Rate Cap Laws and Consumer Welfare

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Abstract

Interest rate caps are regulations that place an upper limit on the interest rate that can be charged on loans. We estimate the impact of rate cap laws on consumers' financial well-being with a difference-in-difference analysis based on staggered implementation of rate cap laws. We combine a credit bureau's detailed data for almost 600,000 consumers between 2016 and 2019 with a database of alternative credit that tracks credit accounts of consumers with primarily subprime alternative credit providers. We find that rate cap laws result in a credit score increase of 0.153 points every quarter. However, consumers with initial credit score in the range 300-660 experience a decline in credit score of about 1.7 points per quarter. Following rate cap laws, unbanked consumers and alternative financing users experience credit score declines of 0.54 points per quarter and 1.545 points per quarter, respectively. We do not find evidence of a decline in credit usage, suggesting there may be substitution across different forms of credit. However, chargeoffs, delinquencies, foreclosures, and payment due increase for consumers in the alternative credit database.

JEL Classification Codes: G51, G53, G28

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I. Introduction

Interest rate caps are regulations that place an upper limit on the interest rate that can be charged on loans. Regulations imposing interest rate caps are often referred to as usury laws. The economic rationale for interest rate caps is hotly debated. The difference of opinion is reflected in the variations in regulations across states in the United States. Some states impose rate cap laws while some do not. Even among states that impose rate cap laws, the levels at which interest rates are capped differ considerably.

The debate on interest rate cap revolves around how rate cap laws impact borrowers. Interest rate caps can prevent borrowers from taking costly loans that they cannot afford to repay. Borrowers who take loans that they cannot afford may end up shelling out a large chunk of their resources on repaying these loans and may need to sacrifice their other monetary needs. Sometimes borrowers take new loans to repay previous loans and can get stuck in a vicious cycle. Borrowers who default may have to suffer costly consequences. The main objective of interest rate caps is to protect borrowers from these problems by preventing them from taking high interest rate loans in the first place. This view assumes that borrowers cannot be trusted to take decisions that are in their best interest. An alternative view is that consumers for whom the adverse consequences of high interest rate loans dominate the benefit from these loans will not take these loans while borrowers who take these loans are in a situation where the adverse consequences of not taking these loans are worse than the consequences of taking these loans.

One can find anecdotes to support both viewpoints. However, policy considerations must be guided by systematic evidence about the impact of rate cap laws on consumer population. Whether rate caps benefit or hurt consumers overall is ultimately an empirical question. We estimate the impact of rate cap laws on consumers' financial well-being. Our identification strategy for estimating a causal effect is a difference-in-difference analysis of consumers in states with staggered implementation of rate cap laws. Our main measure of the impact of

rate cap laws on a consumer is the change in consumer's credit score over time. However, we also examine multiple measures of financial access.

Interest rate regulations vary across states in the US. Since there is no standardized database that aggregates interest rate regulations across states, we consulted various sources to manually examine interest rate regulations across US states and to identify states which have interest rate caps of less than 100 percent APR. We also identified the dates such regulations became effective if these regulations were enacted between 2016 and 2019, our sample period. We track a credit bureau's files of almost 600,000 consumers between 2016 and 2019. These consumers are located across all US states and had a wide range of credit scores at the beginning of our sample period. However, we oversample on states in which rate caps were implemented during our sample period and on nonprime consumers, as we expect that rate caps are more likely to be binding for nonprime consumers.

We combine our sample of credit bureau files with a database of alternative credit. This database tracks credit accounts of consumers with primarily subprime alternative credit providers including short-term lenders, installment lenders, and auto lenders. For the subset of our consumers with alternative credit data, we identify consumers who are unbanked or were users of alternative credit at the beginning of our sample in the first quarter of 2016.

We find that the average impact of rate cap laws on consumer credit score is economically small. In our baseline empirical specification, rate cap laws result in a credit score increase of 0.153 points every quarter, an effect that is statistically significant with p-value of 1%. That is, the change in the credit score of an average consumer over a quarter after a rate cap law becomes effective is 0.153 points higher than the change in the credit score of the same consumer over a quarter before the rate cap law became effective, after controlling for time trends in credit score changes. However, we find substantial heterogeneity in this effect across consumers. We find that the impact of rate cap laws on the quarterly change in credit score is 3.564 points lower for consumers with initial credit score in the range 300-660. This suggests that nonprime consumers who rely on higher-cost credit targeted by rate cap laws, are more likely to experience a reduction in credit score following rate cap laws. We find

that the impact of rate cap laws depends more on consumer's initial credit score and access to financing than on consumer income. Following rate cap laws, unbanked consumers and alternative financing users experience credit score declines of 0.54 points per quarter and 1.545 points per quarter, respectively.

We also compare the availability of credit to consumers through different financial products and the repayment performance of consumers for these accounts. We find that the availability of credit to bank users increases following rate cap laws but the availability of credit through other sources of credit experiences a decline. In particular, there is a decline of about $25 per quarter in the credit limit for all revolving accounts and a decline in balance of about $31 per quarter following rate cap laws. Cross-sectional tests show that the adverse impact of rate cap laws are primarily concentrated in nonprime consumers, those lacking bank accounts, and users of alternative financial products. While our analysis is ongoing, our results provide strong evidence that rate cap laws have uneven effects across consumers. These findings suggest that the debate around the benefits and costs of higher-cost credit is misplaced. The variation in the impact of rate cap laws on consumers suggests that there are underlying frictions that result in an improvement in the financial condition of some consumers following rate cap laws and a decline in the financial condition of others. Thus, rate cap laws seem to be a blunt instrument for consumer financial protection. Identifying the frictions that result in prevalence of high-cost credit and resolving those frictions and providing alternatives may alleviate the adverse consequences of rate cap laws.

Section II reviews related literature. We discuss rate cap laws in Section III. The data and the empirical methodology are described in Section IV. Section VI describes the empirical results and Section VII concludes.

II. Related Literature

The literate on interest rate caps or on usury laws has documented variation in interest rate caps geographically and across time. The most interesting question that this literature aims to answer is whether interest rate caps help or hurt consumers. Identification of the

mechanisms for those effects is important for policy analysis, but has received less attention in the literature.

Regulations aimed at lowering the cost of credit typically target the annual percentage rate (APR) to measure the costs of different types of credit. It is difficult for a single measure like APR to accurately compare cost of credit across different types of loans. While some of the costs incurred by a lender in extending a loan are proportional to the loan amount, many other costs do not scale with loan size. Lenders' fees expressed as a percentage of the loan amount are higher for smaller loans than for larger loans. When lenders' costs are amortized over the duration of the loan, the cost expressed as an APR is higher for shorter-term loans than for longer-term loans. Thus, a limit on loan APR is more restrictive for smaller short-term loans, loans that are more likely to be taken by those with limited financial access. Further, risk-based pricing of loans requires that borrowers who are perceived to be at a higher risk of default are charged a higher interest rate. Interest rate caps are more likely to be binding for such loans. Thus, we expect interest rate caps to result in a rationing of credit to borrowers with ex ante higher credit risk.

Leaving aside the issue of the form of rate cap regulations, discussion of rate cap laws is often not explicit about the economic rationale for such laws. Miller (2013) is an exception. Rate caps are usually justified on the basis of the assumption that financial institutions make excessive profits by charging high interest rates to borrowers. This viewpoint assumes that the high rates are not completely driven by the higher costs of extending small short-duration loans to risky borrowers. Policy solutions must identify the economic mechanism behind this problem. Economic theory suggests that the credit market may malfunction if informational asymmetry about the risk of borrowers results in a market failure (Akerlof, 1970). Borrowers whose risk of default is observed can get financing at rates commensurate with their risk. The remaining borrowers are pooled together. A fixed interest rate attracts riskier borrowers from the pool as safer borrowers find the rate too high. As a result of this adverse selection problem, lenders charge a rate that reflects the riskiest borrowers in the pool and the default probability is high ex ante. Another channel for the market failure is

the information asymmetry about the actions of the borrowers after getting the loans. This leads to a moral hazard problem in which the borrowers engage in risky behavior, increasing the ex post probability of default, and justifying the high interest rate.

If interest rate caps can bring down equilibrium interest rates, safer borrowers who are discouraged by the high interest rates will start borrowing, resulting in greater access to credit at lower cost, probably at the expense of profits of lenders. However, lenders may refuse to lend due to the same problems that cause market failure. It is not clear how interest rate caps can overcome the market failure problem.[1] One possibility is that the pressure from rate caps can induce the lenders to increase their investment in information technology to better screen borrowers and lend at lower interest rates to safer borrowers. This argument can be compelling in a market with a lack of competition[2]. However, most credit markets exhibit high competition and competing lenders have incentives to invest in information technology even in the absence of interest rate caps. Thus, there is a lack of clarity about the mechanism by which interest rate caps can solve the problems they target. Since interest rate caps target the symptom of high interest rate rather than the underlying cause, they may expand financial credit at lower interest rates buy may also shutdown credit options to some borrowers. This latter possibility of eliminating credit to some borrowers may not be considered an adverse consequence if it is assumed that these borrowers are better off not getting credit (Office of Fair Trading, 2010).

Interest rate caps can also have unintended consequences. They may reduce access to credit, lower transparency, product diversity, and competition. In addition, rate caps may disincentivize lenders from investing in new technologies and markets to expand financial access. LEnders may also take actions to reallocate their lending from higher-risk borrowers to lower-risk borrowers, such as lending only to those who can offer collateral. These actions can further exacerbate the prevailing gaps in financial access.

[1]Demitriades and Luintel (2001) show that interest rate caps were effective in the Republic of Korea. There are few other supporting studies.

[2]Office of Fair Trading (2010) reports that the markets for high-cost credit work reasonably well in United Kingdom but there are problems with the effectiveness of competition in these markets

Maimbo and Gallegos (2016) survey the use of interest rate caps around the world. They document that 61 out of 152 countries in the World Bank regions imposed interest rate caps on loans. Most of these countries are in Sub-Saharan Africa, Latin America, and Carribean. Interest rate caps have been declining around the world as countries continue to liberalize their financial policies. However, following the financial crisis of 2008, there was renewed debate in some countries about the use of interest rate caps as a tool for consumer protection. Some countries have either started or increased the use of interest rate caps following this debate. Maimbo and Gallegos (2016) find that the effects of interest rate caps were predominantly negative in most countries where such effects were examined. These negative effects include evasion of caps through alternative products and a consequent reduction in transparency about cost of credit, withdrawal of lenders from markets leading to a reduction in access to credit, imposition of fees and commissions to get around rate caps, a reduction in diversity of financial products, and a reduction in financial depth. In the US, Laeven (2003) finds that eliminating interest rate caps improves access to finance for small enterprises, while Ellison and Forster (2006) observe a migration of lending to states with less restrictive lending.

FCA (2017) evaluates the impact of rate cap that became effective in 2015 on high-cost credit products in UK. The study finds that consumers pay less for loans and are more able to repay them on time after the rate cap. It also reports that consumers who have been turned down for high-cost short-term credit products have not generally turned to other forms of high-cost credit or illegal money lending. Since the rate caps were enforced at the same time across UK, the study cannot use difference-in-difference methodology for identification of causal effects. Further, it does not address access to credit or consumer welfare. Rigbi (2013) examines the impact of interest rate caps on volume and interest rate of loans exploiting a change in interest rate caps that affected some states but not others. Using data for loans made by an online lender, he finds that an increase in interest rate cap leads to an increase in the probability that a loan is funded, especially for riskier borrowers. The increase in probability of funding a loan is not accompanied by an increase in probability

of default suggesting that interest rate caps limit access to credit without reducing the default risk of loans. While Rigbi (2013) focuses on loans from a single lender, we examine several measures of financial performance for a large panel of consumers. Moreover, we examine situations where interest rate cap changes are applicable to all lenders, not just one lender, making it difficult for borrowers to substitute one lender for another.

One measure of consumer well-being is the incidence of bankruptcy. The evidence about the impact of interest rate caps on consumer bankruptcies is not conclusive. Skiba and Tobacman (2019) examine the impact of access to payday loans on consumer bankruptcies and find that payday loans increase personal bankruptcy rates by a factor of two. Their identification strategy relies on a regression discontinuity assumption that borrowers with a credit score above a threshold can access payday loans while those below the threshold cannot. They identify the discontinuity in payday loan access based on the credit score distribution of loan applicants to one lender. However, many loans that are impacted by rate cap laws are made to borrowers who lack conventional credit scores. Without understanding the mechanism for the hypothesized discontinuity in payday loan access, extrapolating their result to a link between interest rate caps and consumer bankruptcies is not straightforward. Lefgren and McIntyre (2009) compare bankruptcy rates across states and conclude that payday loan regulations contribute virtually nothing to cross-rate differences in bankruptcy rates. Morgan, Strain, and Seblani (2012) perform difference-in-difference analysis based on changes in states' payday loan laws to find that that payday loan bans lead to a decrease in Chapter 13 bankruptcy rates but an increase in complaints against lenders and debt collectors and an increase in number of returned checks and overdraft fee income at banks.

Proponents of small-dollar loans argue that the credit they extend to borrowers who have otherwise limited credit options allows them not only to meet their short-term cash needs but also allows them to improve their personal finance skills, and possibly build better credit history, and increase their credit options such as access to credit cards. It is debatable whether increased use of credit card debt is a positive or negative sign of consumer welfare. However, increased access to credit card debt arguably reflects improved consumer financial

health. We are not aware of literature examining the impact of interest rate caps on access to credit card debt. The studies that come close examine the link between credit card usage and small-dollar loan borrowing. Agarwal, Skiba, and Tobacman (2009) show that most borrowers from a payday lender who also have a credit card from a major credit card issuers have substantial credit card liquidity on the day they take out their payday loans. This suggests that these borrowers may not be utilizing the cheapest source of liquidity. However, these findings apply to a small fraction (around three percent) of their samples of payday loan borrowers and credit card users and are not informative about the causal effect of access to payday loans on the access to credit cards.

Dlugosz, Melzer, and Morgan (2021) examine the effect of overdraft fee ceilings, another price control like interest rate caps. They find that federal preemption of state limits on overdraft fees raised overdraft fees in affected states but led to more overdraft credit, fewer bounced checks, and a decline in the share of unbanked among low-income households. There findings are consistent with the credit rationing effect of price ceilings.

Notwithstanding the mixed evidence about the relation between financial access and consumer bankruptcies, much of our economic methodology about welfare analysis relies on rational choices by borrowers and lenders. If access to payday loans causes more bankruptcies, yet consumers voluntarily take payday loans, we must conclude that consumers mistakenly take actions that are not in their interest. Lusardi and Tufano (2015) find that payday loan borrowers have low levels of debt literacy as measured by their understanding of interest compounding. Bertrand and Morse (2011) find that about 40 percent of payday loan borrowers confuse the cash charge per hundred dollars with their annual interest rate. Campbell, Jackson, Madrian, and Tufano (2011) point out that regulations aimed at addressing cognitive biases or financial illiteracy have had modest results. If consumers are prone to making suboptimal financial decisions, rate cap laws that take away the choice of consumers to borrow at high cost may result in those consumers resorting to alternatives that lead to other adverse outcomes. Thus, whether rate cap laws worsen or ameliorate consumer bankruptcies is an empirical question and we address that question.

III. Rate Cap Laws

The interest rate regulations in the United States of America vary across states. Some states have no restrictions on interest rates while some others restrict interest rates for different types of loans. Since the states are free to legislate their own laws and the forms of these laws and the classifications of loans for these laws differ across states, there is no standard database of state rate cap laws or usury laws. Further, these laws change over time so a comprehensive analysis of rate cap laws across states is difficult. A few consumer advocacy groups report statistics about cost of loans or interest rates across states periodically. We first describe some characteristics of various rate cap laws and then list how we identify variation in rate cap laws for our empirical methodology.

