0.37 | 1.62 | 2.63 |
| LN(1+Number of chapter 7 consumer bankruptcies/workforce) | 2,700 | 1.30 | 0.37 | 0.30 | 1.33 | 2.30 |
| LN(1+Number of chapter 11 consumer bankruptcies/workforce) | 2,700 | 0.01 | 0.01 | 0.00 | 0.00 | 0.12 |
| LN(1+Number of chapter 13 consumer bankruptcies/workforce) | 2,700 | 0.80 | 0.46 | 0.03 | 0.75 | 2.19 |
| LN(1+Number of marketplace loan defaults) | 2,700 | 3.45 | 1.38 | 0.00 | 3.58 | 7.06 |
| LN(1+Number of marketplace loan defaults) Borrower Rating 1 | 2,700 | 0.55 | 0.67 | 0.00 | 0.00 | 3.33 |
| LN(1+Number of marketplace loan defaults) Borrower Rating 2 | 2,700 | 1.16 | 0.94 | 0.00 | 1.10 | 4.39 |
| LN(1+Number of marketplace loan defaults) Borrower Rating 3 | 2,700 | 1.74 | 1.16 | 0.00 | 1.79 | 5.12 |
| LN(1+Number of marketplace loan defaults) Borrower Rating 4 | 2,700 | 2.14 | 1.23 | 0.00 | 2.20 | 5.45 |
| LN(1+Number of marketplace loan defaults) Borrower Rating 5 | 2,700 | 2.40 | 1.26 | 0.00 | 2.48 | 5.93 |
| LN(1+Number of marketplace loan defaults) Borrower Rating 6 | 2,700 | 1.96 | 1.18 | 0.00 | 1.95 | 5.54 |
| LN(1+Number of marketplace loan defaults) Borrower Rating 7 | 2,700 | 0.99 | 0.92 | 0.00 | 0.69 | 4.25 |
| LN(1+Non-marketplace consumer loans) | 900.00 | 19.74 | 2.56 | 12.27 | 19.47 | 24.13 |
| *Main explanatory variables* | | | | | | |
| Court ruling*State | 2,700 | 0.02 | 0.15 | 0 | 0 | 1 |
| State | 2,700 | 0.04 | 0.21 | 0 | 0 | 1 |
| Court ruling | 2,700 | 0.52 | 0.50 | 0 | 1 | 1 |
| *Control variables* | | | | | | |
| Unemployment (% of workforce) | 2,700 | 5.38 | 1.46 | 2.10 | 5.20 | 10.40 |
| LN(1+Total assets) | 2,700 | 11.20 | 2.67 | 0.00 | 11.66 | 20.18 |
| LN(1+Requested funds) | 2,700 | 17.57 | 1.41 | 8.29 | 17.70 | 20.91 |

*Notes.* This table presents summary statistics for all dependent and explanatory variables. All variables are measured at a monthly frequency apart from *Income*. Income is measured at quarterly frequency.

TABLE II

THE EFFECT OF *MADDEN* ON MARKETPLACE LENDING

| **Panel A: Intensive margin** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable:* LN(1+Volume of marketplace loans) | | | | | | | | | |
| *Borrower rating:* | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
| Madden*State | -0.158*** | -0.102*** | -1.715*** | -0.654*** | -0.471*** | -0.328*** | -0.021 | 0.038** | 0.021 |
| | (-4.63) | (-7.64) | (-7.69) | (-10.67) | (-13.07) | (-12.51) | (-0.59) | (2.42) | (0.72) |
| State | 1.096* | | | | | | | | |
| | (1.81) | | | | | | | | |
| Madden | 0.890*** | | | | | | | | |
| | (30.55) | | | | | | | | |
| Unemployment | | -0.018*** | 0.400* | 0.261*** | 0.111* | 0.020 | -0.008 | 0.007 | 0.090 |
| | | (-3.09) | (1.91) | (3.44) | (1.78) | (0.61) | (-0.89) | (0.43) | (1.21) |
| Total assets | | -0.003 | 0.018 | 0.012 | -0.048 | -0.084 | 0.003 | -0.030 | -0.024 |
| | | (-1.01) | (0.27) | (0.35) | (-0.89) | (-1.10) | (0.32) | (-0.97) | (-0.79) |
| Requested funds | | 0.531*** | 0.963*** | 0.528*** | 0.803*** | 0.669*** | 0.714*** | 1.191*** | 1.285*** |
| | | (13.07) | (8.65) | (11.10) | (9.65) | (8.59) | (18.19) | (15.12) | (7.36) |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.147 | 0.993 | 0.570 | 0.679 | 0.764 | 0.897 | 0.967 | 0.920 | 0.835 |
| SE Cluster | State | State | State | State | State | State | State | State | State |
| **Panel B: Extensive margin** | | | | | | | | | |
| *Dependent variable:* LN(1+Number of marketplace loans) | | | | | | | | | |
| *Borrower rating:* | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
| Madden*State | -0.174*** | -0.134*** | -0.799*** | -0.793*** | -0.519*** | -0.359*** | -0.039 | 0.002 | -0.005 |
| | (-5.55) | (-7.62) | (-8.46) | (-28.41) | (-29.88) | (-21.89) | (-0.79) | (0.12) | (-0.36) |
| State | 1.073* | | | | | | | | |
| | (1.75) | | | | | | | | |
| Madden | 0.871*** | | | | | | | | |
| | (36.84) | | | | | | | | |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.147 | 0.994 | 0.858 | 0.930 | 0.961 | 0.978 | 0.986 | 0.985 | 0.976 |
| SE Cluster | State | State | State | State | State | State | State | State | State |

| **Panel C: By purpose of the loan** | | | | | | |
|---|---|---|---|---|---|---|
| *Dependent variables:* | LN(1+Relevant loans) | LN(1+Relevant loans) | LN(1+ debt refinancing loans) | LN(1+ medical expenses loans) | LN(1+small business loans) | LN(1+other loans) |
| Madden*State | -0.160*** | -0.101*** | -0.162*** | -1.130*** | -0.395*** | -0.164*** |
| | (-4.65) | (-8.67) | (-6.92) | (-4.96) | (-2.78) | (-7.19) |
| State | 1.074* | | | | | |
| | (1.78) | | | | | |
| Madden | 0.846*** | | | | | |
| | (27.72) | | | | | |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.136 | 0.992 | 0.990 | 0.613 | 0.512 | 0.908 |
| SE Cluster | State | State | State | State | State | State |

*Notes.* This table reports the coefficients and t-statistics (in parentheses). Standard errors are clustered at the state level. The results in Panels A and B document the effect of *Madden* on the amount and number of marketplace loans obtained by borrowers through Lending Club and Prosper, respectively. The results presented in Panel C document the effect of *Madden* on the amount of loans by loan purpose. The main explanatory variable is an interaction term between the variable *Madden* (equal to 1 for months after the announcement of the verdict in *Madden vs Midland LLC* in May 2015, and zero otherwise) and *State* (equal to 1 for the affected states Connecticut and New York, and zero otherwise). Control variables include: monthly state unemployment rates (*Unemployment*), the logarithm of average total assets of residents filing for bankruptcy in each state and month (*Total assets*), and the logarithm of the dollar amount of funds requested through Lending Club and Prosper by residents in each state per month (*Requested funds*). State and month fixed effects are included ("YES") or not included ("NO").

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE III
THE EFFECT OF *MADDEN* ON PERSONAL BANKRUPTCY

| **PANEL A: Total bankruptcies** | | | | | | |
|---|---|---|---|---|---|---|
| *Dependent variable:* LN(1+Total number of bankruptcies/workforce) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.067** | 0.079** | 0.059*** | 0.005 | -0.000 | 0.103** |
| | (2.35) | (2.60) | (3.87) | (0.45) | (-1.56) | (2.58) |
| State | -0.346*** | | | | | |
| | (-5.56) | | | | | |
| Madden | -0.169*** | | | | | |
| | (-12.08) | | | | | |
| Unemployment | | 0.038*** | 0.047*** | 0.003* | 0.001** | 0.008 |
| | | (3.73) | (4.69) | (1.96) | (2.15) | (0.99) |
| Total assets | | -0.008** | -0.012*** | 0.009** | 0.000 | -0.002 |
| | | (-2.47) | (-4.39) | (2.63) | (1.13) | (-0.78) |
| Requested funds | | -0.008 | -0.005 | -0.004 | -0.000 | -0.001 |
| | | (-0.85) | (-0.60) | (-0.86) | (-0.52) | (-0.24) |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.063 | 0.959 | 0.950 | 0.714 | 0.196 | 0.977 |
| SE Cluster | State | State | State | State | State | State |
| **PANEL B: Business bankruptcies** | | | | | | |
| *Dependent variable:* LN(1+Number of business bankruptcies/workforce) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.021 | 0.023 | 0.018** | 0.005 | -0.000 | 0.001 |
| | (1.34) | (1.48) | (2.49) | (0.52) | (-1.56) | (1.41) |
| State | -0.023 | | | | | |
| | (-1.35) | | | | | |
| Madden | -0.031*** | | | | | |
| | (-9.90) | | | | | |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.016 | 0.743 | 0.478 | 0.714 | 0.196 | 0.236 |
| SE Cluster | State | State | State | State | State | State |
| **PANEL C: Consumer bankruptcies** | | | | | | |
| *Dependent variable:* LN(1+Number of consumer bankruptcies/workforce) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* | |
| Madden*State | 0.064** | 0.076*** | 0.056*** | 0.000 | 0.103** | |
| | (2.58) | (2.84) | (3.77) | (0.22) | (2.55) | |
| State | -0.349*** | | | | | |
| | (-5.49) | | | | | |
| Madden | -0.167*** | | | | | |
| | (-11.92) | | | | | |
| Controls | NO | YES | YES | YES | YES | |
| State FE | NO | YES | YES | YES | YES | |
| Month FE | NO | YES | YES | YES | YES | |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | |
| R-squared | 0.061 | 0.963 | 0.950 | 0.684 | 0.977 | |
| SE Cluster | State | State | State | State | State | |

*Notes.* This table reports the coefficients and t-statistics (in parentheses). Standard errors are clustered at the state level. The results in Panels A, B and C document the effect of *Madden* on the number of total, business and consumer bankruptcy filings, respectively. The main explanatory variable is an interaction term between the variable *Madden* (equal to 1 for months after the announcement of the verdict in *Madden vs Midland LLC* in May 2015, and zero otherwise) and *State* (equal to 1 for the affected states Connecticut and New York, and zero otherwise). Control variables include: monthly state unemployment rates (*Unemployment*), the logarithm of average total assets of residents filing for bankruptcy in each state and month (*Total assets*), and the logarithm of the dollar amount of funds requested through Lending Club and Prosper by residents in each state per month (*Requested funds*). State and month fixed effects are included ("YES") or not included ("NO").