Interest rate restrictions can be part of a variety of state statutes, such as statutes about trade and commerce, banking, consumer law, or criminal justice. Some states have no mention of an interest rate in their laws. Some others specify a general interest rate and then offer specific guidelines for specific loan types. Some states specify an interest rate limit unless the borrower and the lender have a written agreement about the interest rate. For example, Colorado specified a maximum interest rate of 8% per year absent a written agreement. The maximum rate for business loans was 45% per year and there were separate provisions for mortgages, small business loans, and business, and agricultural loans. The interest rate caps can vary across types of loans. Since the interest rates are likely to be highest for unsecured short-term consumer loans, we are more interested in interest rate caps for such loans. Some states specify multiple interest rate caps based on the amount of the loan and based on whether the loan is to be repaid in a single payment or in installments. Consumer advocacy groups typically compare rates for $500 or $2,000 loans for a fixed term loan, for example, of six months. However, these examples do not capture the complexity of the regulations across all states.

We identify a measure of rate caps that is robust to complex variations in rate cap laws. We identified all information about rate cap laws from various reports by consumer advocacy

organizations and lender industry organizations. We also identified news items about rate cap regulations during 2016-2019 and in some cases examined the text of statutes. For each state, we identify the highest interest rate permitted by a state. If this rate exceeds 100 percent annually, we consider these states not to have a rate cap. This also includes states with no mention of a restriction on interest rates. Any state capping a consumer loan interest rate at less than 100 percent annually is considered to have a rate cap. The states which had rate caps before our sample period of 2016-2019 are New Jersey, Pennsylvania, Arizona, Montana, Arkansas, Georgia, North Carolina, West Virginia, New York, Connecticut, Massachusetts, New Hampshire, Vermont, and Washington DC. Four states enacted rate cap laws during our sample period: Ohio, Maryland, South Dakota, and Colorado. These states are critical to our difference-in-difference estimation strategy. All other states do not have rate cap laws in our sample period. The most common rate cap is 36% a year, though many states have lower rate caps.

IV. Data

Majority of our analysis is based on a panel data consisting of almost 600,000 consumers over 4 years. For each of these consumers, our data consists of quarterly credit report data from a major credit bureau from the first quarter of 2016 to the fourth quarter of 2019. In addition to the consumer's credit score, we use data on credit accounts of the consumer, including mortgages, credit cards, auto loans, installment loans, and other forms of credit. The data is anonymized but we can track a consumer over time. This allows us to control for individual level fixed effects. We do not observe the identity of the lenders. The data also includes information about events which may impact consumer credit score such as bankruptcy or foreclosures.

The consumers in our sample were selected through stratified sampling based on states and initial credit scores in the first quarter of 2016. The U.S. States in which rate cap laws were introduced between 2016 and 2019 are oversampled to improve estimation of the impact of rate cap laws through differences-in-differences analysis. Table 1 provides a breakdown

of our sample by states. Consumers with subprime or near-prime credit scores (300 to 660) in the first quarter of 2016 constitute about 70% of our sample. Consumers selected in the sample are retained in the sample for all 16 quarters. However, a small fraction of these consumers may drop out of the sample over time due to death or missing credit bureau records.

The only demographic information in our data is the consumer's age and zip code. The credit information for a consumer consists of the consumer credit score and information about the consumer's credit accounts across financial institutions. These accounts can be at banks, credit unions, or other financial institutions and can be in the form of credit cards, revolving accounts, loans, etc. The data also identifies the kind of business associated with an account which can sometimes be a nonfinancial business such as an automotive business or a department store. For each consumer we have information about the number of open accounts of a certain category, balance amounts, payments, past due amounts, chargeoffs, and delinquencies.

Table 2 provides summary statistics for some variables in our data. Our data consists of 9,518,254 observations for almost 600,000 consumers. The mean credit score is 622.31. The mean age at the beginning of our sample is 47 years. Our data provides income estimate for many consumers. The mean of estimated income is about 72 thousand dollars per year. A consumer has an average of 3.68 accounts with an balance across all accounts of about \$50,0000.

We also use a dataset about alternative credit usage. This database tracks credit accounts of primarily nonprime consumers with subprime credit providers that include short-term lenders (which include so-called payday lenders), installment lenders, auto lenders and leases. These lenders can be storefront lenders or online lenders. The data also tracks credit inquiries, information about existence of bank accounts, and instances of NFS fees. NSF fees are charged when a debit transaction from a bank account is unsuccessful due to insufficient funds and are an indicator of financial distress and costs for the consumer. About 12% of the consumers in our main sample are present in this database. We use the data about

alternative credit usage of these consumers. Table 3 provides summary statistics for this subsample. This subsample consists of 1,165,324 observations for about 70,000 consumers. The mean credit score is 551. The mean age at the beginning of our sample is about 40 years. A consumer has on average 1.2 alternative finance accounts with an average total balance of $216. These consumers have made an average of 1 credit inquiry in the past one year and have an average of 1.28 bank accounts.

V. Empirical Methodology

Our empirical strategy is to exploit the variation in existence and timing of rate cap laws across states. We employ difference-in-differences methodology to estimate the impact of rate cap laws on various measures of consumer financial situation. Our main dependent variable is consumer credit score. In addition, we consider several additional dependent variables to measure access to credit and financial distress. Since rate cap laws became effective at different points of time across states, the impact of rate cap laws on a dependent variable can be isolated from the impact of state or the impact of time on the dependent variable. The latter two effects can be controlled through time and state fixed effects. Further, differences in consumer outcomes may reflect differences across consumer characteristics, rather than the impact of rate cap laws. We control for unobserved consumer characteristics by including consumer fixed effects whenever such estimation is feasible. The impact of rate cap laws on a dependent variable may be gradual. We capture this gradual effect by regressing dependent variables on the number of quarters for which the a rate cap law has been effective for that observation in our sample. We estimate panel regressions of the form

$$\begin{aligned} Y_{it} = \beta_0 + \beta_1 AltCreditDB_i + \beta_2 RateCap_{s(i)t} + \beta_3 RateCapQtr_{s(i)t} \\ + \beta_4 RateCap_{s(i)t} \times AltCreditDB_i + \beta_5 RateCapQtr_{s(i)t} \times AltCreditDB_i + C_i + Q_t, \end{aligned} \tag{1}$$

where Y_{isit} is the dependent variable for consumer i and quarter t, $s(i)$ is the state of consumer i, $AltCreditDB_i$ is an indicator variable that equals one if consumer i is present in alternative

credit database, $RateCap_{st}$ is an indicator variable that equals one if there is a recent rate cap is in effect in state s in quarter t, $RateCapQtr_{st}$ equals the number of quarters since a recent rate cap came in effect in state s to quarter t (zero if a rate cap is not in effect in state s in quarter t), C_i is consumer fixed effect, and Q_t is quarter fixed effect. The coefficients β_2 and β_3 represent the persistent effect and the gradual impact of a rate cap on the dependent variable. The coefficients β_4 and β_5 represent the incremental persistent effect and the incremental gradual impact of a rate cap on the dependent variable for consumers present in the alternative credit database.

For most regressions, we report standard errors clustered at consumer level. We account for stratified sampling by performing weighted regressions using the inverse of sampling probability as weights. We assume that consumer fixed effects capture differences in consumers and our identification assumes that if these differences are not stationary, any changes in differences over time are uncorrelated with changes in rate cap laws.

When the dependent variable is not continuous or has limited support, we estimate logit, tobit, or Poisson regressions. When it is not feasible to include consumer fixed effects in estimation, usually when the dependent variable is not continuous, C_i is estimated as a random effect if possible, and the initial value of the dependent variable as an additional control:

$$\begin{aligned} Y_{it} = {} & \beta_0 + \beta_1 AltCreditDB_i + \beta_2 RateCap_{s(i)t} + \beta_3 RateCapQtr_{s(i)t} \\ & + \beta_4 RateCap_{s(i)t} \times AltCreditDB_i + \beta_5 RateCapQtr_{s(i)t} \times AltCreditDB_i \\ & + \beta_6 Y_{i0} + C_i + Q_t, \quad t > 0 \end{aligned} \tag{2}$$

We also estimate additional regressions to examine whether the impact of rate cap laws differs for consumers with nonprime credit score, consumers with low income, consumers that are unbanked at the beginning of our sample period, and consumers who were users of alternative credit at the beginning of our sample period. These regressions estimate the

following model:

$$
\begin{aligned}
Y_{it} = {} & \beta_0 + \beta_1 AltCreditDB_i + \beta_2 RateCap_{s(i)t} + \beta_3 RateCapQtr_{s(i)t} \\
& + \beta_4 NonPrime_i + \beta_5 LowIncome_i + \beta_6 Unbanked_i + \beta_7 AltCreditUser(i) \\
& + \beta_8 RateCap_{s(i)t} \times NonPrime_i + \beta_9 RateCapQtr_{s(i)t} \times NonPrime_i \\
& + \beta_{10} RateCap_{s(i)t} \times LowIncome_i + \beta_{11} RateCapQtr_{s(i)t} \times LowIncome_i \\
& + \beta_{12} RateCap_{s(i)t} \times Unbanked_i + \beta_{13} RateCapQtr_{s(i)t} \times Unbanked_i \\
& + \beta_{14} RateCap_{s(i)t} \times AltCreditUser_i + \beta_{15} RateCapQtr_{s(i)t} \times AltCreditUser_i + C_i + Q_t.
\end{aligned} \tag{3}
$$

In regressions where we cannot estimate consumer fixed effects, we modify the above specification by controlling for the initial value of the dependent variable, as in (2). Finally, our main dependent variable credit score has a limited range and controlling for initial credit score of a consumer is not sufficient as the initial credit score is correlated not only with later level of credit score but also with change in credit score. We discuss our specification for the credit score regression in the next section.

VI. Results

We examine the results of multivariate panel regressions in this section. We first examine how rate cap laws impact consumer credit scores. Following this, we examine how rate cap laws impact financial usage patterns of consumers across different types of accounts. Finally, we examine the impact of rate cap laws on usage of alternative credit.

VI.A. **Impact of Rate Cap Laws on Credit Scores.** Credit score is one of the most important metrics of a consumer's ability to get financing. Consumers with higher credit scores are considered to be less likely to default and are offered financing at lower rates. However, credit score is not a perfect measure of a consumer's financial well-being. For example, the amount of financing available to a consumer depends on the consumer's wealth

and income in addition to credit score. Moreover, a consumer may sometimes face a conflict between spending on necessary expenses and paying off a loan to maintain good credit history. Thus, a good credit score may provide a path to better financial outcomes but is not the sole metric of financial well-being. In particular, we do not observe consumers' consumption and investment decisions. Given these limitations, we focus on credit score as it aggregates information about a consumer's borrowing and repayment history.

The dependent variable in our main regressions is consumer credit score. Since a consumer with a higher credit score in the past is more likely to have a higher credit, we must control for lagged credit score. One method of doing so is using the change in the credit score s the dependent variable. However, the distribution of change in credit score is not independent of lagged credit score. Figure 1 shows that credit scores display mean reversion. Thus, credit score changes may differ across consumers simply because they started with different initial credit scores.

In the absence of a model of credit score changes, we use data to determine how credit score changes depend on initial credit scores. We face a choice in how precisely we fit a model of credit score based on lagged credit score. A coarse fit with fewer degrees of freedom may fail to capture the dependence while using too many degrees of freedom may result in "overfitting" that picks up other effects on credit scores. As a compromise, we estimate credit scores as a cubic function of lagged credit score. We do this by using credit score (rather than change) as the dependent variable and including lagged credit score, its square, and its cube as control variables in addition to other independent variables of interest. As an illustration of the fit, we present in Figure 2 a plot of actual mean credit score and predicted credit score corresponding to lagged values of credit score. The predicted score is based on a regression of credit score on lagged credit score, its square, and cube.

The null hypothesis in our identification is that the credit score of a consumer at the end of a quarter equals a cubic function of the consumer's credit score at the beginning of the quarter plus random error that is uncorrelated with other independent variables. We

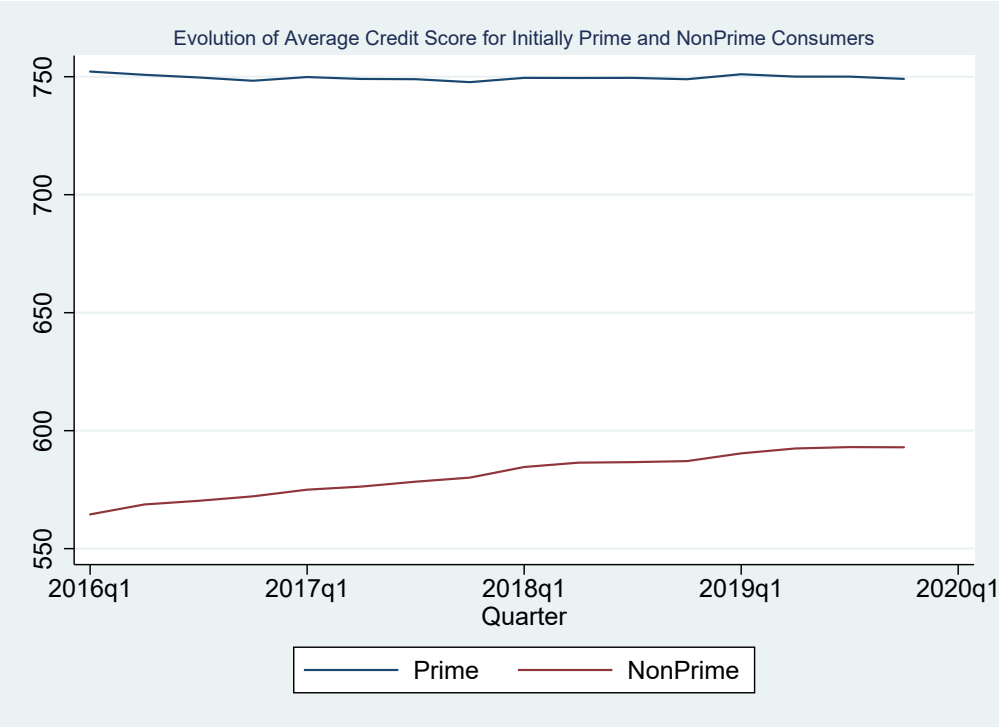


FIGURE 1. Credit Score Evolution by Initial Prime Status

estimate the following model:

$$Score_{i,t} = \beta_0 + \beta_1 Score_{i,t-1} + \beta_2 Score_{i,t-1}^2 + \beta_3 Score_{i,t-1}^3 + \beta_4 AltCreditDB_i + \beta_5 RateCap_{s(i)t} + \beta_6 RateCap_{s(i)t} \times AltCreditDB_i + C_i + Q_t, \quad (4)$$

Table 4 presents results of regressions that examine how rate cap laws in a state affect credit scores of consumers in that state in subsequent quarters. The results in Model 1 show that rate cap laws are associated with an average increase of 0.153 points per quarter in consumer credit score. The coefficient on *rate cap* is statistically significant at 1% level. The change of 0.153 points per quarter is small compared to the median absolute quarterly change of 6 in our sample and mean absolute change of 16.74. While this effect may accumulate over time, the short span of our data doesn't allow us to ascertain long-range effect.

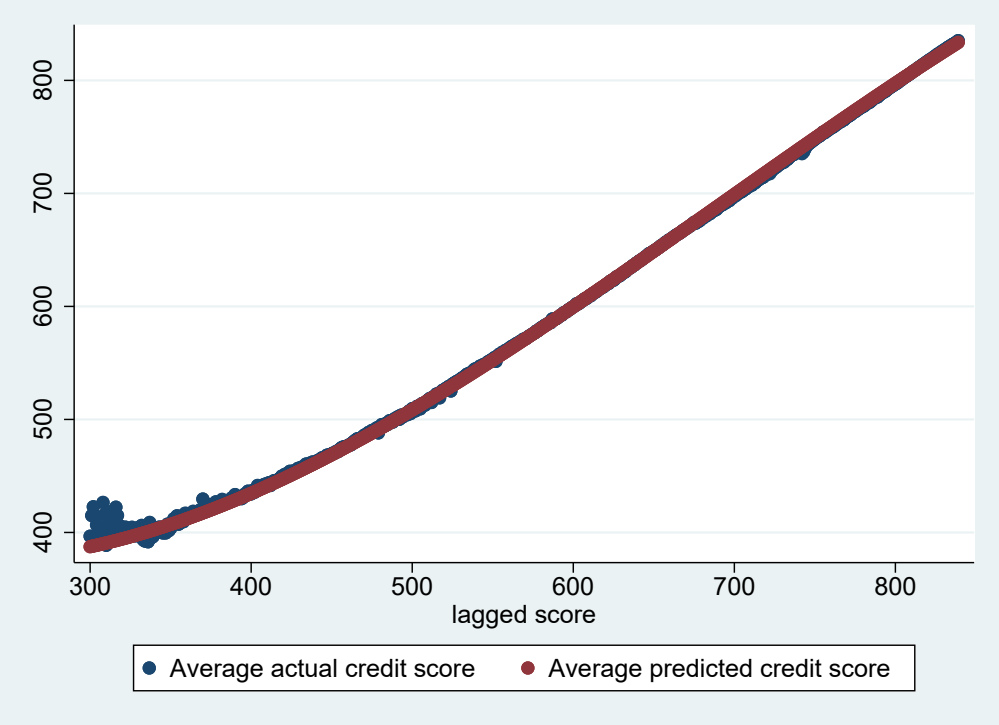


FIGURE 2. Credit Score Transition Fit

We next examine cross-sectional variation in the effect of rate cap laws on consumer credit score. For this, we estimate the following model:

$$\begin{aligned} Score_{i,t} = {} & \beta_0 + \beta_1 Score_{i,t-1} + \beta_2 Score^2_{i,t-1} + \beta_3 Score^3_{i,t-1} + \beta_4 RateCap_{s(i)t} \\ & + \beta_5 NonPrime_i + \beta_6 LowIncome_i + \beta_7 Unbanked_i + \beta_8 AltCreditUser(i) \\ & + \beta_9 RateCap_{s(i)t} \times NonPrime_i + \beta_{10} RateCap_{s(i)t} \times LowIncome_i \\ & + \beta_{11} RateCap_{s(i)t} \times Unbanked_i + \beta_{12} RateCap_{s(i)t} \times AltCreditUser_i + C_i + Q_t. \end{aligned} \tag{5}$$

Model 2 in Table 4 presents results of a regression in which we add the interaction of the *rate cap* indicator variable with *nonprime*, a variable that is one for consumers with initial credit score in the range 300-660. The statistically significant negative coefficient of -3.564 on the interaction term shows that rate cap laws have a more adverse impact on credit

scores of nonprime consumers. That is, rate cap laws result in an increase in credit scores of prime consumers and in a decrease in credit scores of nonprime consumers. Since rate cap laws impact higher-interest loans and such loans are more likely to be taken by nonprime consumers, nonprime consumers are more likely to face direct consequences of rate cap laws. What is not so obvious is why we observe a small positive impact of rate cap laws on credit scores of prime consumers. One possibility is that rate cap laws shut down some lending channels to nonprime consumers. In response, the suppliers of credit shift their focus and lend more aggressively to prime consumers. The increased availability of credit to prime consumers may result in an increase in their credit scores at the expense of a corresponding decline in the scores of nonprime consumers. We subsequently examine how measures of credit availability to prime and nonprime consumers change after rate cap laws.

We next interact *rate cap* indicator variable with an indicator variable that equals one if the consumer's estimated income at the beginning of the sample period was in the lowest decile and zero otherwise. We exclude consumers whose initial estimated income is not available. The results presented in Model 3 of Table 4 show that the consumers with income in the lowest decile are more favorably impacted by rate cap laws than the rest of the consumers. Specifically, consumers in the lowest income decile experience an increase of 0.39 points per quarter whereas those with higher incomes experience a decline of 2.85 points per quarter. The mechanism for this asymmetry is not obvious. One interpretation can be that rate cap laws prevent lower income consumers from taking loans that would eventually hurt their credit scores. However, it is not clear that prevalence of high interest rate loans is concentrated in the lowest-income consumers. Beer, Ionescu, and Li (2018) show that the correlation between income and credit score is low, with income explaining only 8% of the variation in credit scores and that even among the highest one-third of incomes, a "significant mass" of consumers is subprime.

To more directly identify potential users or users of high interest rate credit, we next consider the subsample for which we have alternative credit usage data. For this subsample, we define an indicator variable *unbanked* that takes a value one for a consumer if the customer

had no bank accounts (according to our alternative credit data) at the beginning of our sample. Note that these consumers may have bank accounts later in our sample period. We define another indicator variable *alternative financing user* that takes a value one for a consumer if the customer had at least one alternative credit account with positive balance at the beginning of our sample. Models 4 and 5 in Table 4 show that rate cap laws have a more adverse impact on credit scores of unbanked and alternative financing users. Following rate cap laws, consumers with a bank account experience an increase of 0.654 points per quarter in credit scores while unbanked consumers experience a decrease of 0.54 points per quarter. The credit scores of alternative financing users decline by 1.545 points per quarter following rate cap laws. All of these effects are statistically significant at 1% level.

We consider some alternative regression specifications in Table 5 to examine whether our results are sensitive to changes in these specifications. Model 1 presents results of a regression that is similar to the regression in Model 1 of Table 4 but excludes weights on observations. These results can be interpreted to represent the average effect of rate cap laws on consumer credit in our sample rather than in the entire US population. The coefficient of *rate cap* is reduced slightly when we exclude weights, suggesting that if we performed our other regressions without weights, we may find a slight more adverse impact of rate cap laws on credit scores.

Our difference-in-difference methodology estimates the impact of rate cap laws based on changes in rate cap laws within our sample period. That is, states that did not experience a change in rate cap laws do not directly impact the coefficient of rate cap but may indirectly do so through their impact on the other coefficients. In Model 2 of Table 5, we present results of a regression in which we ignore rate caps that have been in place before our sample period starts and consider the impact of rate cap law changes during our sample period. The coefficient on *recent rate cap* is statistically insignificant indicating that the effect of rate cap laws on the credit score of an average consumer is indistinguishable from no effect.

Models 3 to 7 in Table 5 present results of regressions that include an additional control variable of the fourth power of lagged credit score to the regression specifications of Models

1 to 5, respectively, of Table 4. The coefficients of *rate cap* and its interactions in these results are very close to the corresponding coefficients in Table 4 and show that including the fourth power of lagged credit score has little effect on regression results.

The findings in Table 4 and Table 5 show that the average impact of rate cap laws on consumer credit scores is small compared to the variation in credit scores due to other reasons. Moreover, there is heterogeneity in the impact of rate cap laws. Rate cap laws seem to have more adverse impact on nonprime consumers, unbanked consumers, and alternative financing users. These differences across consumers ranging from 1.2 points per quarter to 3.6 points per quarter are significant. The adverse effects of rate cap laws seem to be concentrated in the consumers whose welfare concerns motivate rate cap laws.

Our difference-in-difference methodology assumes that any confounding events accompanying the introduction of rate cap laws do not have systematically different impact on consumers in states which introduced rate caps and those did not. Following Zinman (2010), we consider an alternative approach with the weaker assumption that all consumers within a state are affected similarly by confounding effects. We restrict this analysis to states with rate cap laws and identify zip codes that border states without rate cap laws. Figure 3 shows these areas in the first quarter of 2016. If consumers residing in these zip codes can borrow across state boundaries, they have better access to high interest credit than other consumers in these states. It is not clear if this assumption is reliable as rate cap laws apply based on the residence of the borrower, not on the location where the transaction is carried out.

Nonetheless, we define a variable access, that is one for consumers who live in zip codes that border states without rate cap laws, and zero otherwise. Regression results are reported in Table 6. The coefficient on access in Model 1 is not statistically significant and fails to identify any impact of access to states with no rate cap laws on credit score. However, the coefficient for the interaction of access and alternative credit database is negative and statistically significant, suggesting that the credit scores of consumers in alternative credit database in states with rate cap laws grow 0.376 points less per quarter if they live in a zip code bordering a state without rate cap laws. This result seems to be opposite of our main

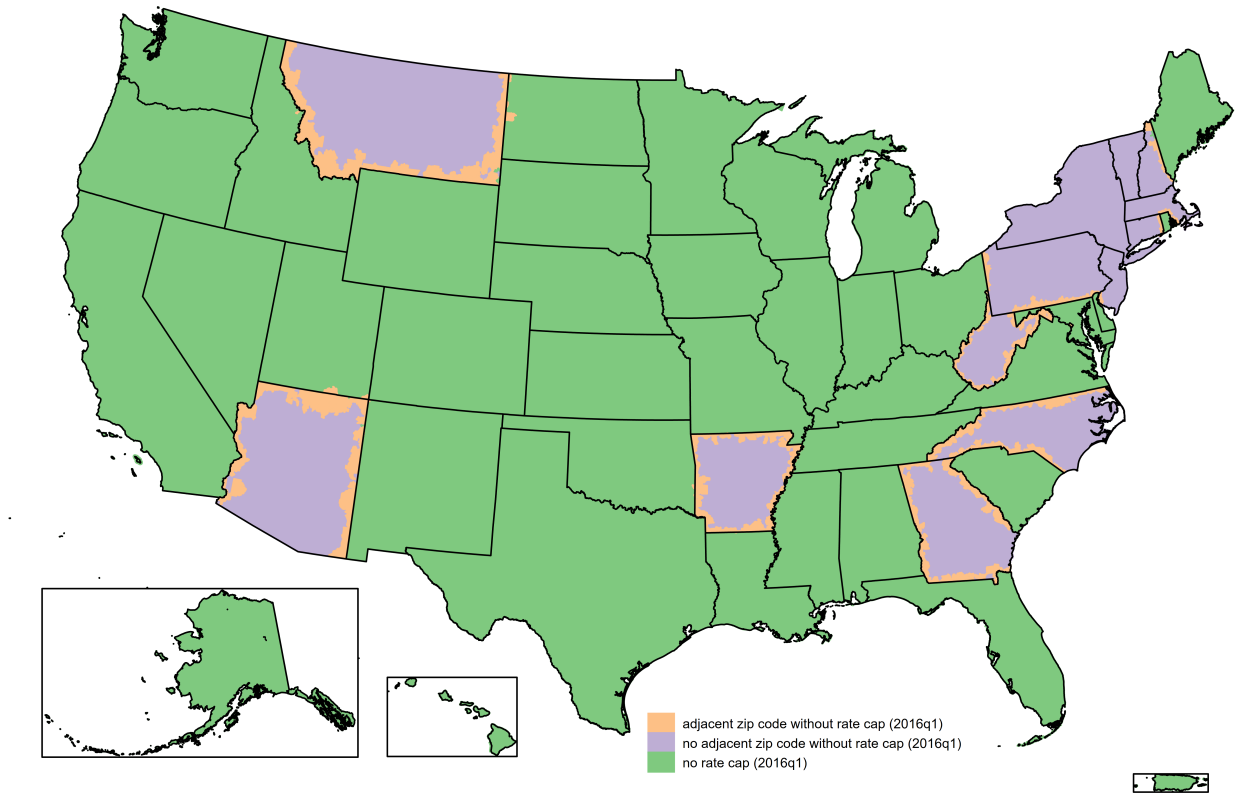


FIGURE 3. Zip Codes with Rate Caps Bordering tStates without Rate Caps in 2016Q1

result. However, Model 2 in Table 6 doesn't find a statistically significant impact of access to states without rate cap laws on credit score.

VI.B. **Impact of Rate Cap Laws on Credit Availability.** We now examine how rate cap laws impact availability of credit to consumers. Ideally, we would like to separately identify changes in the demand for credit from changes in the supply for credit. However, most of our analyses examine changes in the volume of credit. However, differential changes across consumer groups help us identify whether rate cap laws have heterogeneous impact on credit availability. We use detailed data from credit files about the number of accounts, account balances, payments, and account status. We rely on the credit bureau's classification of accounts into several categories, some of which are not exclusive. For example,

an account may be classified as a revolving account, a credit card account, and an account with a department store. Our empirical approach is again to use differences-in-differences methodology based on differences in timing of rate cap laws across states. We perform panel regressions with consumer and quarter fixed effects and incorporate sampling weights so that the results correspond to the average effects in the population.

In Table 7, we examine the impact of rate cap laws on the number of accounts and account balances. The results from Model 1 show that consumers in the alternative credit database tend to have about 0.173 more open accounts than those not in the alternative credit database. Rate cap laws tend to have a statistically significantly negative but very small effect on consumers not in the alternative credit database. However, the number of open accounts for a consumer in the alternative credit database increases by about 0.069 following rate cap law and the increase continues in subsequent quarters (represented by the positive coefficient of 0.008 on the interaction of *quarters w rrc* with *alternative credit database*). The positive coefficients on the interactions of *nonprime* in Model 2 suggest that the increase in accounts is more pronounced for nonprime consumers. Results in Models 3 and 4 with number of current open accounts as the dependent variable and from Models 5 and 6 with total balance across accounts offer qualitatively similar findings. It is hard to draw welfare implications from these results as it is not clear whether the small changes in number of accounts are driven by demand or by supply. If the changes are driven by supply, the results would suggest that rate cap laws improve access to credit for consumers in alternative credit database and nonprime consumers. However, the conclusion will be opposite if demand shift causes these changes.

We next examine the impact of rate cap laws on credit cards. Table 8 examines usage of credit cards. The results in Model 1 show that consumers in alternative credit database open more credit card accounts in the preceding six months. Note that the coefficient of 0.383 cannot be interpreted as 0.383 incremental accounts because the estimates are from Poisson regression. Rate cap laws lead to a slight decline in the number of accounts opened in the preceding six months on average, but consumers in the alternative credit database

open more credit card accounts following rate cap laws. The results in Model 2 do not offer unambiguous distinct effects across consumer types. Models 3 though 6 show that consumers in the alternative credit database experience an increase in credit limit and an increase in credit card balance following rate cap laws.

We examine access to all revolving accounts in Table 9. The results from Model 1 show that following rate cap laws, consumers in the alternative credit database open more accounts in the preceding six months, while other consumers open slightly fewer accounts. Models 3 and 5 show the same trend for credit limit and total balance across revolving accounts. The coefficients on interactions of *nonprime* in Models 2 and 4 show that these effects are stronger for consumers with nonprime credit score.

We next examine installment loan accounts in Table 10. The dependent variable is the number of installment accounts opened in the preceding six months in Models 1 and 2, the log of credit limit of installment accounts in Models 3 and 4, and total balance across installments accounts in Models 5 and 6. The results in Models 1, 3, and 5 show negative coefficients on *recent rate cap*. The coefficients on the interaction of *recent rate cap* with *alternative credit database* are positive and statistically significant, while the coefficients on the interaction of *quarters w rrc* with *alternative credit database* are negative but much smaller in magnitude. This suggests that rate cap laws result in a decline in the number of installment accounts opened, credit limit, and balance for consumers not in the alternative credit database. The effects are opposite and larger for consumers in the alternative credit database. Further, Models 2, 4, and 6 show that these effects are the strongest for unbanked. As rate cap laws prevent consumers from taking higher APR loans, they are more likely to be binding on shorter-duration loans than on installment loans, and it is reasonable for those affected to substitute shorter-duration loans with longer duration installment loans.