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE IV
THE EFFECT OF *MADDEN* ACROSS DIFFERENT INCOME GROUPS

**Panel A: Marketplace lending: intensive and extensive margins**

| *Income range:* | <$25,000 | | $25,000-$49,999 | | $50,000-$74,999 | | $75,000-$99,999 | | >$100,000 | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable:* | LN(1+ Volume of loans) | LN(1+ Number of loans) | LN(1+ Volume of loans) | LN(1+ Number of loans) | LN(1+ Volume of loans) | LN(1+ Number of loans) | LN(1+ Volume of loans) | LN(1+ Number of loans) | LN(1+ Volume of loans) | LN(1+ Number of loans) |
| Madden*State | -1.022*** | -0.519*** | -0.558*** | -0.475*** | -0.316*** | -0.269*** | 0.026 | -0.064*** | -0.006 | -0.029 |
| | (-4.05) | (-4.96) | (-5.08) | (-6.11) | (-5.60) | (-5.26) | (1.31) | (-5.23) | (-0.30) | (-1.63) |
| Controls | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.572 | 0.850 | 0.884 | 0.970 | 0.932 | 0.980 | 0.897 | 0.985 | 0.931 | 0.986 |
| SE Cluster | State | State | State | State | State | State | State | State | State | State |

**Panel B: Bankruptcy rates**

Dependent variable: LN(1+Number of bankruptcies/workforce)

| *Income range:* | <$25,000 | | | $25,000-$49,999 | | | $50,000-$74,999 | | | $75,000-$99,999 | | | >$100,000 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Bankruptcy type:* | *Total* | *Business* | *Consumer* | *Total* | *Business* | *Consumer* | *Total* | *Business* | *Consumer* | *Total* | *Business* | *Consumer* | *Total* | *Business* | *Consumer* |
| Madden*State | 0.085*** | 0.009* | 0.081*** | 0.073*** | 0.002** | 0.071*** | 0.047*** | 0.000 | 0.046*** | 0.002 | 0.001*** | 0.001 | 0.000 | 0.000 | 0.000 |
| | (7.96) | (1.95) | (7.65) | (5.11) | (2.47) | (4.59) | (5.66) | (0.44) | (5.65) | (0.15) | (3.53) | (0.05) | (0.56) | (0.69) | (0.50) |
| Controls | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.938 | 0.523 | 0.938 | 0.937 | 0.302 | 0.937 | 0.915 | 0.224 | 0.915 | 0.848 | 0.113 | 0.848 | 0.117 | 0.043 | 0.119 |
| SE Cluster | State | State | State | State | State | State | State | State | State | State | State | State | State | State | State |

*Notes.* This table reports the coefficients and t-statistics (in parentheses). Standard errors are clustered at the state level.. The results in Panel A explain the effect of *Madden* on the amount and number of marketplace loans obtained by borrowers through Lending Club and Prosper. Panel B documents the effect of the *Madden* on the number of total, business and consumer bankruptcy filings. The sample is split by the income of marketplace borrowers and the income of people filing for bankruptcy. The main explanatory variable is an interaction term between the variable *Madden* (equal to 1 for months after the announcement of the verdict in *Madden vs Midland LLC* in May 2015, and zero otherwise) and *State* (equal to 1 for the affected states Connecticut and New York, and zero otherwise). Control variables include: monthly state unemployment rates (*Unemployment*), the logarithm of average total assets of residents filing for bankruptcy in each state and month (*Total assets*), and the logarithm of the dollar amount of funds requested through Lending Club and Prosper by residents in each state per month (*Requested funds*). State and month fixed effects are included ("YES") or not included ("NO").

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level

TABLE V

*MADDEN* AND NON-MARKETPLACE CONSUMER CREDIT

| **Panel A: Effect of Madden on non-marketplace consumer credit** | | | | |
|---|---|---|---|---|
| *Dependent variable:* | LN(1+Volume of marketplace loans) | LN(1+Credit card loans) | LN(1+ Auto loans) | LN(1+Student loans) |
| Madden*State | -0.098*** | -0.004 | -0.019* | -0.010 |
| | (-6.50) | (-0.47) | (-1.87) | (-0.38) |
| Unemployment | -0.017** | 0.001 | -0.021*** | -0.019** |
| | (-2.46) | (0.36) | (-4.05) | (-2.65) |
| Total assets | 0.011 | -0.010 | -0.010 | -0.004 |
| | (0.42) | (-1.60) | (-1.23) | (-0.46) |
| Requested funds | 0.406*** | -0.005 | 0.029*** | -0.008 |
| | (28.14) | (-1.18) | (10.21) | (-0.88) |
| State FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |
| Observations | 225 | 225 | 225 | 225 |
| R-squared | 0.999 | 0.994 | 0.992 | 0.990 |
| SE Cluster | State | State | State | State |

| **Panel B: Effect of Madden on personal bankruptcy controlling for non-marketplace consumer credit** | | | | | | |
|---|---|---|---|---|---|---|
| *Dependent variable:* | LN(1+Total bankruptcies/ workforce) | | LN(1+Total business bankruptcies/ workforce) | | LN(1+Total consumer bankruptcies/workforce) | |
| Madden*State | 0.084** | 0.067*** | 0.022 | 0.022* | 0.066** | 0.064*** |
| | (2.45) | (3.90) | (1.25) | (1.92) | (2.58) | (4.24) |
| Unemployment | | 0.017 | | 0.006 | | 0.017 |
| | | (1.36) | | (1.31) | | (1.39) |
| Total assets | | -0.022 | | 0.024* | | -0.028 |
| | | (-0.88) | | (1.95) | | (-1.13) |
| Requested funds | | 0.018 | | 0.001 | | 0.017 |
| | | (1.40) | | (0.21) | | (1.36) |
| Credit card loans (ln) | | 1.249*** | | 0.191 | | 1.224*** |
| | | (2.83) | | (1.08) | | (2.81) |
| Auto loans (ln) | | -1.181*** | | -0.074 | | -1.205*** |
| | | (-3.53) | | (-0.65) | | (-3.60) |
| Student loans (ln) | | 0.059 | | -0.084 | | 0.064 |
| | | (0.28) | | (-1.08) | | (0.29) |
| State FE | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES |
| Observations | 225 | 225 | 225 | 225 | 225 | 225 |
| R-squared | 0.986 | 0.989 | 0.965 | 0.969 | 0.984 | 0.990 |
| SE Cluster | State | State | State | State | State | State |

*Notes.* This table reports the coefficients and t-statistics (in parentheses). Standard errors are clustered at the state level. The results in Panel A document the effect of *Madden* on the annual volume of marketplace loans, credit card loans, auto loans and student loans. The results in Panel B document the effect of *Madden* on the number of total, business and consumer bankruptcy filings, while controlling for the volume of credit card loans, auto loans and student loans. Bankruptcies are measured as totals in each year. The main explanatory variable is an interaction term between the variable *Madden* (equal to 1 for months after the announcement of the verdict in *Madden vs Midland LLC* in May 2015, and zero otherwise) and *State* (equal to 1 for the affected states Connecticut and New York, and zero otherwise). Control variables include: yearly average state unemployment rates (*Unemployment*), the logarithm of average total assets of residents filing for bankruptcy in each state and month (*Total assets*), and the logarithm of the annual dollar amount of funds requested through Lending Club and Prosper by residents in each state per month (*Requested funds*). State and month fixed effects are included ("YES") or not included ("NO").

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE VI

THE EFFECT OF *MADDEN* ON PERSONAL BANKRUPTCY BY AFFECTED STATE

| **PANEL A: Treatment group includes only Connecticut** | | | | | | |
|---|---|---|---|---|---|---|
| *Dependent variable:* LN(1+Total number of bankruptcies/workforce) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.032** | 0.043*** | 0.052*** | -0.010*** | -0.000 | 0.051*** |
| | (2.30) | (2.86) | (3.60) | (-6.65) | (-1.03) | (4.38) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE/Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,640 | 2,640 | 2,640 | 2,640 | 2,640 | 2,640 |
| R-squared | 0.052 | 0.959 | 0.950 | 0.716 | 0.196 | 0.977 |
| SE Cluster | State | State | State | State | State | State |
| *Dependent variable:* LN(1+Number of business bankruptcies/workforce) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | -0.001 | -0.002 | 0.009*** | -0.007*** | -0.000 | 0.002** |
| | (-0.17) | (-0.69) | (3.86) | (-4.83) | (-1.03) | (2.26) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE/Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,640 | 2,640 | 2,640 | 2,640 | 2,640 | 2,640 |
| R-squared | 0.017 | 0.744 | 0.478 | 0.715 | 0.196 | 0.236 |
| SE Cluster | State | State | State | State | State | State |
| *Dependent variable:* LN(1+Number of consumer bankruptcies/workforce) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* | |
| Madden*State | 0.035** | 0.046*** | 0.052*** | -0.003*** | 0.050*** | |
| | (2.53) | (3.06) | (3.56) | (-8.84) | (4.35) | |
| Controls | NO | YES | YES | YES | YES | |
| State FE/Month FE | NO | YES | YES | YES | YES | |
| Observations | 2,640 | 2,640 | 2,640 | 2,640 | 2,640 | |
| R-squared | 0.050 | 0.963 | 0.950 | 0.686 | 0.977 | |
| SE Cluster | State | State | State | State | State | |
| **PANEL B: Treatment group includes only New York** | | | | | | |
| *Dependent variable:* LN(1+Total number of bankruptcies/workforce) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.101*** | 0.115*** | 0.066*** | 0.020*** | -0.001** | 0.156*** |
| | (7.22) | (7.69) | (4.58) | (10.44) | (-2.51) | (13.48) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE/Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,640 | 2,640 | 2,640 | 2,640 | 2,640 | 2,640 |
| R-squared | 0.051 | 0.959 | 0.950 | 0.715 | 0.195 | 0.977 |
| SE Cluster | State | State | State | State | State | State |
| *Dependent variable:* LN(1+Number of business bankruptcies/workforce) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.042*** | 0.043*** | 0.027*** | 0.017*** | -0.001** | 0.001 |
| | (13.64) | (12.21) | (12.24) | (8.71) | (-2.51) | (0.90) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE/Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,640 | 2,640 | 2,640 | 2,640 | 2,640 | 2,640 |
| R-squared | 0.016 | 0.743 | 0.479 | 0.714 | 0.195 | 0.232 |
| SE Cluster | State | State | State | State | State | State |
| *Dependent variable:* LN(1+Number of consumer bankruptcies/workforce) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* | |
| Madden*State | 0.093*** | 0.107*** | 0.060*** | 0.004*** | 0.156*** | |
| | (6.60) | (7.16) | (4.11) | (12.62) | (13.58) | |
| Controls | NO | YES | YES | YES | YES | |
| State FE/Month FE | NO | YES | YES | YES | YES | |
| Observations | 2,640 | 2,640 | 2,640 | 2,640 | 2,640 | |
| R-squared | 0.050 | 0.963 | 0.951 | 0.688 | 0.977 | |
| SE Cluster | State | State | State | State | State | |

*Notes.* This table reports the coefficients and t-statistics (in parentheses). Standard errors are clustered at the state level. The results in Panel A and B document the effect of *Madden* on the number of total, business and consumer bankruptcy filings, respectively. The results in Panel A are obtained with sample excluding observations for New York and Panel B presents the results obtained using sample excluding observations for Connecticut. The main explanatory variable is an interaction term between the variable *Madden* (equal to 1 for months after the announcement of the verdict in *Madden vs Midland LLC* in May 2015, and zero otherwise) and *State* (equal to 1 for the affected states Connecticut and New York, and zero otherwise). Control variables include: monthly state unemployment rates (*Unemployment*), the logarithm of average total assets of residents filing for bankruptcy in each state and month (*Total assets*), and the logarithm of the dollar amount of funds requested through Lending Club and Prosper by residents in each state per month (*Requested funds*). State and month fixed effects are included ("YES") or not included ("NO").