Table 11 displays the results of regressions where we analyze how rate cap laws impact the usage of mortgage accounts. Since mortgage accounts can be long-term contracts with interest rates that do not change frequently, an impact of rate cap laws on mortgage balances is more likely from new mortgages. Further, consumers who borrow high -interest loans that

are targeted by interest rate caps are less likely to be taken by homeowners. Thus, our ex ante expectation is that rate cap laws should not significantly affect mortgage accounts. The dependent variables in the regressions in Table 11 are the number of accounts opened in 6 months, the highest APR on a mortgage, and the mortgage balance. These APR rate is estimated by the credit bureau based on balance and payment data. Since a consumer can have multiple mortgages outstanding, we consider the highest APR of all mortgages. The results in Model 1 show that consumers open more mortgage accounts following rate cap laws but this effect is weaker for those in the alternative credit database. However, the results in Model 5 show that mortgage balance change is larger for those in the alternative credit database. This suggests that consumers in the alternative credit database may be reducing payments on their mortgage and tapping into mortgage as a source of short-term credit. However, again, it is not clear whether this is a supply effect or demand effect.

We next consider the impact of rate cap laws on personal loans, that are defined to be unsecured installment loans. The results in Model 1 of Table 12 show that consumers in the alternative credit database open significantly more personal loan accounts in the preceding six months after rate cap laws. The effect is in the opposite direction for consumers not in the alternative credit database. The results are similar in Model 3 about total balance across personal loans. However, consumers in the alternative credit database experience an increase in APR on these loans following rate cap laws (Model 3), suggesting that the increased usage of personal loans is a demand effect rather than a supply effect. These results are consistent with a model in which consumers in the alternative credit database more aggressively seek credit following rate cap laws.

VI.C. **Impact of Rate Cap Laws on Status of Credit Accounts.** We consider account usage and account status for credit cards in Table 13. The results in Model 1 show that delinquencies on credit card accounts increase for consumers in the alternative credit database, but decrease for other consumers, following rate cap laws. The results in Model 3 show that past due amount on credit card accounts increases for consumers in the alternative credit

database, but decreases for other consumers, following rate cap laws. The results of Model 4 show that among consumers in the alternative credit database, the past due amount increase is more pronounced for lower income and unbanked consumers, and less pronounced for consumers with nonprime credit scores. Finally, credit card utilization increases for consumers in alternative credit database but decreases for other consumers. These results suggest that consumers in the alternative credit database experience a deterioration in their financial condition following rate cap laws. These results along with the results in the previous subsection suggest that consumers in the alternative credit database tap more credit following rate cap laws, but this greater use of credit may be driven by adverse changes rather than availability of superior credit.

In Table 14, we examine how rate cap laws impact the usage and performance of revolving accounts. The results are similar to those in Table 13 for credit cards. Rate cap laws result in an increase in delinquencies and past due amounts in revolving accounts for consumers in the alternative credit database, following rate cap laws. The effect is opposite (a reduction in delinquencies) for consumers not in the alternative credit database. Similarly, past due amounts and utilization increase for those in alternative credit database, but not for others. The coefficients of the interactive terms in Models 2, 4, and 6 do not provide a consistent picture of whether a particular subset of consumers in alternative credit database experiences a greater impact on revolving accounts as a result of rate cap laws.

Tables 15, 16, and 17 present results about the performance of consumers on installment accounts, mortgages, and personal loans. The results are similar across all tables. In each case, consumers in the alternative credit database experience more delinquencies and larger unpaid amounts following rate cap laws. However, this pattern is absent for consumers not in the alternative credit database.

We next consider the impact of rate cap laws on chargeoffs and delinquencies across all accounts in Table 18. One motivation for rate cap laws is that consumers who take high-interest loans experience adverse outcomes like chargeoffs or foreclosures. The results in Model 1 show that the two coefficients for the interactions of alternative credit database

are of opposite signs. However, based on their magnitudes, we can conclude that consumers in the alternative credit database experience more chargeoffs in the preceding six months following rate cap laws. Model 2 shows that the increase in chargeoffs is stronger for lower income consumers. The results in Models 3 and 4 are similar to those in Model 1. Specifically, foreclosures in the past 12 months increase by more than 0.1 and delinquencies in the preceding three months increase by at least 0.5 following rate cap laws for consumers in the alternative credit database.

Table 19 considers the impact of rate cap laws on number and amount of collections. The results in Model 4 show that the number of collections in past three months increase for consumers in the alternative credit database following rate cap laws. The magnitude of the coefficient cannot be directly interpreted as the marginal change in the number of collections because the results are from a Poisson regression. The results in Models 2 and 6 show that there is a highly statistically significant increase in the amount of all collections and the amount of collections in the past three months, respectively, for consumers in the alternative credit database following rate cap laws.

VI.D. **Impact of Rate Cap Laws on Credit Inquiries.** Table 20 examines credit inquiries. Models 1 and 2 examine total inquiries, Models 3 and 4 examine inquiries from banks, and Models 5 and 6 examine inquiries from finance companies. All specifications show that consumers in the alternative credit database make more inquiries than the other consumers. However, the magnitude of the coefficient may understate the true difference as some differences may be captured by consumer random effects. The coefficients on the interaction of recent rate cap and alternative credit database in Models 1, 3, and 5 are positive and statistically significant. These results suggest that consumers in the alternative credit database increase inquiries for credit following rate cap laws. These results hold for inquiries across banks or finance companies. The results of Model 4 show that the increase in inquiries among consumers in the alternative credit database is more pronounced

for nonprime consumers, unbanked consumers, and consumers who are users of alternative credit.

Credit reports can contain certain public records. Historically, there were three main kinds of public records included in credit files: bankruptcy, tax liens, and civil judgments (for example, a divorce case judgment). However, following policy changes between 2017 and 2018, credit reports only include bankruptcy public records. Since this change occurs during our sample period, our analysis of public records in Table 21 may refer to only bankruptcies in later quarters and more broader records in earlier quarters. Our regressions, however, include quarter fixed effects. We treat public records as indicators of adverse financial condition. The coefficients of the interactions of the two rate cap variables with alternative credit database in Models 1 and 2 are positive and statistically significant. These results show that consumers in the alternative credit database experience an increase in public records following rate cap laws.

VI.E. **Impact of Rate Cap Laws on Consumers in Alternative Credit Database.** We now examine the alternative credit data for users in our sample that are included in that database. These users are more likely to be impacted by rate cap laws. Table 22 examines number of accounts tracked by this database and the balance in these accounts. The coefficients of *recent rate cap* and *quarters w recent rate cap* in Models 1 and 2 show that the number of accounts in in the preceding three months decreases but the number of accounts with positive balance increases. Models 4 and 6 show that the balance of these accounts also increases. The results in Models 3, 5, and 7 show that unnbanked consumers experience a larger increase in their balances. Again, it is difficult to ascertain whether these changes in balance are a result of demand or supply changes, and cannot be used to draw inference about welfare implications of rate cap laws.

We now focus on credit usage from storefront lenders in the alternative credit database. The much larger positive coefficient of *recent rate cap* than the negative coefficient of *quarters w recent rate cap* in Model 1 of Table 23 shows that the number of storefront accounts,

including those in delinquent or collection status, is higher after rate cap laws. The coefficients in Model 3 are similar. However, the coefficients in Model 5 suggest that the number of accounts in the preceding 12 months go down following rate cap laws. These opposing findings suggest that the number of accounts may initially increase after rate cap laws become effective, but then start declining, resulting in a decline in the number of accounts in the preceding 12 months. The opposing signs of the two coefficients in Model 6 make it difficult to draw any conclusions about change in inquires from storefront lenders.

Table 24 examines credit usage from online lenders in the alternative credit database. The statistically significant positive coefficient of *recent rate cap* in Model 1 shows that there is an increase in the number of online accounts following rate cap laws. The coefficients in Models 3 and 5 are of opposing sign, but the relative magnitudes again suggest an increase in the number of online accounts in the preceding 12 months and also in the balance of these accounts.

We next examine how rate cap laws impact the number of inquiries for alternative credit. The statistically significant negative coefficients of *recent rate cap* and the much smaller positive coefficients of *quarters w recent rate cap* in Models 1, 3, and 5 of Table 25 show that the number of inquiries, aggregate, as well as those from storefront or online lenders decrease following rate cap laws. These results are consistent with binding rate cap laws that shut down opportunities to seek credit from alternative credit providers. However, our previous results about number of accounts and balances suggest that borrowers try to increase utilization of their existing accounts.

We now examine NSF (nonsufficient funds) transactions which are easier to interpreted than credit volume as a sign of financial distress or credit constraints. The coefficients of *recent rate cap* and *quarters w recent rate cap* are of opposing signs in Models 1, 3, and 5 of Table 26. However, the coefficients in Model 6 how that the amount of NSF transactions increases significantly after rate cap laws. These results are an indication of the adverse impact of rate cap laws on consumers in the alternative credit database.

In Table 27, we examine ACH transactions for consumers in the alternative credit database. The opposite signs of the coefficients of *recent rate cap* and *quarters w recent rate cap* in Models 1 and 3 make it difficult to draw conclusions about the change in the number of satisfactory ACH transactions. However, the coefficients of the interaction variables in Model 2 show that the number of satisfactory ACG transactions declined significantly for unbanked consumers and consumers who were users of alternative credit.

Table 28 decomposes ACH transactions into good and bad ACH transactions. While the results in Models 1, 3, and 5 are ambiguous, the results in Model 7 show that the amount of bad ACH transactions in the preceding three months increases significantly following rate cap laws.

We next consider access to banks for consumers in the alternative credit database. The positive coefficients of *recent rate cap* and *quarters w recent rate cap* in Model 1 of Table 29 show that there is an increase in the number of consumers with bank account following rate cap laws. This is plausible as consumers who are marginally unbanked are likely to try to open a bank account when other forms of credit become scarce. The negative coefficient of *recent rate cap* in Model 5 however suggests that the number of distinct bank accounts in the preceding three months goes down following rate cap laws.

Finally, we examine how rate cap laws impact the income, chargeoffs, and bankruptcy of consumers in the alternative credit database. The results are in Table 30. Models 1 and 2 consider consumer income as the dependent variable. However, this variable is not reported directly by the consumer and is imputed by the credit bureau. The coefficients in Model 1 suggest an increase in the imputed income following rate cap laws. The statistically significant positive coefficient of *recent rate cap* shows that the number of chargeoffs increased following rate cap laws. The statistically significant positive coefficient of *quarters w recent rate cap* in Model 5 suggests that the number of lender related bankruptcies increased following rate cap laws.

VII. Conclusion

This study examines detailed panel data for about 600,000 consumers over four years to determine the impact of rate cap laws on consumer financial well-being. Our data enables us to examine broad measures of consumer well-being such as credit score as well as more granular data about individual accounts.

Our analysis does not reveal large average unambiguous positive or negative effects of rate cap laws on consumers. The average effect of rate cap laws on consumer credit score is close to zero. However, there are distinct patterns that emerge through an examination of cross-sectional variation in effects and in examination of credit usage patterns:

(1) Consumers who are nonprime (with credit scores below 660), consumers who do not have a bank account, and consumers who are availaing of alternative credit sources (other than banks and credit unions) experience a greater decline in their credit scores following rate cap laws.
(2) Credit availability and performance for bank products experiences an improvement following rate cap laws.
(3) Rate cap laws significantly increases the number of chargeoffs, delinquencies, and foreclosures for users in the alternative credit database.

These findings suggest that users of traditional finance experience marginal improvement in their financial conditions while those who lack access to traditional finance see further declines in their financial conditions. While the impact on unbanked and users of alternative finance is easy to understand, the benefit for those with access to traditional finance is not so obvious. We conjecture that rate cap laws impose barriers in free market, resulting in a market response where there is a reduction in supply of credit to those who already had poor access and an increase in supply of financial credit to users of traditional credit, resulting in transfer of wealth, and possibly welfare, from financially unprevileged to financially well-off.

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Table 1: Distribution of States

This table presents the number and percent of consumers in our sample from each state.

	Frequency	Percent
Alabama	6719	1.121
Alaska	828	0.138
Arizona	8755	1.460
Arkansas	3935	0.656
California	48406	8.073
Colorado	6355	1.060
Connecticut	4230	0.705
Delaware	1266	0.211
District of Columbia	952	0.159
Florida	27655	4.612
Georgia	14382	2.399
Hawaii	1446	0.241
Idaho	1817	0.303
Illinois	16103	2.686
Indiana	8640	1.441
Iowa	3334	0.556
Kansas	3235	0.540
Kentucky	6038	1.007
Louisiana	6098	1.017
Maine	1661	0.277
Maryland	50194	8.371
Massachusetts	7504	1.252
Michigan	12380	2.065
Minnesota	5377	0.897
Mississippi	4339	0.724
Missouri	8010	1.336
Montana	1206	0.201
Nebraska	1920	0.320
Nevada	4091	0.682
New Hampshire	1580	0.264
New Jersey	37967	6.332
New Mexico	2800	0.467
New York	22425	3.740
North Carolina	12624	2.105
North Dakota	723	0.121
Ohio	93983	15.67
Oklahoma	5177	0.863
Oregon	4826	0.805
Other	612	0.102
Pennsylvania	51969	8.667
Puerto Rico	4325	0.721
Rhode Island	1157	0.193
South Carolina	6772	1.129
South Dakota	5758	0.960
Tennessee	8828	1.472
Texas	37876	6.317
Utah	3267	0.545
Vermont	701	0.117
Virginia	10318	1.721
Washington	8542	1.425
West Virginia	2526	0.421
Wisconsin	7288	1.216
Wyoming	665	0.111
Total	599585	100

Table 2: Summary Statistics

This table presents summary statistics for selected variables in our main sample of panel credit bureau data during 2016-2019. Each statistic is calculated based on all the consumer-quarter observations in our data for which the corresponding variable value is available.

	Mean	Median	SD	Min	Max	N
credit score	622.306	606	102.81	300	839	9,518,254
age	47.245	45	18.18	12	125	8,382,951
annual income estimate thousands	71.597	62	41.29	16	765	7,593,900
open accounts	3.682	2	4.95	0	154	9,518,254
all accounts total balance	50,025.827	2063	124,349.44	0	13,023,809	9,518,246
mortgage total balance	33,157.651	0	108,663.49	0	9,500,000	9,518,254
revolving credit limit	15,499.482	300	41,822.42	0	13,131,500	9,518,037
credit card total balance	2,811.517	0	7,978.72	0	789,700	9,518,248
revolving total balance	4,620.332	0	20,568.19	0	13,012,062	9,518,239
bank revolving total balance	3,782.932	0	19,433.70	0	13,012,062	9,518,223
finance companies revolving total balance	112.880	0	2,509.95	0	1,026,500	9,518,245
installment total balance	11,629.851	0	29,306.08	0	4,602,140	9,518,254
bank installment total balance	3,274.119	0	16,844.58	0	4,602,140	9,518,254
finance companies installment total balance	2,883.818	0	8,894.48	0	741,589	9,518,254
credit union total balance	3,527.023	0	26,355.25	0	6,400,773	9,518,252
auto loans total balance	4,854.465	0	11,342.55	0	797,820	9,518,254
number of inquiries in 3 months	0.250	0	0.93	0	77	9,518,254
number of collections in 3 months	0.040	0	0.28	0	71	9,518,254
chargeoffs in 6 months	0.123	0	0.65	0	37	9,518,254
foreclosures in 12 months	0.001	0	0.03	0	3	9,518,254
alternative credit database	0.122	0	0.33	0	1	9,518,254

Table 3: Summary Statistics for Alternative Credit Subsample

This table presents summary statistics for selected variables in the subsample of panel credit bureau data during 2016-2019 for which alternative credit usage data is available. Each statistic is calculated based on all the consumer-quarter observations in our data for which the corresponding variable value is available.

	Mean	Median	SD	Min	Max	N
credit score	550.999	547	68.10	300	837	1,165,324
age	39.832	38	13.25	14	123	1,133,869
annual income estimate thousands	53.072	49	22.07	17	680	1,063,631
open accounts	3.732	2	5.05	0	110	1,165,324
all accounts total balance	36,269.199	9946	79,100.31	0	5,601,058	1,165,322
mortgage total balance	15,612.398	0	61,855.40	0	2,261,789	1,165,324
revolving credit limit	3,827.783	0	17,780.62	0	3,131,150	1,165,295
credit card total balance	1,344.322	0	4,469.70	0	222,323	1,165,322
revolving total balance	2,022.209	0	13,799.93	0	3,105,986	1,165,320
bank revolving total balance	1,405.366	0	13,189.78	0	3,105,986	1,165,322
finance companies revolving total balance	89.456	0	763.57	0	155,425	1,165,324
installment total balance	18,219.805	6185	32,820.00	0	1,083,130	1,165,324
bank installment total balance	3,545.763	0	16,725.22	0	1,077,997	1,165,324
finance companies installment total balance	6,384.751	0	11,554.61	0	331,154	1,165,324
credit union total balance	2,019.101	0	13,173.78	0	778,873	1,165,324
auto loans total balance	7,848.267	0	12,915.97	0	357,971	1,165,324
number of inquiries in 3 months	0.719	0	1.80	0	77	1,165,324
number of collections in 3 months	0.110	0	0.43	0	34	1,165,324
chargeoffs in 6 months	0.381	0	1.11	0	37	1,165,324
foreclosures in 12 months	0.002	0	0.04	0	2	1,165,324
number of distinct bank accounts	1.284	1	1.50	0	34	1,165,324
number of inquiries 12 months	1.010	0	2.38	0	80	1,165,324
number of NSF 12 months	0.077	0	1.23	0	539	1,165,324
number of accounts	1.218	0	5.19	0	178	1,165,324
number of accounts open 12 months	0.249	0	1.56	0	57	1,165,324
total balance open or collection accounts	216.332	0	1,356.06	0	83,740	1,165,324

Table 4: Impact of Rate Cap on Credit Score

The estimates are from regression models estimated on panel quarterly data over 2016-2019. In all of the regression models, the dependent variable is the credit score, censored between 300 and 839. The independent variables include lagged credit score, its square and cube, recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, and interactions of recent rate cap with: alternative credit user, which equals one for a consumer present in alternative credit database in the first quarter of 2016, and zero otherwise; nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660, and zero otherwise; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include consumer random effects and quarter fixed effects. The standard errors are clustered by consumer.

	(1) **credit score**	(2) **credit score**
lagged score	–1.155***	–0.464***
	(–386.66)	(–31.32)
lagged score squared	0.003***	0.002***
	(657.61)	(65.22)
lagged score cubed	–0.000***	–0.000***
	(–608.29)	(–44.62)
alternative credit database	–5.329***	
	(–370.40)	
recent rate cap	–0.004	0.414
	(–0.28)	(1.31)
recent rate cap * alternative credit database	–0.122***	
	(–5.24)	
nonprime		–15.602***
		(–109.90)
lowest income decile		5.967***
		(86.10)
unbanked		–1.685***
		(–30.33)
alternative credit user		–2.045***
		(–32.53)
recent rate cap * nonprime		0.762***
		(3.16)
recent rate cap * lowest income decile		–1.502***
		(–7.48)
recent rate cap * unbanked		–0.436***
		(–2.83)
recent rate cap * alternative credit user		–0.311
		(–1.59)
quarter fixed effects	Yes	Yes
consumer random effects	Yes	Yes
weights	Yes	Yes
consumer-quarter observations	7,963,946	677,744

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 5: Impact of Rate Cap on Credit Score - Alternative Specifications

The estimates are from regression models estimated on panel quarterly data over 2016-2019. In all of the regression models, the dependent variable is the credit score, censored between 300 and 839. The independent variables include lagged credit score, its square, cube, and in some models the fourth power, rate cap or recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% (introduced in or after 2016 for recent rate cap), and zero otherwise, and its interactions with: alternative credit user, which equals one for a consumer present in alternative credit database in the first quarter of 2016, and zero otherwise; nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660, and zero otherwise; lowest income decile, which equals one if the consumer's income in the first quarter of 2016 was in the first decile, and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. In regressions with weights, the observations are weighted to reflect sample selection probability. All models include consumer random effects and quarter fixed effects. The standard errors are clustered by consumer.

	(1) **credit score**	(2) **credit score**	(3) **credit score**	(4) **credit score**	(5) **credit score**	(6) **credit score**
lagged score	–4.086***	–1.292***	–1.130***	–0.477***	–1.155***	–0.463***
	(–248.07)	(–16.37)	(–132.65)	(–11.44)	(–386.63)	(–31.24)
lagged score squared	0.010***	0.004***	0.003***	0.002***	0.003***	0.002***
	(255.41)	(18.66)	(222.66)	(23.20)	(657.57)	(65.14)
lagged score cubed	–0.000***	–0.000***	–0.000***	–0.000***	–0.000***	–0.000***
	(–213.97)	(–13.35)	(–201.18)	(–15.87)	(–608.23)	(–44.52)
lagged score quart	0.000***	0.000***				
	(180.92)	(10.67)				
alternative credit database	–5.331***		–4.993***		–5.356***	
	(–370.66)		(–129.50)		(–364.20)	
recent rate cap	–0.005	0.359	–0.008	0.406		
	(–0.42)	(1.14)	(–0.21)	(0.40)		
recent rate cap * alternative credit database	–0.117***		–0.109*			
	(–5.02)		(–1.74)			
nonprime		–15.807***		–16.519***		–15.448***
		(–110.50)		(–37.25)		(–104.78)
lowest income decile		5.984***		5.794***		6.007***
		(86.12)		(31.91)		(77.76)
unbanked		–1.704***		–1.935***		–1.777***
		(–30.56)		(–13.69)		(–27.51)
alternative credit user		–2.056***		–2.226***		–2.183***
		(–32.61)		(–13.15)		(–31.83)
recent rate cap * nonprime		0.839***		0.667		
		(3.48)		(0.77)		
recent rate cap * lowest income decile		–1.505***		–1.360***		
		(–7.49)		(–2.74)		
recent rate cap * unbanked		–0.448***		–0.329		
		(–2.91)		(–0.86)		
recent rate cap * alternative credit user		–0.316		–0.353		
		(–1.61)		(–0.73)		
rate cap					–0.064***	–0.139
					(–8.38)	(–0.66)
rate cap * alternative credit database					–0.062**	
					(–2.56)	
rate cap * nonprime						–0.146
						(–0.91)
rate cap * lowest income decile						–0.516***
						(–3.89)
rate cap * unbanked						0.076
						(0.72)
rate cap * alternative credit user						0.243*
						(1.80)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
consumer random effects	Yes	Yes	Yes	Yes	Yes	Yes
weights	Yes	Yes	No	No	Yes	Yes
consumer-quarter observations	7,963,946	677,744	7,963,946	677,744	7,963,946	677,744

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 6: Impact of Access to States with No Rate Cap on Credit Score

The estimates are from regression models estimated on panel quarterly data over 2016-2019 for states which had rate cap through this period. In all of the regression models, the dependent variable is the credit score, censored between 300 and 839. The independent variables include lagged credit score, its square and cube, access, which equals one in a quarter in a zip code if the zip code is on the boundary with a state without rate cap in that quarter, and interactions of access with: alternative credit user, which equals one for a consumer present in alternative credit database in the first quarter of 2016, and zero otherwise; nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660, and zero otherwise; lowest income decile, which equals one if the consumer's income in the first quarter of 2016 was in the first decile, and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include consumer random effects and state-quarter fixed effects. The standard errors are clustered by consumer.

	(1) **credit score**	(2) **credit score**
lagged score	–1.200***	–0.561***
	(–225.36)	(–17.26)
lagged score squared	0.003***	0.002***
	(376.92)	(31.79)
lagged score cubed	–0.000***	–0.000***
	(–348.61)	(–21.72)
alternative credit database	–5.334***	
	(–209.40)	
access	–0.016	–2.000
	(–0.35)	(–1.38)
access * alternative credit database	–0.376***	
	(–2.67)	
nonprime		–15.876***
		(–52.07)
lowest income quartile		5.073***
		(47.62)
unbanked		–1.648***
		(–14.28)
alternative credit user		–1.836***
		(–11.09)
access * nonprime		0.738
		(0.62)
access * lowest income decile		–0.014
		(–0.02)
access * unbanked		–0.241
		(–0.39)
access * alternative credit user		1.930*
		(1.76)
quarter-state fixed effects	Yes	Yes
consumer random effects	Yes	Yes
weights	Yes	Yes
consumer-quarter observations	2,271,405	144,038

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 7: Impact of Rate Cap on Number and Balance of Accounts

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1)	(2)	(3)	(4)	(5)	(6)
	open accounts	**open accounts**	**number of open accounts current**	**number of open accounts current**	**log all accounts total balance**	**log all accounts total balance**
alternative credit database	0.173***		0.157***		0.415***	
	(244.59)		(198.47)		(62.15)	
recent rate cap	–0.009***	–0.036***	–0.007***	–0.029***	–0.072***	–0.412
	(–51.57)	(–8.25)	(–40.28)	(–6.22)	(–37.07)	(–1.53)
quarters w recent rate cap	–0.000***	0.005***	–0.000***	–0.000	0.008***	0.041
	(–7.53)	(4.47)	(–11.83)	(–0.36)	(22.59)	(0.77)
recent rate cap * alternative credit database	0.069***		0.063***		0.590***	
	(108.62)		(91.99)		(171.61)	
quarters w rrc * alternative credit database	0.008***		0.007***		–0.023***	
	(43.22)		(39.19)		(–26.99)	
nonprime		–0.201***		–0.220***		–0.854***
		(–161.45)		(–163.19)		(–10.21)
lowest income decile		0.129***		0.170***		0.809***
		(69.70)		(81.58)		(11.69)
unbanked		–0.103***		–0.109***		–0.182***
		(–71.12)		(–66.68)		(–3.74)
alternative credit user		0.016***		0.009***		0.002
		(9.38)		(4.41)		(0.04)
recent rate cap * nonprime		0.017***		0.030***		0.044
		(7.92)		(12.93)		(0.23)
quarters w rrc * nonprime		0.008***		0.008***		–0.007
		(17.01)		(17.60)		(–0.21)
recent rate cap * lowest income decile		0.013***		0.008*		0.321*
		(3.49)		(1.94)		(1.78)
quarters w rrc * lowest income decile		–0.009***		–0.006***		–0.025
		(–9.60)		(–6.05)		(–0.64)
recent rate cap * unbanked		0.011***		0.004		0.224*
		(4.22)		(1.38)		(1.83)
quarters w rrc * unbanked		–0.003***		–0.002***		0.014
		(–5.42)		(–2.72)		(0.56)
recent rate cap * alternative credit user		0.035***		0.040***		0.103
		(9.26)		(9.99)		(0.64)
quarters w rrc * alternative credit user		–0.001		–0.001		0.042
		(–1.44)		(–1.10)		(1.20)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Poisson	Poisson	Tobit	Tobit
consumer random effects	Yes	Yes	Yes	Yes	Yes	No
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes	Yes	No	Yes
consumer-quarter observations	8,863,631	684,495	8,863,631	684,495	8,863,609	684,493

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 8: Impact of Rate Cap on Credit Cards

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **credit card accounts opened in in 6 months**	(2) **credit card accounts opened in in 6 months**	(3) **log credit card credit limit**	(4) **log credit card credit limit**	(5) **log credit card total balance**	(6) **log credit card total balance**
alternative credit database	0.383***		0.962***		0.535***	
	(362.50)		(131.02)		(65.88)	
recent rate cap	–0.027***	0.146***	–0.019***	–0.395	–0.028***	–0.445
	(–29.40)	(8.79)	(–9.38)	(–1.01)	(–12.24)	(–1.11)
quarters w recent rate cap	–0.001***	–0.055***	–0.010***	0.011	–0.005***	0.022
	(–6.66)	(–17.30)	(–26.76)	(0.16)	(–10.74)	(0.30)
recent rate cap * alternative credit database	0.244***		0.460***		0.435***	
	(141.94)		(119.92)		(98.28)	
quarters w rrc * alternative credit database	0.007***		0.025***		0.017***	
	(13.76)		(26.38)		(15.35)	
nonprime		–0.012***		–1.435***		–1.945***
		(–4.72)		(–12.29)		(–15.89)
lowest income decile		0.331***		1.639***		1.689***
		(100.43)		(15.43)		(15.92)
unbanked		0.073***		–0.473***		–0.427***
		(29.57)		(–6.21)		(–5.63)
alternative credit user		0.086***		–0.038		0.023
		(33.52)		(–0.40)		(0.25)
recent rate cap * nonprime		–0.048***		0.466*		0.462
		(–4.72)		(1.70)		(1.62)
quarters w rrc * nonprime		0.060***		0.058		0.034
		(30.36)		(1.14)		(0.68)
recent rate cap * lowest income decile		–0.169***		–0.128		–0.099
		(–12.32)		(–0.49)		(–0.38)
quarters w rrc * lowest income decile		0.011***		–0.026		–0.020
		(4.43)		(–0.51)		(–0.39)
recent rate cap * unbanked		0.078***		0.256		0.359**
		(8.25)		(1.39)		(1.97)
quarters w rrc * unbanked		–0.015***		–0.042		–0.038
		(–8.11)		(–1.17)		(–1.06)
recent rate cap * alternative credit user		0.250***		0.548**		0.529**
		(21.13)		(2.39)		(2.29)
quarters w rrc * alternative credit user		–0.036***		–0.091*		–0.106**
		(–14.00)		(–1.78)		(–2.06)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Tobit	Tobit	Tobit	Tobit
consumer random effects	Yes	Yes	Yes	No	Yes	No
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	No	Yes	No	Yes
consumer-quarter observations	8,863,555	684,495	8,863,506	684,495	8,863,625	684,494

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 9: Impact of Rate Cap on Revolving Accounts

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1)	(2)	(3)	(4)	(5)	(6)
	revolving accounts opened in in 6 months	**revolving accounts opened in in 6 months**	**log revolving credit limit**	**log revolving credit limit**	**log revolving total balance**	**log revolving total balance**
alternative credit database	0.299***		0.869***		0.497***	
	(270.28)		(130.87)		(65.27)	
recent rate cap	–0.013***	–0.038**	–0.027***	–0.743**	–0.031***	–0.523
	(–15.51)	(–2.46)	(–15.05)	(–2.13)	(–14.01)	(–1.43)
quarters w recent rate cap	–0.003***	–0.022***	–0.005***	0.066	–0.003***	0.063
	(–19.29)	(–7.00)	(–14.63)	(1.04)	(–7.67)	(0.95)
recent rate cap * alternative credit database	0.164***		0.408***		0.419***	
	(93.60)		(118.66)		(101.27)	
quarters w rrc * alternative credit database	0.005***		0.015***		0.010***	
	(10.20)		(18.11)		(10.01)	
nonprime		–0.117***		–1.265***		–1.830***
		(–54.09)		(–12.94)		(–16.51)
lowest income decile		0.411***		1.617***		1.660***
		(123.62)		(17.22)		(17.16)
unbanked		0.015***		–0.476***		–0.416***
		(6.18)		(–7.10)		(–5.98)
alternative credit user		0.016***		–0.120		–0.070
		(5.99)		(–1.44)		(–0.82)
recent rate cap * nonprime		0.074***		0.518**		0.476*
		(8.64)		(2.21)		(1.88)
quarters w rrc * nonprime		0.027***		0.026		0.008
		(15.95)		(0.60)		(0.17)
recent rate cap * lowest income decile		–0.109***		0.199		0.061
		(–8.17)		(0.82)		(0.25)
quarters w rrc * lowest income decile		0.005*		–0.051		–0.036
		(1.73)		(–1.06)		(–0.74)
recent rate cap * unbanked		0.069***		0.242		0.230
		(7.55)		(1.47)		(1.38)
quarters w rrc * unbanked		–0.012***		–0.034		–0.035
		(–6.60)		(–1.07)		(–1.10)
recent rate cap * alternative credit user		0.239***		0.504**		0.516**
		(20.56)		(2.33)		(2.38)
quarters w rrc * alternative credit user		–0.033***		–0.062		–0.090*
		(–12.75)		(–1.31)		(–1.91)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Tobit	Tobit	Tobit	Tobit
consumer random effects	Yes	Yes	Yes	No	Yes	No
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	No	Yes	No	Yes
consumer-quarter observations	8,862,091	684,413	8,863,184	684,477	8,863,602	684,492