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level

TABLE VII

THE EFFECT OF *MADDEN* ON MARKETPLACE LOAN DEFAULTS

| *Dependent variable:* LN(1+Number of marketplace loan defaults) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Borrower rating:* | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
| Madden*State | 0.034 | 0.037 | -0.011 | -0.002 | -0.083* | 0.014 | 0.067* | -0.045 | -0.086 |
| | (0.76) | (1.38) | (-0.18) | (-0.06) | (-1.86) | (0.47) | (1.99) | (-1.45) | (-0.85) |
| State | 1.099 | | | | | | | | |
| | (1.56) | | | | | | | | |
| Madden | -0.049 | | | | | | | | |
| | (-1.43) | | | | | | | | |
| Unemployment | | 0.017 | 0.060*** | -0.001 | 0.005 | 0.041* | 0.027 | 0.041* | -0.042* |
| | | (1.22) | (3.07) | (-0.04) | (0.26) | (1.79) | (1.50) | (1.73) | (-1.87) |
| Total assets | | -0.004 | 0.046 | 0.075 | 0.040 | -0.001 | -0.022 | 0.007 | 0.022 |
| | | (-0.13) | (0.71) | (1.44) | (0.94) | (-0.02) | (-0.45) | (0.07) | (0.40) |
| Requested funds | | 0.566*** | 0.011 | 0.112*** | 0.224*** | 0.273*** | 0.323*** | 0.283*** | 0.089*** |
| | | (11.78) | (0.56) | (6.30) | (5.33) | (6.62) | (6.90) | (8.74) | (3.33) |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.035 | 0.917 | 0.610 | 0.781 | 0.862 | 0.892 | 0.901 | 0.878 | 0.749 |
| SE Cluster | State | State | State | State | State | State | State | State | State |

*Notes.* This table reports the coefficients and t-statistics (in parentheses). Standard errors are clustered at the state level. The presented results document the effect of *Madden* on the number of marketplace loan defaults. The main explanatory variable is an interaction term between the variable *Madden* (equal to 1 for months after the announcement of the verdict in *Madden vs Midland LLC* in May 2015, and zero otherwise) and *State* (equal to 1 for the affected states Connecticut and New York, and zero otherwise). Control variables include: monthly state unemployment rates (*Unemployment*), the logarithm of average total assets of residents filing for bankruptcy in each state and month (*Total assets*), and the logarithm of the dollar amount of funds requested through Lending Club and Prosper by residents in each state per month (*Requested funds*). State and month fixed effects are included ("YES") or not included ("NO").

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE VIII

*MADDEN*'S PERSISTENT EFFECT ON CREDIT RATIONING AND BANKRUPTCY

| **PANEL A: Marketplace lending** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Dependent variable:* LN(1+Volume of marketplace loans) | | | | | | | | |
| Borrower rating: | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
| SR-Madden*State | -0.073*** | -1.204*** | -0.297*** | -0.209*** | -0.142*** | -0.063** | -0.027 | -0.059 |
| | (-4.50) | (-5.01) | (-3.20) | (-4.97) | (-3.27) | (-2.65) | (-1.08) | (-1.32) |
| LR-Madden*State | -0.121*** | -2.037*** | -0.880*** | -0.637*** | -0.445*** | 0.005 | 0.078*** | 0.071* |
| | (-8.99) | (-8.58) | (-13.07) | (-12.97) | (-10.75) | (0.11) | (4.16) | (1.89) |
| Controls/State FE/ Month FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.993 | 0.570 | 0.680 | 0.764 | 0.897 | 0.967 | 0.920 | 0.835 |
| SE Cluster | State | State | State | State | State | State | State | State |
| *Dependent variable:* LN(1+Number of marketplace loans) | | | | | | | | |
| Borrower rating: | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
| SR-Madden*State | -0.082*** | -0.135 | -0.201*** | -0.162*** | -0.154*** | -0.068* | -0.033 | -0.034** |
| | (-3.60) | (-1.04) | (-3.79) | (-9.62) | (-6.50) | (-1.88) | (-1.13) | (-2.11) |
| LR-Madden*State | -0.167*** | -1.219*** | -1.167*** | -0.744*** | -0.489*** | -0.020 | 0.024** | 0.013 |
| | (-10.68) | (-15.27) | (-33.89) | (-34.15) | (-22.71) | (-0.35) | (2.07) | (0.84) |
| Controls/State FE/ Month FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.994 | 0.863 | 0.933 | 0.962 | 0.979 | 0.986 | 0.985 | 0.976 |
| SE Cluster | State | State | State | State | State | State | State | State |

| **PANEL B: Bankruptcy rates** | | | | | |
|---|---|---|---|---|---|
| *Dependent variable:* LN(1+Total number of bankruptcies/workforce) | | | | | |
| | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| SR-Madden*State | 0.066*** | 0.060*** | 0.002 | 0.001* | 0.071*** |
| | (4.78) | (5.11) | (0.36) | (1.92) | (4.91) |
| LR-Madden*State | 0.087** | 0.058*** | 0.007 | -0.001* | 0.124** |
| | (2.05) | (3.14) | (0.45) | (-1.91) | (2.17) |
| Controls/State FE/Month FE | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.959 | 0.950 | 0.714 | 0.196 | 0.977 |
| SE Cluster | State | State | State | State | State |
| *Dependent variable:* LN(1+Number of business bankruptcies/workforce) | | | | | |
| | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| SR-Madden*State | 0.016* | 0.013** | 0.002 | 0.001* | 0.002* |
| | (1.70) | (2.36) | (0.33) | (1.92) | (1.70) |
| LR-Madden*State | 0.027 | 0.021** | 0.006 | -0.001* | 0.001 |
| | (1.37) | (2.52) | (0.54) | (-1.91) | (0.86) |
| Controls/State FE/Month FE | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.743 | 0.478 | 0.714 | 0.196 | 0.236 |
| SE Cluster | State | State | State | State | State |
| *Dependent variable:* LN(1+Number of consumer bankruptcies/workforce) | | | | | |
| | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* | |
| SR-Madden*State | 0.065*** | 0.058*** | 0.001 | 0.070*** | |
| | (5.03) | (4.90) | (0.49) | (4.70) | |
| LR-Madden*State | 0.084** | 0.054*** | 0.000 | 0.124** | |
| | (2.21) | (3.07) | (0.13) | (2.17) | |
| Controls/State FE/Month FE | YES | YES | YES | YES | |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | |
| R-squared | 0.963 | 0.950 | 0.684 | 0.977 | |
| SE Cluster | State | State | State | State | |

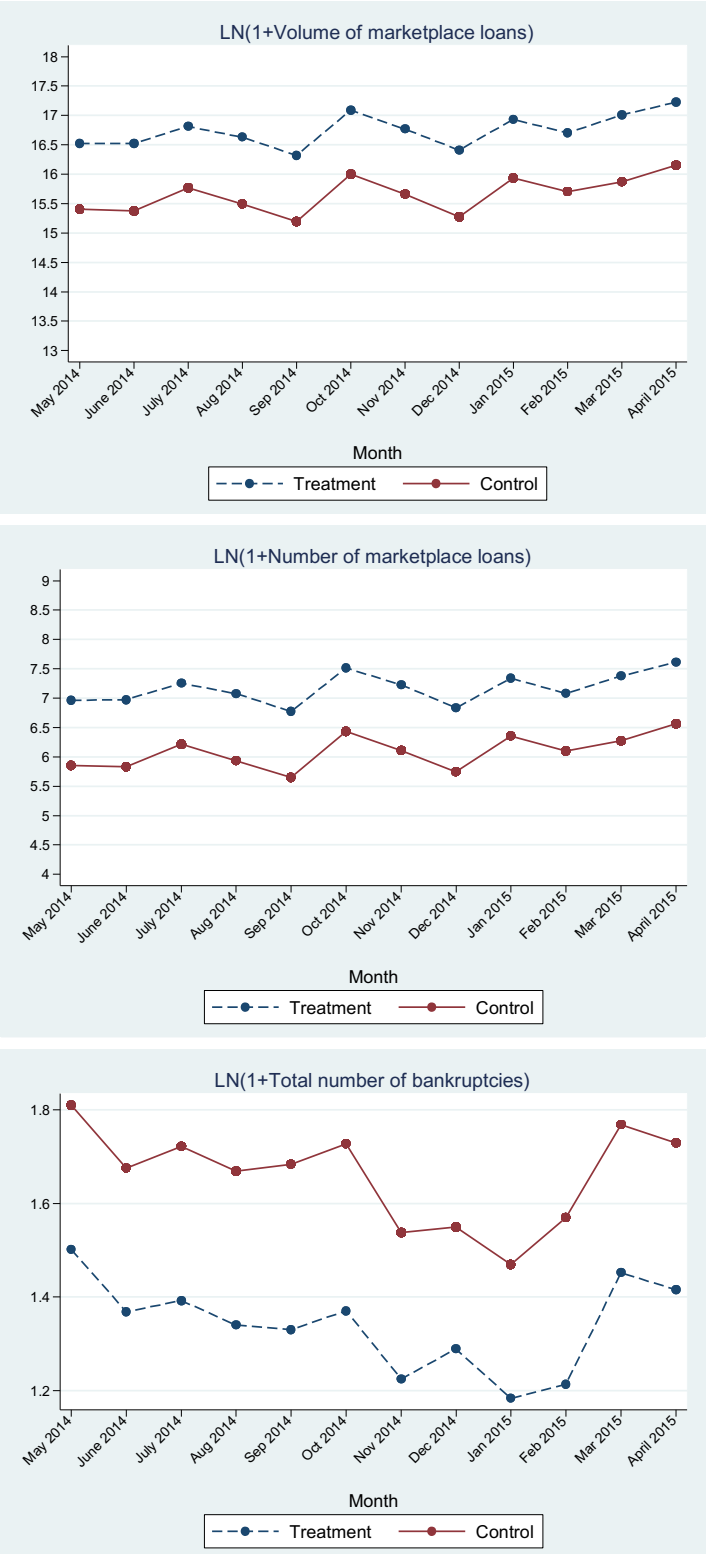
*Notes.* This table replicates the results presented in Table II (Panel A and B) and Table III. We replace the interaction term *Madden*State* as the main explanatory variable with SR-Madden*State and SR-Madden*State capturing the short-run and long-run effects of *Madden*.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

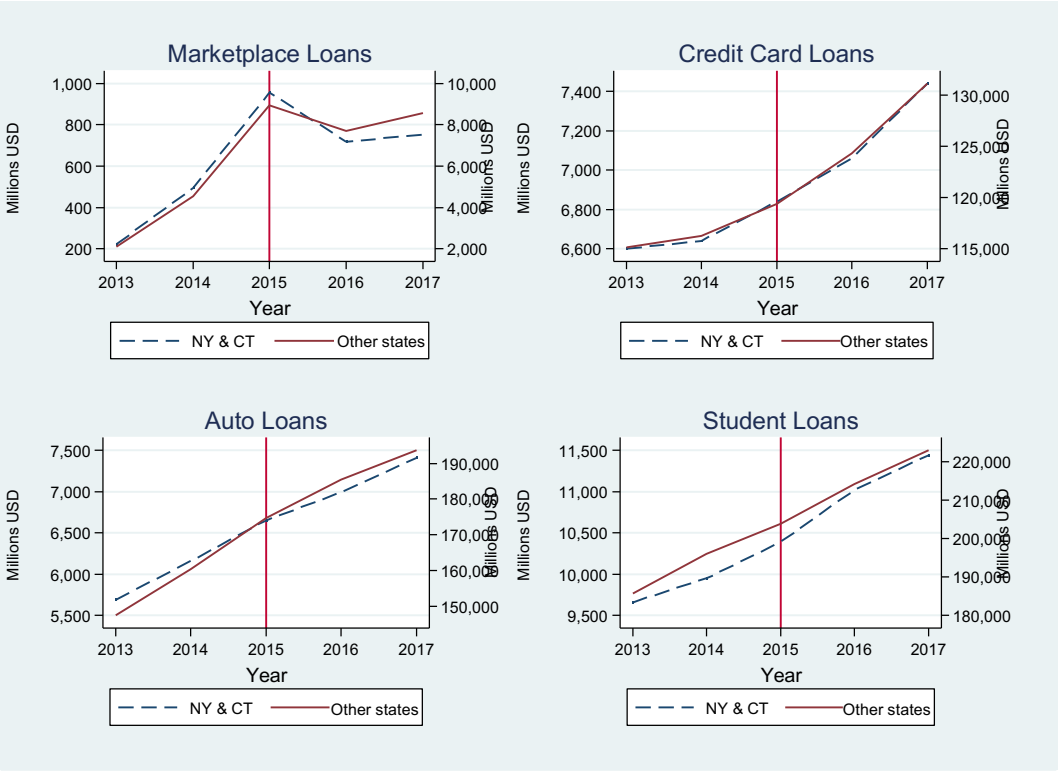
* Significant at the 10 percent level.

FIGURE I
PARALLEL TRENDS




*Notes.* This figure presents the trends in the evolution of marketplace lending and total bankruptcy filings in the treatment and control group states in the 12 months preceding the treatment event. The figure shows that, prior to the court ruling, both marketplace lending and bankruptcy rates in the control and treatment group states evolve in a parallel manner.

FIGURE II
EFFECT OF MADDEN ON CONSUMER LOANS




*Notes.* This figure presents the trends in the evolution of marketplace lending, credit card loans, auto loans and student loans prior to and following *Madden* verdict. It shows that apart from marketplace lending, other types of consumer loans are not significantly affected by *Madden*. A formal test for this, where we let the dependent variable be, respectively, the total annual volume of marketplace loans, credit card loans, auto loans and student loans, is presented in Table V, Panel A.

# Appendix A – Additional Tests

TABLE A.1
ADDITIONAL SUMMARY STATISTICS

| **Panel A: Court district level data** | | | | | | |
|---|---|---|---|---|---|---|
| *Variable* | *N* | *Mean* | *St Dev* | *Min* | *Median* | *Max* |
| *Dependent variables* | | | | | | |
| Volume of marketplace lending | 2,700 | 13,000,000.00 | 18,100,000.00 | 4,000.00 | 7,078,644.00 | 159,000,000.00 |
| Volume of marketplace lending Borrower Rating 1 | 2,700 | 125,766.30 | 209,791.70 | 0.00 | 57,150.00 | 2,643,925.00 |
| Volume of marketplace lending Borrower Rating 2 | 2,700 | 436,396.00 | 621,838.20 | 0.00 | 236,912.50 | 5,651,712.00 |
| Volume of marketplace lending Borrower Rating 3 | 2,700 | 1,202,876.00 | 1,681,499.00 | 0.00 | 649,150.00 | 14,900,000.00 |
| Volume of marketplace lending Borrower Rating 4 | 2,700 | 2,455,936.00 | 3,404,691.00 | 0.00 | 1,342,738.00 | 28,900,000.00 |
| Volume of marketplace lending Borrower Rating 5 | 2,700 | 3,701,912.00 | 5,158,227.00 | 0.00 | 2,006,050.00 | 41,400,000.00 |
| Volume of marketplace lending Borrower Rating 6 | 2,700 | 3,233,284.00 | 4,587,314.00 | 0.00 | 1,728,838.00 | 41,100,000.00 |
| Volume of marketplace lending Borrower Rating 7 | 2,700 | 1,804,184.00 | 2,736,030.00 | 0.00 | 880,825.00 | 33,500,000.00 |
| Number of marketplace loans | 2,700 | 900.81 | 1,237.28 | 1.00 | 507.00 | 10,432.00 |
| Number of marketplace loans Borrower Rating 1 | 2,700 | 12.24 | 21.35 | 0.00 | 5.00 | 259.00 |
| Number of marketplace loans Borrower Rating 2 | 2,700 | 35.79 | 51.39 | 0.00 | 20.00 | 521.00 |
| Number of marketplace loans Borrower Rating 3 | 2,700 | 78.80 | 108.53 | 0.00 | 43.00 | 899.00 |
| Number of marketplace loans Borrower Rating 4 | 2,700 | 163.76 | 222.67 | 0.00 | 92.00 | 1,870.00 |
| Number of marketplace loans Borrower Rating 5 | 2,700 | 249.68 | 343.62 | 0.00 | 139.00 | 2,802.00 |
| Number of marketplace loans Borrower Rating 6 | 2,700 | 233.20 | 322.48 | 0.00 | 130.50 | 2,896.00 |
| Number of marketplace loans Borrower Rating 7 | 2,700 | 127.34 | 187.12 | 0.00 | 64.00 | 2,112.00 |
| Relevant loans | 2,700 | 11,100,000.00 | 15,300,000.00 | 4,000.00 | 6,118,925.00 | 136,000,000.00 |
| Debt refinancing loans | 2,700 | 8,648,005.00 | 12,000,000.00 | 4,000.00 | 4,732,488.00 | 103,000,000.00 |
| Medical expenses loans | 2,700 | 148,947.00 | 246,008.70 | 0.00 | 64,950.00 | 2,086,036.00 |
| Small business loans | 2,700 | 156,252.40 | 249,318.60 | 0.00 | 76,050.00 | 2,672,050.00 |
| Other loans | 2,700 | 1,888,847.00 | 2,926,664.00 | 0.00 | 885,744.00 | 26,500,000.00 |
| Number of bankruptcies | 2,700 | 1,573.30 | 1,637.89 | 17.00 | 1,145.50 | 13,839.00 |
| Number of chapter 7 bankruptcies | 2,700 | 1,017.42 | 1,142.27 | 13.00 | 736.00 | 11,039.00 |
| Number of chapter 11 bankruptcies | 2,700 | 13.49 | 22.39 | 0.00 | 6.00 | 306.00 |
| Number of chapter 12 bankruptcies | 2,700 | 0.68 | 1.15 | 0.00 | 0.00 | 9.00 |
| Number of chapter 13 bankruptcies | 2,700 | 541.51 | 611.85 | 2.00 | 356.00 | 3,167.00 |
| Number of business bankruptcies | 2,700 | 46.55 | 58.97 | 0.00 | 29.00 | 441.00 |
| Number of chapter 7 business bankruptcies | 2,700 | 30.28 | 39.81 | 0.00 | 19.00 | 329.00 |
| Number of chapter 11 business bankruptcies | 2,700 | 11.41 | 20.16 | 0.00 | 5.00 | 306.00 |
| Number of chapter 12 business bankruptcies | 2,700 | 0.68 | 1.15 | 0.00 | 0.00 | 9.00 |
| Number of chapter 13 business bankruptcies | 2,700 | 3.98 | 5.39 | 0.00 | 2.00 | 45.00 |
| Number of consumer bankruptcies | 2,700 | 1,526.75 | 1,588.53 | 16.00 | 1,112.00 | 13,401.00 |
| Number of chapter 7 consumer bankruptcies | 2,700 | 987.14 | 1,107.13 | 13.00 | 714.00 | 10,716.00 |
| Number of chapter 11 consumer bankruptcies | 2,700 | 2.08 | 4.37 | 0.00 | 0.00 | 43.00 |
| Number of chapter 13 consumer bankruptcies | 2,700 | 537.53 | 608.35 | 1.00 | 352.50 | 3,153.00 |
| Number of bankruptcies/workforce | 2,700 | 4.56 | 2.34 | 0.47 | 4.24 | 12.99 |
| Number of chapter 7 bankruptcies/workforce | 2,700 | 3.00 | 1.44 | 0.36 | 2.87 | 9.04 |
| Number of chapter 11 bankruptcies/workforce | 2,700 | 0.05 | 0.22 | 0.00 | 0.03 | 6.40 |
| Number of chapter 12 bankruptcies/workforce | 2,700 | 0.00 | 0.01 | 0.00 | 0.00 | 0.09 |
| Number of chapter 13 bankruptcies/workforce | 2,700 | 1.51 | 1.42 | 0.06 | 1.13 | 7.96 |
| Number of business bankruptcies/workforce | 2,700 | 0.15 | 0.25 | 0.00 | 0.12 | 6.86 |
| Number of chapter 7 business bankruptcies/workforce | 2,700 | 0.09 | 0.05 | 0.00 | 0.08 | 0.89 |
| Number of chapter 11 business bankruptcies/workforce | 2,700 | 0.05 | 0.22 | 0.00 | 0.02 | 6.40 |
| Number of chapter 12 business bankruptcies/workforce | 2,700 | 0.00 | 0.01 | 0.00 | 0.00 | 0.09 |
| Number of chapter 13 business bankruptcies/workforce | 2,700 | 0.01 | 0.01 | 0.00 | 0.01 | 0.18 |
| Number of consumer bankruptcies/workforce | 2,700 | 4.41 | 2.31 | 0.44 | 4.06 | 12.89 |
| Number of chapter 7 consumer bankruptcies/workforce | 2,700 | 2.91 | 1.42 | 0.36 | 2.78 | 8.94 |
| Number of chapter 11 consumer bankruptcies/workforce | 2,700 | 0.01 | 0.01 | 0.00 | 0.00 | 0.13 |
| Number of chapter 13 consumer bankruptcies/workforce | 2,700 | 1.50 | 1.42 | 0.03 | 1.12 | 7.94 |
| LN(1+Number of bankruptcies) | 2,700 | 6.73 | 1.32 | 2.89 | 7.04 | 9.54 |
| LN(1+Number of chapter 7 bankruptcies) | 2,700 | 6.31 | 1.25 | 2.64 | 6.60 | 9.31 |
| LN(1+Number of chapter 11 bankruptcies) | 2,700 | 1.92 | 1.22 | 0.00 | 1.95 | 5.73 |
| LN(1+Number of chapter 12 bankruptcies) | 2,700 | 0.36 | 0.52 | 0.00 | 0.00 | 2.30 |
| LN(1+Number of chapter 13 bankruptcies) | 2,700 | 5.39 | 1.64 | 1.10 | 5.88 | 8.06 |
| LN(1+Number of business bankruptcies) | 2,700 | 3.30 | 1.10 | 0.00 | 3.40 | 6.09 |
| LN(1+Number of chapter 7 business bankruptcies) | 2,700 | 2.90 | 1.08 | 0.00 | 3.00 | 5.80 |
| LN(1+Number of chapter 11 business bankruptcies) | 2,700 | 1.79 | 1.18 | 0.00 | 1.79 | 5.73 |
| LN(1+Number of chapter 12 business bankruptcies) | 2,700 | 0.00 | 0.01 | 0.00 | 0.00 | 0.08 |
| LN(1+Number of chapter 13 business bankruptcies) | 2,700 | 1.20 | 0.88 | 0.00 | 1.10 | 3.83 |
| LN(1+Number of consumer bankruptcies) | 2,700 | 6.69 | 1.34 | 2.83 | 7.01 | 9.50 |
| LN(1+Number of chapter 7 consumer bankruptcies) | 2,700 | 6.28 | 1.26 | 2.64 | 6.57 | 9.28 |
| LN(1+Number of chapter 11 consumer bankruptcies) | 2,700 | 0.67 | 0.83 | 0.00 | 0.00 | 3.78 |
| LN(1+Number of chapter 13 consumer bankruptcies) | 2,700 | 5.38 | 1.65 | 0.69 | 5.87 | 8.06 |
| Average interest rate on marketplace loan | 2,700 | 9.32 | 2.20 | 0.13 | 9.24 | 14.93 |
| Average interest rate on marketplace loan Borrower Rating 1 | 2,700 | 9.81 | 8.83 | 0.00 | 8.19 | 30.99 |
| Average interest rate on marketplace loan Borrower Rating 2 | 2,700 | 10.61 | 6.25 | 0.00 | 10.17 | 30.75 |
| Average interest rate on marketplace loan Borrower Rating 3 | 2,700 | 11.71 | 4.53 | 0.00 | 11.56 | 25.87 |
| Average interest rate on marketplace loan Borrower Rating 4 | 2,700 | 10.32 | 3.44 | 0.00 | 10.17 | 19.92 |
| Average interest rate on marketplace loan Borrower Rating 5 | 2,700 | 10.56 | 2.47 | 0.00 | 10.76 | 16.29 |
| Average interest rate on marketplace loan Borrower Rating 6 | 2,700 | 8.33 | 1.93 | 0.00 | 8.60 | 13.11 |
| Average interest rate on marketplace loan Borrower Rating 7 | 2,700 | 5.75 | 1.25 | 0.00 | 5.78 | 8.90 |
| Average rating of marketplace borrowers | 2,700 | 5.00 | 0.20 | 2.00 | 5.00 | 6.08 |
| Number of marketplace loan defaults | 2,700 | 70.85 | 110.55 | 0.00 | 35.00 | 1,164.00 |
| Number of marketplace loan defaults Borrower Rating 1 | 2,700 | 1.27 | 2.19 | 0.00 | 0.00 | 27.00 |