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 10: Impact of Rate Cap on Installment Accounts

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **installment accounts opened in in 6 months**	(2) **installment accounts opened in in 6 months**	(3) **log installment credit limit**	(4) **log installment credit limit**	(5) **log installment total balance**	(6) **log installment total balance**
alternative credit database	0.663***		1.605***		1.441***	
	(629.10)		(120.64)		(113.27)	
recent rate cap	–0.072***	–0.092***	–0.167***	–0.053	–0.162***	–0.070
	(–79.27)	(–6.55)	(–40.86)	(–0.90)	(–41.58)	(–1.22)
quarters w recent rate cap	0.000	–0.065***	0.011***	0.005	0.010***	–0.006
	(0.19)	(–23.82)	(14.51)	(0.50)	(13.42)	(–0.58)
recent rate cap * alternative credit database	0.321***		0.974***		0.972***	
	(207.94)		(148.87)		(155.38)	
quarters w rrc * alternative credit database	–0.014***		–0.057***		–0.056***	
	(–32.80)		(–35.10)		(–36.35)	
nonprime		0.151***		0.354***		0.318***
		(66.07)		(9.97)		(9.15)
lowest income decile		0.089***		0.359***		0.350***
		(33.53)		(12.41)		(12.38)
unbanked		0.017***		–0.490***		–0.424***
		(7.74)		(–20.31)		(–17.94)
alternative credit user		0.111***		0.025		0.038
		(46.54)		(0.91)		(1.41)
recent rate cap * nonprime		0.061***		–0.433***		–0.438***
		(7.35)		(–9.49)		(–9.81)
quarters w rrc * nonprime		0.023***		–0.025***		–0.018**
		(17.23)		(–3.13)		(–2.31)
recent rate cap * lowest income decile		–0.058***		0.227***		0.222***
		(–5.34)		(6.08)		(6.09)
quarters w rrc * lowest income decile		0.045***		–0.032***		–0.032***
		(19.20)		(–4.41)		(–4.56)
recent rate cap * unbanked		0.077***		0.389***		0.418***
		(10.08)		(14.07)		(15.46)
quarters w rrc * unbanked		0.006***		0.075***		0.081***
		(3.84)		(14.57)		(15.98)
recent rate cap * alternative credit user		0.014		0.023		0.032
		(1.45)		(0.65)		(0.94)
quarters w rrc * alternative credit user		–0.006***		0.017**		0.020***
		(–3.02)		(2.46)		(2.90)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Tobit	Tobit	Tobit	Tobit
consumer random effects	Yes	Yes	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	No	No	No	No
consumer-quarter observations	8,861,794	684,375	8,863,096	684,432	8,863,631	684,495

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 11: Impact of Rate Cap on Mortgages

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **mortgage accounts opened in in 6 months**	(2) **mortgage accounts opened in in 6 months**	(3) **mortgage hi apr**	(4) **mortgage hi apr**	(5) **log mortgage total balance**	(6) **log mortgage total balance**
alternative credit database	–0.498***				–0.851***	
	(–203.45)				(–45.42)	
recent rate cap	0.057***	0.321***	–0.006	–0.506	–0.049***	2.501***
	(42.17)	(4.96)	(–0.79)	(–0.67)	(–8.48)	(10.31)
quarters w recent rate cap	–0.003***	–0.046***	0.003*	0.018	0.009***	0.533***
	(–12.17)	(–3.59)	(1.89)	(0.27)	(8.96)	(10.76)
recent rate cap * alternative credit database	–0.176***		–0.050*		0.148***	
	(–42.88)		(–1.65)		(10.90)	
quarters w rrc * alternative credit database	0.045***		–0.005		0.106***	
	(40.72)		(–0.64)		(32.75)	
nonprime		–1.170***				–3.806***
		(–207.56)				(–47.62)
lowest income decile		1.051***				9.014***
		(75.44)				(60.59)
unbanked		–0.232***				–1.241***
		(–35.00)				(–19.23)
alternative credit user		–0.352***				–0.567***
		(–39.46)				(–6.67)
recent rate cap * nonprime		0.282***		–0.237**		0.055
		(10.72)		(–2.56)		(0.59)
quarters w rrc * nonprime		0.023***		0.006		0.064***
		(5.24)		(0.28)		(4.00)
recent rate cap * lowest income decile		–0.601***		0.765		–2.584***
		(–10.20)		(1.01)		(–11.58)
quarters w rrc * lowest income decile		0.082***		–0.046		–0.408***
		(6.52)		(–0.70)		(–8.71)
recent rate cap * unbanked		0.115***		–0.171		0.379***
		(4.59)		(–1.43)		(4.42)
quarters w rrc * unbanked		–0.032***		0.022		–0.184***
		(–7.73)		(1.03)		(–12.28)
recent rate cap * alternative credit user		–0.612***		0.022		–1.126***
		(–11.75)		(0.12)		(–9.05)
quarters w rrc * alternative credit user		0.140***		–0.028		0.132***
		(16.25)		(–0.86)		(5.61)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	No	No	Yes	Yes
regression	Poisson	Poisson	Linear	Linear	Tobit	Tobit
consumer random effects	Yes	Yes	No	No	Yes	Yes
consumer fixed effects	No	No	Yes	Yes	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes	Yes	No	No
consumer-quarter observations	8,863,516	684,489	1,193,826	39,597	8,863,631	684,495

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 12: Impact of Rate Cap on Personal Loans

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1)	(2)	(3)	(4)	(5)	(6)
	personal loan accounts opened in in 6 months	**personal loan accounts opened in in 6 months**	**high apr personal**	**high apr personal**	**log personal loan total balance**	**log personal loan total balance**
alternative credit database	1.173***				3.983***	
	(576.62)				(162.40)	
recent rate cap	–0.106***	0.472***	0.016	3.048	–0.094***	2.734***
	(–52.75)	(16.33)	(0.17)	(1.64)	(–6.47)	(14.09)
quarters w recent rate cap	0.006***	–0.102***	–0.049**	–0.606*	0.061***	–0.189***
	(15.66)	(–17.22)	(–2.39)	(–1.68)	(23.17)	(–5.25)
recent rate cap * alternative credit database	0.318***		0.503**		1.162***	
	(100.20)		(1.97)		(58.37)	
quarters w rrc * alternative credit database	–0.014***		–0.006		–0.075***	
	(–16.59)		(–0.12)		(–14.91)	
nonprime		0.170***				–0.127
		(38.90)				(–1.62)
lowest income decile		0.169***				0.724***
		(29.80)				(11.04)
unbanked		0.139***				0.375***
		(28.93)				(6.88)
alternative credit user		0.221***				0.961***
		(49.71)				(15.86)
recent rate cap * nonprime		–0.239***		–2.264		–1.852***
		(–16.67)		(–1.60)		(–13.99)
quarters w rrc * nonprime		0.057***		0.365*		0.236***
		(25.88)		(1.71)		(9.98)
recent rate cap * lowest income decile		–0.364***		–0.906		–1.230***
		(–16.05)		(–0.84)		(–9.00)
quarters w rrc * lowest income decile		0.071***		0.076		0.124***
		(13.88)		(0.30)		(4.82)
recent rate cap * unbanked		0.127***		0.019		0.625***
		(7.59)		(0.03)		(6.38)
quarters w rrc * unbanked		–0.021***		0.270*		–0.110***
		(–6.37)		(1.81)		(–6.15)
recent rate cap * alternative credit user		–0.059***		0.183		0.205*
		(–3.59)		(0.17)		(1.84)
quarters w rrc * alternative credit user		0.022***		–0.241		–0.004
		(5.86)		(–1.15)		(–0.19)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	No	No	Yes	Yes
regression	Poisson	Poisson	Linear	Linear	Tobit	Tobit
consumer random effects	Yes	Yes	No	No	Yes	Yes
consumer fixed effects	No	No	Yes	Yes	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes	Yes	No	No
consumer-quarter observations	8,863,252	684,449	225,310	26,469	8,863,631	684,495

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 13: Impact of Rate Cap on Credit Cards Performance

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1)	(2)	(3)	(4)	(5)	(6)
	Credit Card Delinquency in 3m	**Credit Card Delinquency in 3m**	**log credit cards past due amount**	**log credit cards past due amount**	**credit card utilizn 12 months**	**credit card utilizn 12 months**
alternative credit database	1.821***		6.520***		–2.227***	
	(264.10)		(240.72)		(–6.94)	
recent rate cap	–0.195***	0.267	–0.649***	0.305	–0.207	–10.226**
	(–43.03)	(0.90)	(–23.66)	(0.92)	(–1.32)	(–2.02)
quarters w recent rate cap	0.006***		0.055***	–0.058	0.206***	1.329
	(6.76)		(10.61)	(–0.98)	(6.84)	(1.46)
recent rate cap * alternative credit database	0.538***		3.180***		5.371***	
	(102.82)		(112.69)		(12.47)	
quarters w rrc * alternative credit database	–0.005***		–0.117***		–0.080	
	(–4.04)		(–15.16)		(–0.72)	
nonprime		0.761***		4.171***		–34.322***
		(4.94)		(54.12)		(–23.34)
lowest income decile		0.062		0.854***		24.356***
		(0.57)		(16.00)		(17.03)
unbanked		0.058		0.610***		–4.074***
		(0.48)		(13.56)		(–4.08)
alternative credit user		0.086		0.516***		–0.577
		(0.74)		(10.56)		(–0.46)
recent rate cap * nonprime		–0.023		–0.587**		11.680***
		(–0.10)		(–2.10)		(3.39)
recent rate cap * lowest income decile		–0.068		0.350**		–0.876
		(–0.41)		(1.97)		(–0.24)
recent rate cap * unbanked		0.043		0.425***		4.728**
		(0.23)		(3.13)		(1.99)
recent rate cap * alternative credit user		–0.009		0.170		7.261**
		(–0.05)		(1.11)		(2.34)
quarters w rrc * nonprime				0.069		–0.467
				(1.39)		(–0.77)
quarters w rrc * lowest income decile				0.007		–0.364
				(0.22)		(–0.52)
quarters w rrc * unbanked				–0.055**		–0.596
				(–2.22)		(–1.28)
quarters w rrc * alternative credit user				0.001		–1.337**
				(0.03)		(–1.96)
quarter fixed effects	Yes	No	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Logit	Logit	Tobit	Tobit	Tobit	Tobit
consumer random effects	Yes	No	Yes	Yes	No	No
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	No	No	No	No	Yes	Yes
consumer-quarter observations	8,863,631	684,495	8,863,430	684,433	8,863,500	684,494

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 14: Impact of Rate Cap on Revolving Accounts Performance

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **Revolving Account Delinquency in 3m**	(2) **Revolving Account Delinquency in 3m**	(3) **log revolving past due amount**	(4) **log revolving past due amount**	(5) **revolving utilizn in 12 months**	(6) **revolving utilizn in 12 months**
alternative credit database	1.747***		5.964***		–1.160***	
	(262.23)		(259.14)		(–3.97)	
recent rate cap	–0.155***	0.271	–0.494***	0.021	–0.248*	–8.462*
	(–38.46)	(1.02)	(–22.81)	(0.08)	(–1.75)	(–1.93)
quarters w recent rate cap	0.006***		0.038***	–0.054	0.146***	1.641**
	(7.95)		(9.14)	(–1.10)	(5.28)	(2.03)
recent rate cap * alternative credit database	0.506***		2.526***		5.653***	
	(103.70)		(107.84)		(14.41)	
quarters w rrc * alternative credit database	0.000		–0.089***		0.047	
	(0.10)		(–13.98)		(0.46)	
nonprime		0.771***		3.910***		–27.449***
		(5.50)		(58.10)		(–22.36)
lowest income decile		0.074		0.686***		22.145***
		(0.77)		(14.42)		(17.81)
unbanked		0.038		0.305***		–3.767***
		(0.36)		(7.62)		(–4.38)
alternative credit user		0.061		0.365***		–0.926
		(0.57)		(8.25)		(–0.86)
recent rate cap * nonprime		–0.109		–0.399*		8.911***
		(–0.52)		(–1.73)		(3.12)
recent rate cap * lowest income decile		–0.047		0.475***		0.445
		(–0.33)		(3.23)		(0.14)
recent rate cap * unbanked		0.031		0.302***		2.817
		(0.19)		(2.67)		(1.36)
recent rate cap * alternative credit user		0.058		0.234*		5.522**
		(0.34)		(1.80)		(2.00)
quarters w rrc * nonprime				0.021		–0.473
				(0.51)		(–0.93)
quarters w rrc * lowest income decile				0.038		–0.547
				(1.38)		(–0.87)
quarters w rrc * unbanked				–0.038*		–0.527
				(–1.83)		(–1.29)
quarters w rrc * alternative credit user				0.013		–0.869
				(0.49)		(–1.49)
quarter fixed effects	Yes	No	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Logit	Logit	Tobit	Tobit	Tobit	Tobit
consumer random effects	Yes	No	Yes	Yes	No	No
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	No	No	No	No	Yes	Yes
consumer-quarter observations	8,863,631	684,495	8,863,405	684,441	8,863,155	684,474

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 15: Impact of Rate Cap on Installment Accounts Performance

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **Installment Account Delinquency in 3m**	(2) **Installment Account Delinquency in 3m**	(3) **log installment past due amount**	(4) **log installment past due amount**	(5) **installment utilizn in 12 months**	(6) **installment utilizn in 12 months**
alternative credit database	3.014***		10.870***		5.640***	
	(416.98)		(384.29)		(16.38)	
recent rate cap	–0.240***	0.294	–1.149***	–1.959***	–0.980***	–1.324
	(–49.74)	(1.06)	(–44.87)	(–6.13)	(–3.73)	(–0.33)
quarters w recent rate cap	0.008***		0.058***	0.639***	–0.034	0.218
	(8.37)		(11.46)	(12.12)	(–0.63)	(0.28)
recent rate cap * alternative credit database	0.559***		2.552***		12.349***	
	(104.75)		(98.51)		(25.73)	
quarters w rrc * alternative credit database	0.003**		–0.040***		0.460***	
	(2.29)		(–5.78)		(3.61)	
nonprime		1.454***		8.140***		2.401*
		(9.37)		(96.23)		(1.83)
lowest income decile		–0.265***		–0.399***		7.876***
		(–2.86)		(–7.74)		(8.92)
unbanked		–0.176*		–1.201***		–1.037
		(–1.68)		(–27.45)		(–1.62)
alternative credit user		0.212**		1.357***		1.221
		(2.01)		(27.69)		(1.55)
recent rate cap * nonprime		–0.233		1.134***		–1.805
		(–1.03)		(3.93)		(–0.55)
recent rate cap * lowest income decile		0.051		0.346**		3.067
		(0.34)		(2.44)		(1.35)
recent rate cap * unbanked		–0.079		0.378***		4.543***
		(–0.47)		(3.53)		(2.87)
recent rate cap * alternative credit user		–0.063		–0.360***		2.564
		(–0.36)		(–2.80)		(1.24)
quarters w rrc * nonprime				–0.544***		0.091
				(–11.86)		(0.15)
quarters w rrc * lowest income decile				–0.052*		–0.625
				(–1.90)		(–1.27)
quarters w rrc * unbanked				–0.016		0.274
				(–0.79)		(0.84)
quarters w rrc * alternative credit user				0.081***		0.506
				(3.23)		(1.13)
quarter fixed effects	Yes	No	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Logit	Logit	Tobit	Tobit	Tobit	Tobit
consumer random effects	Yes	No	Yes	Yes	No	No
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	No	No	No	No	Yes	Yes
consumer-quarter observations	8,863,631	684,495	8,863,124	684,313	8,863,094	684,432

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 16: Impact of Rate Cap on Mortgages Performance

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **Mortgage Account Delinquency in 3m**	(2) **Mortgage Account Delinquency in 3m**	(3) **log mortgage past due amount**	(4) **log mortgage past due amount**	(5) **mortgage utilizn in 12 months**
alternative					
credit					
database	0.817***		3.603***		
	(54.87)		(13.92)		
recent rate cap	–0.131***	0.075	–0.533**	3.193***	13.071
	(–13.52)	(0.17)	(–2.46)	(3.76)	(1.16)
quarters w recent rate cap	0.032***		0.114***	1.089***	–0.978
	(17.70)		(2.77)	(7.21)	(–0.46)
recent rate cap * alternative credit database	0.254***		4.467***		
	(20.87)		(13.35)		
quarters w rrc * alternative credit database	–0.005*		0.162**		
	(–1.68)		(2.05)		
nonprime		0.466**		3.136***	–35.856***
		(2.38)		(11.65)	(–11.35)
lowest income decile		1.220***		12.762***	44.325***
		(6.72)		(51.05)	(11.00)
unbanked		–0.191		–1.415***	–9.391***
		(–1.14)		(–12.42)	(–4.87)
alternative credit user		0.149		0.623***	–3.343
		(0.86)		(4.83)	(–1.35)
recent rate cap * nonprime		–0.225		–3.261***	–4.207
		(–0.73)		(–6.32)	(–0.63)
recent rate cap * lowest income decile		0.078		–1.357**	–10.800
		(0.27)		(–2.04)	(–1.30)
recent rate cap * unbanked		0.100		1.151***	6.569
		(0.38)		(4.70)	(1.48)
recent rate cap * alternative credit user		–0.017		0.321	–9.150
		(–0.06)		(1.07)	(–1.53)
quarters w rrc * nonprime				–0.532***	0.719
				(–7.22)	(0.61)
quarters w rrc * lowest income decile				–0.228*	1.800
				(–1.74)	(1.07)
quarters w rrc * unbanked				–0.334***	–0.729
				(–7.95)	(–0.85)
quarters w rrc * alternative credit user				0.221***	–0.137
				(3.95)	(–0.12)
quarter fixed effects	Yes	No	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes
regression	Logit	Logit	Tobit	Tobit	Tobit
consumer random effects	Yes	No	No	Yes	No
consumer fixed effects	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	No	No	Yes	No	Yes
consumer-quarter observations	8,863,631	684,495	8,863,289	684,414	684,465

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 17: Impact of Rate Cap on Personal Loans Performance

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **Personal Loan Delinquency in 3m**	(2) **Personal Loan Delinquency in 3m**	(3) **log personal loan past due amount**	(4) **log personal loan past due amount**	(5) **personal loan utilizn in 12 months**	(6) **personal loan utilizn in 12 months**
alternative credit database	5.419***		9.408***		30.934***	
	(294.52)		(45.33)		(29.00)	
recent rate cap	–0.254***	–1.403***	–2.372***	–7.526***	–7.896***	5.104
	(–19.90)	(–3.13)	(–8.14)	(–8.21)	(–8.64)	(0.39)
quarters w recent rate cap	–0.024***		–0.070	0.682***	0.613***	–3.285
	(–9.98)		(–1.11)	(4.52)	(3.50)	(–1.41)
recent rate cap * alternative credit database	0.357***		1.004***		13.367***	
	(26.80)		(3.36)		(9.43)	
quarters w rrc * alternative credit database	0.025***		0.557***		1.157***	
	(7.37)		(7.29)		(3.26)	
nonprime		0.758***		2.747***		–8.289**
		(3.87)		(16.83)		(–2.14)
lowest income decile		–0.507***		–1.881***		17.797***
		(–3.69)		(–17.47)		(7.05)
unbanked		0.130		1.008***		0.755
		(0.84)		(10.03)		(0.37)
alternative credit user		0.285*		2.362***		6.883***
		(1.94)		(23.24)		(3.07)
recent rate cap * nonprime		0.536		4.146***		–22.130**
		(1.56)		(5.41)		(–2.30)
recent rate cap * lowest income decile		0.621**		1.684***		–4.399
		(2.57)		(3.63)		(–0.59)
recent rate cap * unbanked		–0.033		2.104***		12.358**
		(–0.12)		(5.46)		(2.26)
recent rate cap * alternative credit user		–0.105		0.243		–4.852
		(–0.37)		(0.66)		(–0.79)
quarters w rrc * nonprime				–0.509***		2.612
				(–4.27)		(1.47)
quarters w rrc * lowest income decile				–0.157*		1.545
				(–1.88)		(1.08)
quarters w rrc * unbanked				–0.166**		0.411
				(–2.41)		(0.41)
quarters w rrc * alternative credit user				–0.013		–0.659
				(–0.18)		(–0.53)
quarter fixed effects	Yes	No	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Logit	Logit	Tobit	Tobit	Tobit	Tobit
consumer random effects	Yes	No	No	Yes	No	No
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	No	No	Yes	No	Yes	Yes
consumer-quarter observations	8,863,631	684,495	8,863,542	684,467	8,862,445	684,352

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 18: Impact of Rate Cap on Chargeoffs and Delinquencies

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **chargeoffs in in 6 months**	(2) **chargeoffs in in 6 months**	(3) **foreclosures in 12 months**	(4) **Delinquency in 3m**	(5) **Delinquency in 3m**
alternative credit database	1.382***		0.638***	2.454***	
	(925.80)		(84.58)	(374.25)	
recent rate cap	–0.126***	0.609***	–0.101***	–0.144***	0.116
	(–42.48)	(23.19)	(–9.24)	(–41.30)	(0.50)
quarters w recent rate cap	0.012***	0.021***	0.028***	0.004***	
	(18.85)	(4.36)	(11.43)	(5.52)	
recent rate cap * alternative credit database	0.224***		0.100***	0.538***	
	(72.13)		(6.01)	(119.46)	
quarters w rrc * alternative credit database	–0.020***		0.020***	0.014***	
	(–22.13)		(4.19)	(11.66)	
nonprime		1.134***			1.370***
		(199.16)			(11.25)
lowest income decile		–0.099***			–0.212***
		(–34.59)			(–2.65)
unbanked		0.062***			–0.064
		(21.06)			(–0.71)
alternative credit user		0.203***			0.182*
		(73.78)			(1.82)
recent rate cap * nonprime		–0.787***			–0.175
		(–35.89)			(–0.92)
quarters w rrc * nonprime		–0.033***			
		(–8.47)			
recent rate cap * lowest income decile		0.159***			0.132
		(10.77)			(1.09)
quarters w rrc * lowest income decile		0.017***			
		(5.70)			
recent rate cap * unbanked		0.107***			–0.084
		(8.27)			(–0.58)
quarters w rrc * unbanked		–0.015***			
		(–5.62)			
recent rate cap * alternative credit user		0.083***			–0.034
		(6.13)			(–0.21)
quarters w rrc * alternative credit user		–0.018***			
		(–5.19)			
quarter fixed effects	Yes	Yes	Yes	Yes	No
control for initial value	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Poisson	Logit	Logit
consumer random effects	Yes	Yes	Yes	Yes	No
consumer fixed effects	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes	No	No
consumer-quarter observations	8,863,631	684,495	8,863,631	8,863,631	684,495

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 19: Impact of Rate Cap on Collections

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **number of collections all**	(2) **log amount of collections all**	(3) **log amount of collections all**	(4) **number of collections in 3m**	(5) **number of collections in 3m**	(6) **log amount of collections in 3m**	(7) **log amount of collections in 3m**
nonprime	1.566***		3.585***		1.642***		12.750***
	(496.66)		(24.10)		(285.38)		(123.84)
lowest income decile	–0.158***		–0.698***		–0.238***		–1.965***
	(–97.76)		(–16.16)		(–93.87)		(–36.39)
unbanked	0.065***		0.169***		0.163***		1.154***
	(41.73)		(4.12)		(60.68)		(23.98)
alternative credit user	0.121***		0.313***		0.204***		1.540***
	(82.84)		(7.48)		(80.13)		(29.85)
recent rate cap	0.232***	0.095***	–0.009	0.184***	0.013	1.044***	1.458***
	(22.85)	(24.17)	(–0.02)	(84.48)	(0.43)	(30.35)	(2.59)
quarters w recent rate cap	0.043***	–0.059***	0.138*	–0.069***	–0.078***	–0.423***	–0.434***
	(22.06)	(–73.97)	(1.84)	(–124.90)	(–15.21)	(–56.77)	(–3.89)
recent rate cap * nonprime	–0.054***		0.326		0.265***		0.673
	(–5.99)		(0.91)		(9.48)		(1.30)
quarters w rrc * nonprime	–0.037***		–0.143**		0.032***		0.093
	(–23.25)		(–2.08)		(7.45)		(0.90)
recent rate cap * lowest income decile	–0.057***		–0.105		0.054***		–0.427**
	(–13.10)		(–0.84)		(4.44)		(–2.09)
quarters w rrc * lowest income decile	–0.015***		–0.076***		–0.008***		0.026
	(–13.77)		(–2.66)		(–2.95)		(0.61)
recent rate cap * unbanked	–0.036***		–0.131		–0.026**		–0.160
	(–9.42)		(–1.22)		(–2.51)		(–0.93)
quarters w rrc * unbanked	–0.012***		–0.008		–0.010***		–0.054
	(–13.20)		(–0.34)		(–4.64)		(–1.58)
recent rate cap * alternative credit user	–0.003		0.030		–0.085***		–0.152
	(–0.74)		(0.25)		(–7.72)		(–0.77)
quarters w rrc * alternative credit user	0.011***		0.015		0.011***		–0.010
	(9.49)		(0.55)		(4.01)		(–0.23)
alternative credit database		2.125***		1.411***		12.617***	
		(209.10)		(1147.19)		(407.27)	
recent rate cap * alternative credit database		0.722***		0.304***		2.987***	
		(139.63)		(106.15)		(83.89)	
quarters w rrc * alternative credit database		0.060***		0.026***		0.183***	
		(44.24)		(33.81)		(16.81)	
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Tobit	Tobit	Poisson	Poisson	Tobit	Tobit
consumer random effects	Yes	Yes	No	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	No	Yes	Yes	Yes	No	No
consumer-quarter observations	684,495	8,863,631	684,495	8,863,631	684,495	8,863,631	684,495

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 20: Impact of Rate Cap on Inquiries

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **number of inquiries in 3m**	(2) **number of inquiries in 3m**	(3) **bank inquiries in 3m**	(4) **bank inquiries in 3m**	(5) **finance company inquiries in 3m**	(6) **finance company inquiries in 3m**
alternative credit database	0.870***		0.824***		1.208***	
	(998.29)		(800.82)		(1117.28)	
recent rate cap	–0.194***	–0.021	–0.108***	–0.162***	–0.404***	–0.005
	(–176.29)	(–1.46)	(–94.26)	(–9.78)	(–245.59)	(–0.27)
quarters w recent rate cap	0.012***	–0.033***	–0.001***	–0.032***	0.007***	–0.076***
	(62.52)	(–11.29)	(–3.08)	(–10.08)	(24.68)	(–19.36)
recent rate cap * alternative credit database	0.513***		0.437***		0.650***	
	(346.48)		(266.37)		(342.72)	
quarters w rrc * alternative credit database	–0.033***		–0.003***		–0.006***	
	(–80.37)		(–5.62)		(–10.91)	
nonprime		0.668***		0.652***		0.661***
		(306.57)		(243.50)		(226.36)
lowest income decile		0.026***		–0.000		0.013***
		(11.97)		(–0.10)		(5.11)
unbanked		0.045***		0.155***		0.163***
		(22.69)		(63.85)		(70.74)
alternative credit user		0.116***		0.088***		0.211***
		(60.00)		(39.22)		(88.94)
recent rate cap * nonprime		0.025**		0.125***		–0.181***
		(2.38)		(10.01)		(–12.55)
quarters w rrc * nonprime		0.032***		0.032***		0.063***
		(13.92)		(13.98)		(23.15)
recent rate cap * lowest income decile		–0.035***		–0.018*		–0.100***
		(–3.47)		(–1.72)		(–7.58)
quarters w rrc * lowest income decile		0.007***		–0.001		0.028***
		(3.67)		(–0.48)		(10.16)
recent rate cap * unbanked		–0.027***		0.061***		0.057***
		(–3.52)		(6.86)		(5.52)
quarters w rrc * unbanked		0.004***		0.001		–0.001
		(2.73)		(0.46)		(–0.60)
recent rate cap * alternative credit user		0.100***		0.073***		0.081***
		(11.47)		(7.53)		(6.65)
quarters w rrc * alternative credit user		–0.026***		0.009***		–0.011***
		(–14.29)		(4.08)		(–4.31)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Poisson	Poisson	Poisson	Poisson
consumer random effects	Yes	Yes	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes	Yes	Yes	Yes
consumer-quarter observations	8,863,631	684,495	8,863,631	684,495	8,863,631	684,495

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 21: Impact of Rate Cap on Public Records

The estimates are from regression models estimated on panel quarterly data over 2016-2019. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **number of public records all**	(2) **number of public records in 3m**	(3) **number of public records in 3m**
alternative credit database	0.852***	1.351***	
	(293.54)	(525.70)	
recent rate cap	0.226***	0.250***	0.604***
	(177.00)	(47.66)	(9.14)
quarters w recent rate cap	–0.078***	–0.086***	0.029*
	(–197.53)	(–71.10)	(1.71)
recent rate cap * alternative credit database	0.131***	0.295***	
	(62.68)	(60.16)	
quarters w rrc * alternative credit database	0.016***	0.015***	
	(23.68)	(7.72)	
nonprime			1.312***
			(133.99)
lowest income decile			0.364***
			(49.11)
unbanked			0.053***
			(9.45)
alternative credit user			0.148***
			(26.46)
recent rate cap * nonprime			–0.395***
			(–8.49)
quarters w rrc * nonprime			–0.059***
			(–4.84)
recent rate cap * lowest income decile			0.272***
			(6.29)
quarters w rrc * lowest income decile			–0.113***
			(–9.53)
recent rate cap * unbanked			–0.142***
			(–5.60)
quarters w rrc * unbanked			0.062***
			(8.70)
recent rate cap * alternative credit user			0.213***
			(7.71)
quarters w rrc * alternative credit user			–0.043***
			(–6.03)
quarter fixed effects	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes
regression	Poisson	Poisson	Poisson
consumer random effects	Yes	Yes	Yes
consumer fixed effects	No	No	No
weights	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes
consumer-quarter observations	8,863,631	8,863,631	684,495

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 22: Impact of Rate Cap on Alternative Credit Accounts in Alternative Credit Subsample