TABLE A.1 (*CONTINUED*)

| | | | | | | |
|---|---|---|---|---|---|---|
| Number of marketplace loan defaults Borrower Rating 2 | 2,700 | 4.20 | 6.71 | 0.00 | 2.00 | 80.00 |
| Number of marketplace loan defaults Borrower Rating 3 | 2,700 | 10.21 | 16.42 | 0.00 | 5.00 | 167.00 |
| Number of marketplace loan defaults Borrower Rating 4 | 2,700 | 16.35 | 25.24 | 0.00 | 8.00 | 232.00 |
| Number of marketplace loan defaults Borrower Rating 5 | 2,700 | 22.21 | 34.99 | 0.00 | 11.00 | 375.00 |
| Number of marketplace loan defaults Borrower Rating 6 | 2,700 | 13.18 | 21.60 | 0.00 | 6.00 | 254.00 |
| Number of marketplace loan defaults Borrower Rating 7 | 2,700 | 3.43 | 6.17 | 0.00 | 1.00 | 69.00 |
| Non- marketplace consumer loans | 2,700 | 3,430,000,000 | 6,380,000,000 | 212,705.40 | 285,000,000 | 30,300,000,000 |
| *Control variables* | | | | | | |
| Unemployment (% of workforce) | 2,700 | 5.38 | 1.46 | 2.10 | 5.20 | 10.40 |
| Total assets | 2,700 | 570,920.60 | 12,100,000 | 0.00 | 115,699.20 | 582,000,000 |
| Requested funds | 2,700 | 96,200,000 | 142,000,000 | 4,000 | 48,500,000 | 1,210,000,000 |

**Panel B: Other summary statistics**

| *Variable* | *Mean* | *Min* | *Max* |
|---|---|---|---|
| Total business bankruptcy fillings/Total bankruptcy fillings | 3.82% | 0.00% | 66.13% |
| Total consumer bankruptcy fillings/Total bankruptcy fillings | 96.18% | 33.87% | 100.00% |
| Total Chapter 7 bankruptcy fillings/Total bankruptcy fillings | 68.52% | 21.03% | 96.94% |
| Total Chapter 11 bankruptcy fillings/Total bankruptcy fillings | 1.21% | 0.00% | 61.69% |
| Total Chapter 12 bankruptcy fillings/Total bankruptcy fillings | 0.08% | 0.00% | 6.90% |
| Total Chapter 13 bankruptcy fillings/Total bankruptcy fillings | 30.15% | 3.06% | 78.77% |
| Chapter 7 business bankruptcy fillings/Total bankruptcy fillings | 67.68% | 0.00% | 100.00% |
| Chapter 11 business bankruptcy fillings/Total bankruptcy fillings | 20.39% | 0.00% | 100.00% |
| Chapter 12 business bankruptcy fillings/Total bankruptcy fillings | 2.33% | 0.00% | 100.00% |
| Chapter 13 business bankruptcy fillings/Total bankruptcy fillings | 9.29% | 0.00% | 100.00% |
| Chapter 7 consumer bankruptcy fillings/Total bankruptcy fillings | 68.94% | 19.34% | 97.56% |
| Chapter 11 consumer bankruptcy fillings/Total bankruptcy fillings | 0.13% | 0.00% | 4.17% |
| Chapter 13 consumer bankruptcy fillings/Total bankruptcy fillings | 30.93% | 2.44% | 80.66% |
| Marketplace loan value: Borrower rating 1/Total marketplace loans | 0.94% | 0.00% | 16.26% |
| Marketplace loan value: Borrower rating 2/Total marketplace loans | 3.56% | 0.00% | 100.00% |
| Marketplace loan value: Borrower rating 3/Total marketplace loans | 9.32% | 0.00% | 36.00% |
| Marketplace loan value: Borrower rating 4/Total marketplace loans | 18.85% | 0.00% | 51.12% |
| Marketplace loan value: Borrower rating 5/Total marketplace loans | 28.65% | 0.00% | 66.67% |
| Marketplace loan value: Borrower rating 6/Total marketplace loans | 25.31% | 0.00% | 66.24% |
| Marketplace loan value: Borrower rating 7/Total marketplace loans | 13.37% | 0.00% | 34.67% |
| Number of marketplace loans: Borrower rating 1/Total number of marketplace loans | 1.28% | 0.00% | 22.22% |
| Number of marketplace loans: Borrower rating 2/Total number of marketplace loans | 4.21% | 0.00% | 100.00% |
| Number of marketplace loans: Borrower rating 3/Total number of marketplace loans | 8.83% | 0.00% | 33.33% |
| Number of marketplace loans: Borrower rating 4/Total number of marketplace loans | 18.27% | 0.00% | 47.06% |
| Number of marketplace loans: Borrower rating 5/Total number of marketplace loans | 27.59% | 0.00% | 50.00% |
| Number of marketplace loans: Borrower rating 6/Total number of marketplace loans | 26.28% | 0.00% | 53.85% |
| Number of marketplace loans: Borrower rating 7/Total number of marketplace loans | 13.54% | 0.00% | 33.68% |
| Relevant marketplace loan value/Total marketplace loan value | 87.04% | 45.54% | 100.00% |
| Debt consolidation marketplace loan value/Total marketplace loan value | 69.84% | 39.54% | 100.00% |
| Small business marketplace loan value/Total marketplace loan value | 9.56% | 0.03% | 15.56% |
| Medical expenses marketplace loan value/Total marketplace loan value | 7.64% | 0.02% | 38.33% |
| Other marketplace loan value/Total marketplace loan value | 12.96% | 0.75% | 100.00% |

**Panel C: Marketplace loans and bankruptcy filings by treatment state**

*Affected state: Connecticut*

| Variable | U.S. Total | Connecticut Total | Connecticut Total as % of U.S. Total |
|---|---|---|---|
| Volume of marketplace loans ($) | 35,000,000,000 | 502,000,000 | 1.430% |
| Number of marketplace loans | 2,432,191 | 33,844 | 1.392% |
| Total bankruptcy filings | 4,247,918 | 31,860 | 0.750% |
| Business bankruptcy filings | 125,688 | 1,257 | 0.999% |
| Consumer bankruptcy filings | 4,122,230 | 30,603 | 0.742% |

*Affected state: New York*

| Variable | U.S. Total | New York Total | New York Total as % of U.S. Total |
|---|---|---|---|
| Volume of marketplace loans ($) | 35,000,000,000 | 2,640,000,000 | 7.552% |
| Number of marketplace loans | 2,432,191 | 183,524 | 7.546% |
| Total bankruptcy filings | 4,247,918 | 163,109 | 3.840% |
| Business bankruptcy filings | 125,688 | 8,539 | 6.794% |
| Consumer bankruptcy filings | 4,122,230 | 154,570 | 3.750% |

*Affected state: Vermont*

| Variable | U.S. Total | Vermont Total | Vermont Total as % of U.S. Total |
|---|---|---|---|
| Volume of marketplace loans ($) | 35,000,000,000 | 59,500,000 | 0.170% |
| Number of marketplace loans | 2,432,191 | 4,446 | 0.183% |
| Total bankruptcy filings | 4,247,918 | 3,426 | 0.081% |
| Business bankruptcy filings | 125,688 | 208 | 0.165% |
| Consumer bankruptcy filings | 4,122,230 | 3,218 | 0.078% |

*Notes.* This table presents additional summary statistics.

TABLE A.2
RESULTS BASED ON MATCHED SAMPLE

**PANEL A: Marketplace lending**

*Dependent variable*: LN(1+Volume of marketplace loans)

| Borrower rating: | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
|---|---|---|---|---|---|---|---|---|---|
| Madden*State | -0.185*** | -0.107*** | -0.734*** | -0.560*** | -0.422*** | -0.354*** | -0.028 | 0.004 | 0.041 |
| | (-5.70) | (-7.58) | (-5.30) | (-18.23) | (-11.23) | (-15.22) | (-0.70) | (0.24) | (0.95) |
| Observations | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| R-squared | 0.176 | 0.994 | 0.662 | 0.939 | 0.975 | 0.985 | 0.990 | 0.990 | 0.870 |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE & Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State | State | State | State |

*Dependent variable:* LN(1+Number of marketplace loans)

| Borrower rating: | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
|---|---|---|---|---|---|---|---|---|---|
| Madden*State | -0.206*** | -0.145*** | -0.925*** | -0.834*** | -0.550*** | -0.387*** | -0.049 | -0.009 | -0.003 |
| | (-6.13) | (-8.05) | (-8.20) | (-30.26) | (-17.63) | (-18.02) | (-0.94) | (-0.61) | (-0.11) |
| Observations | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| R-squared | 0.178 | 0.995 | 0.903 | 0.940 | 0.974 | 0.985 | 0.991 | 0.991 | 0.178 |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE & Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State | State | State | State |

| *Dependent variables:* | LN(1+Relevant loans) | LN(1+Relevant loans) | LN(1+ debt refinancing loans) | LN(1+ medical expenses loans) | LN(1+small business loans) | LN(1+other loans) |
|---|---|---|---|---|---|---|
| Madden*State | -0.186*** | -0.107*** | -0.168*** | -0.632** | -0.426** | -0.151*** |
| | (-6.01) | (-7.68) | (-6.61) | (-2.28) | (-2.82) | (-7.99) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE & Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 600 | 600 | 600 | 600 | 600 | 600 |
| R-squared | 0.164 | 0.994 | 0.994 | 0.690 | 0.663 | 0.990 |
| SE Cluster | State | State | State | State | State | State |

**PANEL B: Bankruptcy rates**

*Dependent variable:* LN(1+Total number of bankruptcies/workforce)

| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
|---|---|---|---|---|---|---|
| Madden*State | 0.112** | 0.115** | 0.091** | 0.003 | -0.000 | 0.150** |
| | (2.50) | (2.44) | (2.61) | (0.25) | (-1.33) | (3.09) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE & Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 600 | 600 | 600 | 600 | 600 | 600 |
| R-squared | 0.261 | 0.967 | 0.954 | 0.373 | 0.240 | 0.981 |
| SE Cluster | State | State | State | State | State | State |

*Dependent variable:* LN(1+Number of business bankruptcies/workforce)

| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
|---|---|---|---|---|---|---|
| Madden*State | 0.019 | 0.018 | 0.017* | 0.002 | -0.000 | -0.000 |
| | (1.07) | (0.99) | (2.06) | (0.19) | (-1.33) | (-0.31) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE & Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 600 | 600 | 600 | 600 | 600 | 600 |
| R-squared | 0.102 | 0.538 | 0.721 | 0.338 | 0.240 | 0.371 |
| SE Cluster | State | State | State | State | State | State |

*Dependent variable:* LN(1+Number of consumer bankruptcies/workforce)

| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* |
|---|---|---|---|---|---|
| Madden*State | 0.112** | 0.115** | 0.090** | 0.001 | 0.151** |
| | (2.64) | (2.57) | (2.57) | (0.55) | (3.09) |
| Controls | NO | YES | YES | YES | YES |
| State FE & Month FE | NO | YES | YES | YES | YES |
| Observations | 600 | 600 | 600 | 600 | 600 |
| R-squared | 0.259 | 0.968 | 0.955 | 0.698 | 0.981 |
| SE Cluster | State | State | State | State | State |

*Notes.* This table presents estimates using a matched sample. The matching procedure follows the nearest neighbor matching method by Lemmon and Roberts (2010). We match states based on the volume of marketplace lending prior to the treatment event. For each treated state we choose four nearest neighbor states from the control group.

TABLE A.3
INCLUDING VERMONT IN THE TREATMENT GROUP

**PANEL A: Marketplace lending**

*Dependent variable:* LN(1+Volume of marketplace loans)

| Borrower rating: | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
|---|---|---|---|---|---|---|---|---|---|
| Madden*State | -0.115** | -0.095*** | -1.809*** | -0.780*** | -0.036 | -0.296*** | -0.022 | 0.106* | 0.398 |
| | (-2.38) | (-7.48) | (-8.64) | (-6.93) | (-0.10) | (-7.78) | (-0.88) | (1.85) | (1.32) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.120 | 0.993 | 0.571 | 0.681 | 0.763 | 0.897 | 0.967 | 0.920 | 0.836 |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State | State | State | State |

*Dependent variable:* LN(1+Number of marketplace loans)

| Borrower rating: | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
|---|---|---|---|---|---|---|---|---|---|
| Madden*State | -0.145*** | -0.129*** | -0.855*** | -0.845*** | -0.538*** | -0.400*** | -0.059 | 0.004 | 0.021 |
| | (-3.81) | (-9.07) | (-11.00) | (-21.95) | (-28.43) | (-13.16) | (-1.61) | (0.29) | (0.84) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.120 | 0.994 | 0.862 | 0.933 | 0.962 | 0.979 | 0.986 | 0.985 | 0.976 |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State | State | State | State |

| *Dependent variables:* | LN(1+Relevant loans) | LN(1+Relevant loans) | LN(1+ debt refinancing loans) | LN(1+ medical expenses loans) | LN(1+small business loans) | LN(1+other loans) |
|---|---|---|---|---|---|---|
| Madden*State | -0.101* | -0.119*** | -0.198*** | -0.338*** | -0.203 | -0.161*** |
| | (-1.74) | (-3.86) | (-6.66) | (-2.56) | (-0.64) | (-7.45) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.110 | 0.945 | 0.941 | 0.562 | 0.461 | 0.882 |
| SE Cluster | State | State | State | State | State | State |

**PANEL B: Bankruptcy rates**

*Dependent variable:* LN(1+Total number of bankruptcies/workforce)

| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
|---|---|---|---|---|---|---|
| Madden*State | 0.043 | 0.042 | 0.049*** | 0.004 | 0.001 | 0.041 |
| | (1.48) | (1.12) | (3.08) | (0.59) | (0.90) | (0.73) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.111 | 0.959 | 0.950 | 0.714 | 0.196 | 0.976 |
| SE Cluster | State | State | State | State | State | State |

*Dependent variable:* LN(1+Number of business bankruptcies/workforce)

| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
|---|---|---|---|---|---|---|
| Madden*State | 0.023** | 0.023** | 0.019*** | 0.004 | 0.001 | -0.000 |
| | (2.15) | (2.19) | (3.74) | (0.67) | (0.90) | (-0.14) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.018 | 0.743 | 0.479 | 0.714 | 0.196 | 0.236 |
| SE Cluster | State | State | State | State | State | State |

*Dependent variable:* LN(1+Number of consumer bankruptcies/workforce)

| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* |
|---|---|---|---|---|---|
| Madden*State | 0.040 | 0.038 | 0.045*** | 0.000 | 0.042 |
| | (1.40) | (1.03) | (2.79) | (0.29) | (0.75) |
| Controls | NO | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.109 | 0.962 | 0.950 | 0.684 | 0.976 |
| SE Cluster | State | State | State | State | State |

*Notes.* This table reproduces the results presented in Tables II and III with Vermont included in the treatment group.

TABLE A.4

ALTERNATIVE MEASURES OF BANKRUPTCY RATES

| **PANEL A: Measuring bankruptcy as bankruptcy/workforce** | | | | | | |
|---|---|---|---|---|---|---|
| *Dependent variable:* Total number of bankruptcies/workforce | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.569*** | 0.683*** | 0.460*** | 0.006 | -0.000 | 0.217*** |
| | (4.27) | (4.87) | (5.47) | (0.54) | (-1.58) | (2.97) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.067 | 0.945 | 0.912 | 0.497 | 0.194 | 0.975 |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State |
| *Dependent variable:* Number of business bankruptcies/workforce | | | | | | |
| VARIABLES | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.026 | 0.027 | 0.020** | 0.006 | -0.000 | 0.001 |
| | (1.45) | (1.61) | (2.59) | (0.62) | (-1.58) | (1.42) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.005 | 0.556 | 0.456 | 0.497 | 0.194 | 0.236 |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State |
| *Dependent variable:* Number of consumer bankruptcies/workforce | | | | | | |
| VARIABLES | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* | |
| Madden*State | 0.543*** | 0.656*** | 0.440*** | 0.001 | 0.216*** | |
| | (4.52) | (5.17) | (5.48) | (0.22) | (2.94) | |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | |
| R-squared | 0.065 | 0.950 | 0.912 | 0.683 | 0.975 | |
| Controls | NO | YES | YES | YES | YES | |
| State FE | NO | YES | YES | YES | YES | |
| Month FE | NO | YES | YES | YES | YES | |
| SE Cluster | State | State | State | State | State | |
| **PANEL B: Measuring bankruptcy as the log of one plus bankruptcy** | | | | | | |
| *Dependent variable:* LN(1+Total number of bankruptcies) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.063** | 0.074** | 0.050*** | -0.004 | -0.042 | 0.223** |
| | (2.09) | (2.10) | (2.85) | (-0.02) | (-1.22) | (2.36) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.009 | 0.993 | 0.992 | 0.841 | 0.384 | 0.988 |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State |
| *Dependent variable:* LN(1+Number of business bankruptcies) | | | | | | |
| VARIABLES | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.118 | 0.132 | 0.173* | 0.017 | -0.042 | -0.009 |
| | (0.86) | (0.98) | (1.84) | (0.07) | (-1.22) | (-0.12) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.029 | 0.926 | 0.917 | 0.815 | 0.384 | 0.750 |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State |
| *Dependent variable:* LN(1+Number of consumer bankruptcies) | | | | | | |
| VARIABLES | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* | |
| Madden*State | 0.059* | 0.071** | 0.045** | 0.175 | 0.225** | |
| | (1.97) | (2.17) | (2.56) | (0.61) | (2.34) | |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | |
| R-squared | 0.008 | 0.994 | 0.992 | 0.781 | 0.988 | |
| Controls | NO | YES | YES | YES | YES | |
| State FE | NO | YES | YES | YES | YES | |
| Month FE | NO | YES | YES | YES | YES | |
| SE Cluster | State | State | State | State | State | |

TABLE A.4 *(CONTINUED)*

| **PANEL C: Measuring bankruptcy as the log of bankruptcy** | | | | | | |
|---|---|---|---|---|---|---|
| *Dependent variable:* LN(Total number of bankruptcies) | | | | | | |
| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.075* | 0.087** | 0.063*** | 0.038 | 0.032 | 0.236** |
| | (1.98) | (2.15) | (3.27) | (0.13) | (0.54) | (2.43) |
| Observations | 2,700 | 2,700 | 2,700 | 2,360 | 1,016 | 2,700 |
| R-squared | 0.058 | 0.958 | 0.953 | 0.681 | 0.757 | 0.954 |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State |
| *Dependent variable:* LN(Number of business bankruptcies) | | | | | | |
| VARIABLES | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
| Madden*State | 0.137 | 0.150 | 0.192* | 0.051 | 0.032 | -0.132 |
| | (0.94) | (1.04) | (1.85) | (0.20) | (0.54) | (-1.00) |
| Observations | 2,689 | 2,689 | 2,669 | 2,318 | 1,016 | 2,129 |
| R-squared | 0.055 | 0.642 | 0.485 | 0.651 | 0.757 | 0.452 |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State |
| *Dependent variable:* LN(Number of consumer bankruptcies) | | | | | | |
| VARIABLES | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* | |
| Madden*State | 0.071** | 0.084** | 0.058*** | 0.351 | 0.238** | |
| | (2.17) | (2.35) | (3.08) | (1.13) | (2.40) | |
| Observations | 2,700 | 2,700 | 2,700 | 1,347 | 2,700 | |
| R-squared | 0.056 | 0.960 | 0.954 | 0.728 | 0.953 | |
| Controls | NO | YES | YES | YES | YES | |
| State FE | NO | YES | YES | YES | YES | |
| Month FE | NO | YES | YES | YES | YES | |
| SE Cluster | State | State | State | State | State | |

*Notes.* This table reproduces the results presented in Table III with the dependent variable being the number of bankruptcies scaled by the size of the workforce (measured in 10,000 workers) in Panel A; with the dependent variable expressed as the logarithm of one plus the number of bankruptcies (not scaled by workforce) in Panel B; and with the dependent variable expressed as the logarithm of the number of bankruptcies (not scaled by workforce) in Panel C.

TABLE A.5
BOOTSTRAPPED STANDARD ERRORS

**PANEL A: Marketplace lending**

*Dependent variable:* LN(1+Volume of marketplace loans)

| Borrower rating: | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
|---|---|---|---|---|---|---|---|---|---|
| Madden*State | -0.158** | -0.102*** | -1.715*** | -0.654*** | -0.471*** | -0.328*** | -0.021 | 0.038 | 0.021 |
| | (-2.09) | (-6.49) | (-6.15) | (-7.06) | (-6.96) | (-6.16) | (-0.79) | (1.12) | (0.51) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.147 | 0.993 | 0.570 | 0.679 | 0.764 | 0.897 | 0.967 | 0.920 | 0.835 |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |

*Dependent variable:* LN(1+Number of marketplace loans)

| Borrower rating: | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
|---|---|---|---|---|---|---|---|---|---|
| Madden*State | -0.174** | -0.134*** | -0.799*** | -0.793*** | -0.519*** | -0.359*** | -0.039** | 0.002 | -0.005 |
| | (-2.08) | (-7.07) | (-7.62) | (-8.49) | (-8.82) | (-8.83) | (-2.07) | (0.10) | (-0.21) |
| Observations | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 |
| R-squared | 0.116 | 0.993 | 0.856 | 0.930 | 0.959 | 0.977 | 0.985 | 0.983 | 0.974 |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |

| *Dependent variables:* | LN(1+Relevant loans) | LN(1+Relevant loans) | LN(1+ debt refinancing loans) | LN(1+ medical expenses loans) | LN(1+small business loans) | LN(1+other loans) |
|---|---|---|---|---|---|---|
| Madden*State | -0.160*** | -0.101*** | -0.162*** | -1.129*** | -0.399* | -0.163*** |
| | (-2.81) | (-5.95) | (-7.76) | (-4.89) | (-1.86) | (-5.01) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.136 | 0.992 | 0.990 | 0.613 | 0.512 | 0.908 |
| SE Cluster | State | State | State | State | State | State |

**PANEL B: Bankruptcy filings**

*Dependent variable:* LN(1+Total number of bankruptcies)

| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
|---|---|---|---|---|---|---|
| Madden*State | 0.067*** | 0.079*** | 0.059*** | 0.005 | -0.000 | 0.103*** |
| | (2.89) | (6.33) | (4.98) | (0.88) | (-0.98) | (9.44) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.063 | 0.959 | 0.950 | 0.714 | 0.196 | 0.977 |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State |

*Dependent variable:* LN(1+Number of business bankruptcies)

| VARIABLES | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
|---|---|---|---|---|---|---|
| Madden*State | 0.021** | 0.023*** | 0.018*** | 0.005 | -0.000 | 0.001 |
| | (2.52) | (3.53) | (4.49) | (0.83) | (-0.90) | (1.27) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.016 | 0.743 | 0.478 | 0.714 | 0.196 | 0.236 |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State | State |

*Dependent variable:* LN(1+Number of consumer bankruptcies)

| VARIABLES | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* |
|---|---|---|---|---|---|
| Madden*State | 0.064** | 0.076*** | 0.056*** | 0.000 | 0.103*** |
| | (2.53) | (6.26) | (4.80) | (0.54) | (8.10) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.061 | 0.963 | 0.950 | 0.684 | 0.977 |
| Controls | NO | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES |
| SE Cluster | State | State | State | State | State |

*Notes.* This table reproduces the results presented in Tables II and III with bootstrapped standard errors.

TABLE A.6

STANDARD ERRORS CLUSTERED AT THE STATE-MONTH LEVEL

**PANEL A: Marketplace lending**

*Dependent variable:* LN(1+Volume of marketplace loans)

| Borrower rating: | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
|---|---|---|---|---|---|---|---|---|---|
| Madden*State | -0.158* | -0.102*** | -1.715*** | -0.654*** | -0.471*** | -0.328*** | -0.021 | 0.038 | 0.021 |
| | (-1.85) | (-6.42) | (-6.27) | (-7.01) | (-6.92) | (-6.76) | (-0.85) | (1.30) | (0.53) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.147 | 0.993 | 0.570 | 0.679 | 0.764 | 0.897 | 0.967 | 0.920 | 0.835 |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| SE Cluster: | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month |

*Dependent variable:* LN(1+Number of marketplace loans)

| Borrower rating: | *ALL* | *ALL* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
|---|---|---|---|---|---|---|---|---|---|
| Madden*State | -0.172** | -0.134*** | -0.799*** | -0.793*** | -0.519*** | -0.359*** | -0.039* | 0.002 | -0.005 |
| | (-2.07) | (-7.85) | (-7.88) | (-8.69) | (-9.37) | (-9.26) | (-1.87) | (0.10) | (-0.20) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.147 | 0.994 | 0.858 | 0.930 | 0.961 | 0.978 | 0.986 | 0.985 | 0.976 |
| Controls | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES | YES | YES | YES |
| SE Cluster: | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month |

| *Dependent variables:* | LN(1+Relevant loans) | LN(1+Relevant loans) | LN(1+ debt refinancing loans) | LN(1+ medical expenses loans) | LN(1+small business loans) | LN(1+ other loans) |
|---|---|---|---|---|---|---|
| Madden*State | -0.160*** | -0.101*** | -0.162*** | -1.129*** | -0.399* | -0.163*** |
| | (-2.81) | (-6.15) | (-8.13) | (-4.51) | (-1.76) | (-5.20) |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.136 | 0.992 | 0.990 | 0.613 | 0.512 | 0.908 |
| SE Cluster: | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month |

**PANEL B: Bankruptcy filings**

*Dependent variable:* LN(1+Total number of bankruptcies)

| | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
|---|---|---|---|---|---|---|
| Madden*State | 0.067*** | 0.079*** | 0.059*** | 0.005 | -0.000 | 0.103*** |
| | (2.74) | (6.94) | (5.33) | (0.85) | (-1.08) | (8.48) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.063 | 0.959 | 0.950 | 0.714 | 0.196 | 0.977 |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| SE Cluster: | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month |

*Dependent variable:* LN(1+Number of business bankruptcies)

| VARIABLES | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 12* | *Chapter 13* |
|---|---|---|---|---|---|---|
| Madden*State | 0.021** | 0.023*** | 0.018*** | 0.005 | -0.000 | 0.001 |
| | (2.53) | (3.39) | (5.17) | (0.81) | (-1.08) | (1.26) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.016 | 0.743 | 0.478 | 0.714 | 0.196 | 0.236 |
| Controls | NO | YES | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES | YES |
| SE Cluster: | State-Month | State-Month | State-Month | State-Month | State-Month | State-Month |

*Dependent variable:* LN(1+Number of consumer bankruptcies)

| VARIABLES | *All chapters* | *All chapters* | *Chapter 7* | *Chapter 11* | *Chapter 13* |
|---|---|---|---|---|---|
| Madden*State | 0.064*** | 0.076*** | 0.056*** | 0.000 | 0.103*** |
| | (2.63) | (7.02) | (5.02) | (0.57) | (8.48) |
| Observations | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.061 | 0.963 | 0.950 | 0.684 | 0.977 |
| Controls | NO | YES | YES | YES | YES |
| State FE | NO | YES | YES | YES | YES |
| Month FE | NO | YES | YES | YES | YES |
| SE Cluster: | State-Month | State-Month | State-Month | State-Month | State-Month |

*Notes.* This table reproduces the results presented in Tables II and III with standard errors clustered at the state and month level.

TABLE A.7

THE EFFECT OF *MADDEN* ON MARKETPLACE BORROWER QUALITY

| *Dependent variable:* LN(Average rating of marketplace borrowers) | | |
|---|---|---|
| Madden*State | 0.038*** | 0.043*** |
| | (13.96) | (20.31) |
| State | 0.004 | |
| | (0.82) | |
| Madden | 0.002 | |
| | (0.79) | |
| Unemployment rate | | -0.003 |
| | | (-0.92) |
| Total assets | | 0.000 |
| | | (0.03) |
| Requested funds | | -0.003 |
| | | (-0.92) |
| Observations | 2,700 | 2,700 |
| R-squared | 0.035 | 0.600 |
| State FE | NO | YES |
| Month FE | NO | YES |
| SE Cluster | State | State |

*Notes.* This table presents the effect of *Madden* on the rating of marketplace borrowers. Main explanatory variable is an interaction term between variable *Court ruling* (equal 1 for months after the announcement of the *Madden vs Midland LLC* verdict in May 2015, zero otherwise) and *State* (equal 1 for affected states Connecticut and New York, zero otherwise). Control variables include: state unemployment rates measured at monthly frequency (*Unemployment*), the logarithm of average total assets of residents filing for bankruptcy in each state and month (*Total assets*), and the logarithm of dollar amount of funds requested through Lending Club and Prosper by residents in each state and month (*Requested funds*). State and month fixed effects are included ("YES") or not included ("NO").

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE A.8
CONTROLLING FOR NON-MARKETPLACE CONSUMER CREDIT

| *Dependent variable:* | LN(1+Non-Marketplace Consumer loans) | LN(1+Non-Marketplace Consumer loans) | LN(1+Total bankruptcies/ workforce) | LN(1+Total business bankruptcies/ workforce) | LN(1+Total consumer bankruptcies/ workforce) |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Madden*State | -0.084 | -0.074 | 0.077** | 0.024 | 0.074*** |
| | (-1.21) | (-1.27) | (2.59) | (1.55) | (2.82) |
| State | 3.358*** | | | | |
| | (8.20) | | | | |
| Madden | 0.143** | | | | |
| | (2.15) | | | | |
| Unemployment | | -0.036 | 0.038*** | 0.008*** | 0.038*** |
| | | (-0.94) | (3.68) | (2.85) | (3.62) |
| Total assets | | 0.020 | -0.019 | -0.005 | -0.016 |
| | | (0.45) | (-1.68) | (-0.68) | (-1.46) |
| Requested funds | | 0.001 | -0.007 | -0.003 | -0.007 |
| | | (0.09) | (-0.82) | (-0.73) | (-0.83) |
| Non-marketplace consumer loans | | | -0.019 | 0.016 | -0.024 |
| | | | (-0.62) | (1.42) | (-0.75) |
| State FE | NO | YES | YES | YES | YES |
| Month FE | NO | NO | YES | YES | YES |
| Quarter FE | NO | YES | NO | NO | NO |
| Observations | 900 | 900 | 2,700 | 2,700 | 2,700 |
| R-squared | 0.072 | 0.995 | 0.959 | 0.741 | 0.963 |
| SE Cluster | State | State | State | State | State |

*Notes.* This table presents in Columns 1 and 2 the results for the effect of *Madden* on the volume of consumer loans originated by traditional financial institutions in each state and quarter. Columns 3-5 report the results for the effect of *Madden* on bankruptcy filings with the volume of lending provided by traditional financial institution included as a control variable. The main explanatory variable is an interaction term between the variable *Madden* (equal to 1 for months after the announcement of the verdict in *Madden vs Midland LLC* in May 2015, and zero otherwise) and *State* (equal to 1 for the affected states Connecticut and New York, and zero otherwise). Control variables in Column 1 and 2 include quarterly averages of: monthly state unemployment rates (*Unemployment*), the logarithm of average total assets of residents filing for bankruptcy in each state and month (*Total assets*), and the logarithm of dollar amount of funds requested through Lending Club and Prosper by residents in each state and month (*Requested funds*). Control variables in Columns 3-5 include: monthly state unemployment rates (*Unemployment*), the logarithm of average total assets of residents filing for bankruptcy in each state and month (*Total assets*), and the logarithm of dollar amount of funds requested through Lending Club and Prosper by residents in each state and month (*Requested funds*). Standard errors are clustered at the state level and t-statistics are presented in parentheses. State and quarter/month fixed effects are included ("YES") or not included ("NO").
*** Significant at the 1 percent level.
** Significant at the 5 percent level.
* Significant at the 10 percent level.

TABLE A.9
CONTROLLING FOR NON-MARKETPLACE CONSUMER CREDIT USING QUARTERLY DATA

| *Dependent variable:* | LN(1+Total bankruptcies/ workforce) | LN(1+Total business bankruptcies/ workforce) | LN(1+Total non-business bankruptcies/ workforce) |
|---|---|---|---|
| Madden*State | 0.095** | 0.026 | 0.094*** |
| | (2.60) | (0.85) | (2.73) |
| Unemployment | 0.072*** | 0.014* | 0.073*** |
| | (3.61) | (1.89) | (3.64) |
| Total assets | -0.027 | 0.001 | -0.026 |
| | (-0.93) | (0.05) | (-0.91) |
| Requested funds | -0.008 | -0.010* | -0.009 |
| | (-0.60) | (-1.69) | (-0.60) |
| Non-marketplace consumer loans | 0.020 | 0.045 | 0.014 |
| | (0.43) | (1.66) | (0.30) |
| State FE | YES | YES | YES |
| Quarter FE | YES | YES | YES |
| Observations | 900 | 900 | 900 |
| R-squared | 0.873 | 0.901 | 0.873 |
| SE Cluster | State | State | State |

*Notes.* This table presents the effect of *Madden* on the number of bankruptcy filings. Main explanatory variable is an interaction term between variable *Madden* (equal 1 for months after the announcement of the *Madden vs Midland LLC* verdict in May 2015, zero otherwise) and *State* (equal 1 for affected states Connecticut and New York, zero otherwise). Control variables include quarterly averages of: monthly state unemployment rates (*Unemployment*), the logarithm of average total assets of residents filing for bankruptcy in each state and month (*Total assets*), the logarithm of dollar amount of funds requested through Lending Club and Prosper by residents in each state and month (*Requested funds*) and lending provided by traditional financial institutions (Non-Marketplace Consumer loans). Standard errors are clustered at the state level and t-statistics are presented in parentheses. State and quarter fixed effects are included ("YES") or not included ("NO").

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE A.10

TREATMENT AND CONTROL GROUP DIFFERENCES

| *Variable* | *Period* | *Control Mean* | *Treatment Mean* | *Difference* | *T-statistic* |
|---|---|---|---|---|---|
| LN(1+Volume of marketplace loans) | t-1 | 16.15 | 17.22 | -1.07 | -1.37 |
| LN(1+Volume of marketplace loans) | t-2 | 15.87 | 17.01 | -1.14 | -1.46 |
| LN(1+Volume of marketplace loans) | t-3 | 15.70 | 16.70 | -1.00 | -1.25 |
| LN(1+Volume of marketplace loans) | t-4 | 15.94 | 16.93 | -0.99 | -1.23 |
| LN(1+Volume of marketplace loans) | t-5 | 15.27 | 16.41 | -1.14 | -1.42 |
| LN(1+Volume of marketplace loans) | t-6 | 15.66 | 16.77 | -1.11 | -1.39 |
| LN(1+Volume of marketplace loans) | t-7 | 16.00 | 17.09 | -1.09 | -1.36 |
| LN(1+Volume of marketplace loans) | t-8 | 15.19 | 16.32 | -1.13 | -1.44 |
| LN(1+Volume of marketplace loans) | t-9 | 15.49 | 16.63 | -1.14 | -1.45 |
| LN(1+Volume of marketplace loans) | t-10 | 15.77 | 16.81 | -1.04 | -1.30 |
| LN(1+Volume of marketplace loans) | t-11 | 15.38 | 16.53 | -1.15 | -1.43 |
| LN(1+Volume of marketplace loans) | t-12 | 15.41 | 16.52 | -1.11 | -1.43 |
| LN(1+Number of marketplace loans) | t-1 | 6.56 | 7.61 | -1.05 | -1.36 |
| LN(1+Number of marketplace loans) | t-2 | 6.28 | 7.38 | -1.10 | -1.43 |
| LN(1+Number of marketplace loans) | t-3 | 6.10 | 7.08 | -0.98 | -1.25 |
| LN(1+Number of marketplace loans) | t-4 | 6.36 | 7.34 | -0.98 | -1.24 |
| LN(1+Number of marketplace loans) | t-5 | 5.74 | 6.83 | -1.09 | -1.40 |
| LN(1+Number of marketplace loans) | t-6 | 6.11 | 7.23 | -1.12 | -1.44 |
| LN(1+Number of marketplace loans) | t-7 | 6.44 | 7.52 | -1.08 | -1.34 |
| LN(1+Number of marketplace loans) | t-8 | 5.65 | 6.77 | -1.12 | -1.44 |
| LN(1+Number of marketplace loans) | t-9 | 5.94 | 7.08 | -1.14 | -1.46 |
| LN(1+Number of marketplace loans) | t-10 | 6.22 | 7.25 | -1.03 | -1.31 |
| LN(1+Number of marketplace loans) | t-11 | 5.83 | 6.97 | -1.14 | -1.45 |
| LN(1+Number of marketplace loans) | t-12 | 5.86 | 6.96 | -1.10 | -1.44 |
| LN(1+Total bankruptcies/workforce) | t-1 | 1.73 | 1.42 | 0.31 | 1.07 |
| LN(1+Total bankruptcies/workforce) | t-2 | 1.77 | 1.45 | 0.32 | 1.06 |
| LN(1+Total bankruptcies/workforce) | t-3 | 1.57 | 1.21 | 0.36 | 1.23 |
| LN(1+Total bankruptcies/workforce) | t-4 | 1.47 | 1.18 | 0.29 | 0.95 |
| LN(1+Total bankruptcies/workforce) | t-5 | 1.55 | 1.29 | 0.26 | 0.93 |
| LN(1+Total bankruptcies/workforce) | t-6 | 1.53 | 1.22 | 0.31 | 1.11 |
| LN(1+Total bankruptcies/workforce) | t-7 | 1.73 | 1.37 | 0.36 | 1.19 |
| LN(1+Total bankruptcies/workforce) | t-8 | 1.68 | 1.33 | 0.35 | 1.24 |
| LN(1+Total bankruptcies/workforce) | t-9 | 1.67 | 1.34 | 0.33 | 1.07 |
| LN(1+Total bankruptcies/workforce) | t-10 | 1.72 | 1.39 | 0.33 | 1.12 |
| LN(1+Total bankruptcies/workforce) | t-11 | 1.68 | 1.37 | 0.31 | 1.03 |
| LN(1+Total bankruptcies/workforce) | t-12 | 1.81 | 1.50 | 0.31 | 1.08 |

*Notes.* This table presents the mean values for our main dependent variables, differences in the means as well as t-statistics for the treatment and control group in the 12 months preceding the treatment event.

# Appendix B – Treatment Event: Madden and Marketplace Lending

## (1.) Prosper acknowledging risk emanating from the *Madden* court verdict in SEC filing:

"In addition, it is possible that state usury laws may impose liability that could affect an assignee's (i.e., PFL's and/or an investor who purchases Borrower Loans from PFL) ability to continue to charge to borrowers the interest rates that they agreed to pay at origination of their Borrower Loans. In particular, one recent judicial decision by the Court of Appeals for the Second Circuit, Madden v. Midland Funding, LLC (786 F.3d 246 (2d Cir. 2015)), concluded that the debt buyer of a charged off credit card account could not rely on the National Bank Act's preemption of state interest rate limits for interest at rates imposed by the debt buyer after charge-off. The decision has created some uncertainty as to whether non-bank entities purchasing loans originated by a bank may rely on federal preemption of state usury laws, and the decision may create an increased risk of litigation by plaintiffs challenging our ability to collect interest in accordance with the terms of Borrower Loans. Although the Madden decision specifically addressed preemption under the National Bank Act, such decision could support future challenges to federal preemption for other institutions, including an FDIC-insured, state chartered industrial bank like WebBank.

On November 10, 2015, the defendant in the Madden case filed a petition for a writ of certiorari with the United States Supreme Court for further review of the Second Circuit's decision. On June 27, 2016, the United States Supreme Court denied the petition and refused to review the case, leaving the decision of the Second Circuit intact and binding on federal courts in Connecticut, New York and Vermont. Although there can be no assurances as to the outcome of any potential litigation, or the possible impact of the litigation on our marketplace, we believe the Madden case addressed facts that are not presented by our marketplace lending platform and thus would not apply to Borrower Loans. Nevertheless, we and our counsel are monitoring the matter closely and, as developments warrant, we, of course, will consider any necessary changes to our marketplace required to avoid the impact of this case on our business model. Because of investor demand, the maximum annual percentage rate offered through our marketplace may be lower in some states than others."

Source: Prosper Marketplace, Prospectus, as filed with the SEC: https://prosper.com/Downloads/Legal/Prosper_Prospectus_2018-03-12.pdf.

## (2.) Lending Club acknowledging risk emanating from the *Madden* court verdict in SEC filing:

"If the loans originated through our marketplace were found to violate a state's usury laws, and/or we were found to be the true lender (as opposed to our issuing bank(s)), your investment may lose substantial value and you may lose all of the interest due on your Note.

The interest rates that are charged to borrowers and that form the basis of payments to investors through our marketplace are enabled by legal principles including (i) the application of federal law to enable an issuing bank that originates the loan to export the interest rates of the jurisdiction where it is located, (ii) the application of common law "choice of law" principles based upon factors such as the loan document's terms and where the loan transaction is completed to provide uniform rates to borrowers, or (iii) the application of principles that allow the transferee of a loan to continue to collect interest as provided in the loan document. WebBank, the primary issuing bank of the loans originated through our marketplace, is chartered in, and operates out of, Utah, which allows parties to generally agree by contract to any interest rate. Certain states, including Utah, have no statutory interest rate limitations on personal loans, while other jurisdictions have a maximum rate. In some jurisdictions, the maximum rate is less than the current maximum rate offered by WebBank through our platform. If the laws of such jurisdictions were found to govern the loans originated through our marketplace (in conflict with the principles described above), those loans could be in violation of such laws.

In May 2015, the U.S. Court of Appeals for the Second Circuit issued its decision in Madden v. Midland Funding, LLC that interpreted the scope of federal preemption under the National Bank Act and held that a nonbank assignee of a loan originated by a national bank was not entitled to the benefits of federal preemption of claims of usury. The Second Circuit denied the defendant's (Midland Funding) motion to reconsider the decision and remanded the case to address choice of law matters. The Second Circuit's decision is binding on federal courts located in Connecticut, New York, and Vermont, but the decision could also be adopted by other courts. The defendant petitioned the U.S. Supreme Court to review the decision and in March 2016, the Court invited the Solicitor General to file a brief expressing the views of the U.S. on the petition. The Solicitor General filed an amicus brief that stated the Second Circuit decision was incorrect, but that the case was not yet ready to be heard by the Supreme Court. In June 2016, the Supreme Court declined to hear the case. The Federal District Court is now hearing the case in regard to Midland's alternative claim under a choice of law analysis, and application of state law. The outcome could create potential liability under state statutes such as usury and consumer protection statutes. [...]

If a borrower were to successfully bring claims against us for state usury law violations, and the rate on that borrower's personal loan was greater than that allowed under applicable state law, we could be subject to fines and penalties, including the voiding of loans and repayment of principal and interest to borrowers and investors. We might decide to limit the maximum interest rate on certain loans originated through our marketplace, and we might decide to originate loans under state-specific licenses, where such a ruling is applicable. These actions could adversely impact our returns on the corresponding member loans and Notes. Further, if we were unable to partner with another issuing bank, we would have to substantially modify our business operations from the manner currently contemplated and would be required to maintain state-specific licenses and only provide a limited range of interest rates for personal loans, all of which would substantially reduce our operating efficiency and attractiveness to investors and possibly result in a decline in our operating results.

There has been (and may continue to be) other litigation challenging lending arrangements where a bank or other third party has made a loan and then sells and assigns it to an entity that is engaged in assisting with the origination and servicing of a loan."

Source: Lending Club, Prospectus for Public Offering, as filed with the SEC: http://ir.lendingclub.com/Cache/c2000698265.html.