The estimates are from regression models estimated on the subsample of panel credit bureau data during 2016-2019 for which alternative credit usage data is available. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **number of open accounts w positive balance excluding collection**	(2) **number of accounts 3m**	(3) **number of accounts 3m**	(4) **log total balance open or collection accounts**	(5) **log total balance open or collection accounts**	(6) **log total balance open accounts including collection**	(7) **log total balance open accounts including collection**
recent rate cap	0.099***	–0.443***	–0.484***	0.022	1.865***	0.031*	1.848***
	(24.94)	(–35.51)	(–8.77)	(1.20)	(15.42)	(1.71)	(15.29)
quarters w recent rate cap	0.012***	–0.001	0.014	0.091***	0.193***	0.097***	0.191***
	(9.43)	(–0.27)	(1.17)	(24.36)	(8.07)	(26.14)	(7.99)
nonprime			0.445***		2.034***		2.043***
			(35.00)		(29.29)		(29.39)
lowest income decile			0.412***		0.332***		0.318***
			(26.99)		(8.34)		(8.01)
unbanked			0.833***		1.884***		1.894***
			(57.72)		(47.44)		(47.73)
alternative credit user			0.333***		11.609***		10.635***
			(33.57)		(56.67)		(47.51)
recent rate cap * nonprime			0.185***		–0.130		–0.150
			(7.07)		(–1.33)		(–1.54)
quarters w rrc * nonprime			–0.059***		0.081***		0.090***
			(–13.74)		(4.36)		(4.83)
recent rate cap * lowest income decile			–0.266***		–0.224***		–0.184***
			(–6.36)		(–3.92)		(–3.23)
quarters w rrc * lowest income decile			0.046***		0.053***		0.046***
			(4.54)		(4.15)		(3.65)
recent rate cap * unbanked			0.096***		0.122**		0.129**
			(2.98)		(1.97)		(2.10)
quarters w rrc * unbanked			0.021***		0.058***		0.068***
			(2.90)		(4.62)		(5.38)
recent rate cap * alternative credit user			0.006		–2.898***		–2.895***
			(0.23)		(–79.45)		(–79.49)
quarters w rrc * alternative credit user			–0.058***		–0.582***		–0.587***
			(–6.96)		(–75.32)		(–76.19)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Poisson	Tobit	Tobit	Tobit	Tobit
consumer random effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes	No	No	No	No
consumer-quarter observations	696,740	696,740	641,542	696,740	641,542	696,740	641,542

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 23: Impact of Rate Cap on Accounts with Storefront Lenders in Alternative Credit Subsample

The estimates are from regression models estimated on the subsample of panel credit bureau data during 2016-2019 for which alternative credit usage data is available. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	number of open delinquent chargeoff accounts storefront lender	**number of open delinquent chargeoff accounts storefront lender**	**number of opncollection or chargeoff accounts storefront lender**	**number of opncollection or chargeoff accounts storefront lender**	**number of accounts open 12 months storefront lender**	**number of lender location w inquiries or accounts 3m storefront lender**	**number of lender location w inquiries or accounts 3m storefront lender**
recent rate cap	0.378***	0.461***	0.360***	0.502***	–0.089***	0.086***	0.958***
	(52.04)	(16.10)	(53.10)	(19.71)	(–3.73)	(6.31)	(13.76)
quarters w recent rate cap	–0.031***	–0.009	–0.026***	–0.086***	–0.053***	–0.078***	–0.484***
	(–15.38)	(–0.77)	(–13.86)	(–8.93)	(–5.93)	(–19.11)	(–21.73)
nonprime		0.568***		0.549***			0.260***
		(27.39)		(28.60)			(15.96)
lowest income decile		0.296***		0.308***			0.380***
		(10.05)		(11.56)			(19.23)
unbanked		0.249***		0.330***			0.480***
		(12.43)		(17.54)			(32.05)
alternative credit user		0.670***		0.047***			0.022
		(48.59)		(2.99)			(1.59)
recent rate cap * nonprime		0.099***		0.015			0.079**
		(5.27)		(0.97)			(2.46)
quarters w rrc * nonprime		–0.018**		0.053***			–0.047***
		(–2.13)		(8.71)			(–7.58)
recent rate cap * lowest income decile		0.155***		0.102***			–0.737***
		(8.80)		(6.01)			(–14.31)
quarters w rrc * lowest income decile		–0.027***		–0.009			0.169***
		(–4.41)		(–1.51)			(9.45)
recent rate cap * unbanked		–0.136***		–0.125***			–0.313***
		(–7.10)		(–6.55)			(–6.32)
quarters w rrc * unbanked		0.065***		0.072***			0.323***
		(9.92)		(10.64)			(20.26)
recent rate cap * alternative credit user		–0.583***		–0.450***			0.343***
		(–41.38)		(–35.09)			(9.02)
quarters w rrc * alternative credit user		–0.045***		–0.069***			–0.043***
		(–10.06)		(–18.24)			(–3.55)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Poisson	Poisson	Poisson	Poisson	Poisson
consumer random effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes	Yes	Yes	Yes	Yes
consumer-quarter observations	696,740	641,542	696,740	641,542	696,740	696,740	641,542

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 24: Impact of Rate Cap on Accounts with Online Lenders in Alternative Credit Subsample

The estimates are from regression models estimated on the subsample of panel credit bureau data during 2016-2019 for which alternative credit usage data is available. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1)	(2)	(3)	(4)	(5)	(6)
	number of open delinquent chargeoff accounts online lender	**number of open delinquent chargeoff accounts online lender**	**number of accounts open 12 months online lender**	**number of accounts open 12 months online lender**	**log total balance open or collection accounts online lender**	**log total balance open or collection accounts online lender**
recent rate cap	0.019***	0.704***	–0.062***	–0.373***	–0.195***	1.834***
	(6.02)	(36.64)	(–5.25)	(–4.88)	(–9.55)	(12.58)
quarters w recent rate cap	–0.001	0.083***	0.048***	0.181***	0.089***	0.247***
	(–0.88)	(19.10)	(15.80)	(12.49)	(21.89)	(9.41)
nonprime		0.949***		1.144***		2.258***
		(82.12)		(67.40)		(29.57)
lowest income decile		0.104***		0.212***		0.310***
		(7.17)		(17.39)		(7.22)
unbanked		0.913***		0.921***		2.819***
		(56.82)		(67.37)		(59.74)
alternative credit user		1.378***		0.683***		2.154***
		(263.06)		(81.23)		(34.38)
recent rate cap * nonprime		–0.287***		0.152***		–0.385***
		(–18.97)		(2.87)		(–3.21)
quarters w rrc * nonprime		0.008***		–0.088***		0.075***
		(4.85)		(–17.11)		(3.65)
recent rate cap * lowest income decile		0.007		0.095**		–0.218***
		(0.76)		(2.27)		(–3.41)
quarters w rrc * lowest income decile		0.008**		0.048***		0.065***
		(2.31)		(4.84)		(4.75)
recent rate cap * unbanked		0.004		0.287***		0.381***
		(0.40)		(6.54)		(5.14)
quarters w rrc * unbanked		–0.038***		–0.071***		–0.005
		(–12.77)		(–7.11)		(–0.38)
recent rate cap * alternative credit user		–0.595***		–0.475***		–3.057***
		(–89.74)		(–19.18)		(–76.21)
quarters w rrc * alternative credit user		–0.102***		–0.076***		–0.604***
		(–54.43)		(–11.94)		(–74.03)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Poisson	Poisson	Tobit	Tobit
consumer random effects	Yes	Yes	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes	Yes	No	No
consumer-quarter observations	696,740	641,542	696,740	641,542	696,740	641,542

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 25: Impact of Rate Cap on Number of Inquiries for Alternative Credit in Alternative Credit Subsample

The estimates are from regression models estimated on the subsample of panel credit bureau data during 2016-2019 for which alternative credit usage data is available. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1)	(2)	(3)	(4)	(5)	(6)
	number of inquiries 3m	**number of inquiries 3m**	**number of inquiries 3m storefront lender**	**number of inquiries 3m storefront lender**	**number of inquiries 3m online lender**	**number of inquiries 3m online lender**
recent rate cap	–0.294***	0.007	–0.111***	–0.299***	–0.324***	0.071**
	(–58.58)	(0.27)	(–18.95)	(–7.95)	(–57.96)	(2.39)
quarters w recent rate cap	0.018***	0.086***	0.002*	0.084***	0.018***	0.087***
	(18.70)	(18.72)	(1.73)	(13.55)	(16.85)	(16.23)
nonprime		1.048***		1.165***		1.021***
		(188.24)		(181.32)		(164.11)
lowest income decile		–0.013***		–0.121***		0.020***
		(–3.62)		(–33.15)		(4.47)
unbanked		0.780***		0.181***		0.953***
		(192.10)		(47.78)		(180.46)
alternative credit user		0.507***		0.351***		0.543***
		(160.48)		(100.67)		(154.89)
recent rate cap * nonprime		–0.197***		0.089***		–0.236***
		(–11.03)		(2.90)		(–12.39)
quarters w rrc * nonprime		–0.073***		–0.104***		–0.071***
		(–25.97)		(–21.60)		(–23.80)
recent rate cap * lowest income decile		0.075***		–0.028		0.102***
		(4.73)		(–1.35)		(5.59)
quarters w rrc * lowest income decile		0.003		0.028***		–0.004
		(1.02)		(6.78)		(–0.96)
recent rate cap * unbanked		–0.148***		0.197***		–0.231***
		(–10.02)		(12.61)		(–12.47)
quarters w rrc * unbanked		–0.001		–0.005*		0.002
		(–0.25)		(–1.83)		(0.64)
recent rate cap * alternative credit user		–0.146***		–0.033**		–0.157***
		(–12.30)		(–2.06)		(–12.32)
quarters w rrc * alternative credit user		–0.008***		–0.003		–0.007***
		(–2.97)		(–0.76)		(–2.76)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Poisson	Poisson	Poisson	Poisson
consumer random effects	Yes	Yes	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes	Yes	Yes	Yes
consumer-quarter observations	696,740	641,542	696,740	641,542	696,740	641,542

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 26: Impact of Rate Cap on NSF Transactions in Alternative Credit Subsample

The estimates are from regression models estimated on the subsample of panel credit bureau data during 2016-2019 for which alternative credit usage data is available. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **number of NSF 3m**	(2) **number of NSF 3m**	(3) **log amount NSF 3m**	(4) **log amount NSF 3m**	(5) **number of NSF 12 months**	(6) **log amount NSF 12 months**	(7) **log amount NSF 12 months**
recent rate cap	0.089***	–1.281***	0.123	–3.431**	0.049	0.674***	–2.783***
	(3.27)	(–11.16)	(0.63)	(–2.39)	(0.10)	(7.51)	(–3.78)
quarters w recent rate cap	–0.039***	0.315***	–0.102***	0.688***	–0.010	0.061***	0.813***
	(–7.21)	(16.11)	(–2.70)	(2.84)	(–0.13)	(3.62)	(7.15)
nonprime		1.124***		5.672***			5.548***
		(65.43)		(24.70)			(24.79)
lowest income decile		0.109***		1.173***			0.951***
		(6.16)		(8.61)			(8.59)
unbanked		1.087***		5.688***			4.853***
		(65.08)		(39.14)			(40.54)
alternative credit user		0.954***		5.683***			4.835***
		(96.38)		(52.23)			(55.24)
recent rate cap * nonprime		0.157***		1.516			1.951***
		(2.89)		(1.32)			(3.19)
quarters w rrc * nonprime		–0.180***		–0.662***			–0.570***
		(–22.19)		(–3.79)			(–6.90)
recent rate cap * lowest income decile		1.018***		1.576**			1.109***
		(12.64)		(2.22)			(3.50)
quarters w rrc * lowest income decile		–0.121***		0.008			0.025
		(–8.35)		(0.06)			(0.39)
recent rate cap * unbanked		0.450***		1.374**			0.845***
		(6.41)		(2.10)			(2.65)
quarters w rrc * unbanked		–0.069***		–0.110			–0.124**
		(–5.41)		(–0.92)			(–2.19)
recent rate cap * alternative credit user		–0.663***		–2.282***			–1.056***
		(–12.88)		(–4.98)			(–5.30)
quarters w rrc * alternative credit user		0.017		–0.043			–0.350***
		(1.55)		(–0.47)			(–9.01)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Tobit	Tobit		Tobit	Tobit
consumer random effects	Yes	Yes	Yes	Yes	No	Yes	Yes
consumer fixed effects	No	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	No	No	No	No	No
consumer-quarter observations	696,740	641,542	696,740	641,542	696,740	696,740	641,542

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 27: Impact of Rate Cap on ACH Transactions in Alternative Credit Subsample

The estimates are from regression models estimated on the subsample of panel credit bureau data during 2016-2019 for which alternative credit usage data is available. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **number of satisfactory ACH transactions 3m**	(2) **number of satisfactory ACH transactions 3m**	(3) **log amount satisfactory ACH transactions 3m**	(4) **log amount satisfactory ACH transactions 3m**
recent rate cap	–0.091***	0.222***	–0.373***	0.079
	(–7.34)	(3.74)	(–4.80)	(0.16)
quarters w recent rate cap	0.034***	0.085***	0.065***	0.560***
	(10.75)	(6.61)	(4.16)	(5.96)
nonprime		0.771***		4.784***
		(70.42)		(31.19)
lowest income decile		0.390***		1.592***
		(34.93)		(16.43)
unbanked		0.861***		4.363***
		(81.48)		(44.47)
alternative credit user		0.593***		3.635***
		(77.44)		(45.74)
recent rate cap * nonprime		0.041		0.383
		(1.22)		(0.96)
quarters w rrc * nonprime		–0.017***		–0.406***
		(–3.51)		(–5.71)
recent rate cap * lowest income decile		–0.118***		–0.320
		(–3.03)		(–1.24)
quarters w rrc * lowest income decile		0.006		–0.099*
		(0.73)		(–1.87)
recent rate cap * unbanked		–0.142***		0.078
		(–3.70)		(0.33)
quarters w rrc * unbanked		–0.025***		0.007
		(–2.61)		(0.14)
recent rate cap * alternative credit user		–0.466***		–2.335***
		(–16.89)		(–12.76)
quarters w rrc * alternative credit user		–0.042***		–0.049
		(–5.98)		(–1.27)
quarter fixed effects	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Tobit	Tobit
consumer random effects	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No
weights	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	No	No
consumer-quarter observations	696,740	641,542	696,739	641,541

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 28: Impact of Rate Cap on Good and Bad ACH Transactions in Alternative Credit Subsample

The estimates are from regression models estimated on the subsample of panel credit bureau data during 2016-2019 for which alternative credit usage data is available. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **total good ACH events last 3m**	(2) **total good ACH events last 3m**	(3) **total good ACH amount last 3m**	(4) **total good ACH amount last 3m**	(5) **total bad ACH events last 3m**	(6) **total bad ACH events last 3m**	(7) **total bad ACH amount last 3m**	(8) **total bad ACH amount last 3m**
recent rate cap	–0.068***	0.195***	–0.207***	0.285***	0.089***	–1.280***	0.054**	0.206
	(–5.47)	(3.26)	(–14.68)	(3.84)	(3.19)	(–10.91)	(2.21)	(1.53)
quarters w recent rate cap	0.027***	0.084***	0.027***	0.070***	–0.036***	0.303***	0.023***	0.210***
	(8.50)	(6.50)	(8.09)	(4.36)	(–6.63)	(15.13)	(4.89)	(9.09)
nonprime		0.774***		0.443***		1.115***		1.019***
		(71.38)		(33.17)		(65.04)		(47.20)
lowest income decile		0.386***		0.603***		0.095***		0.303***
		(34.86)		(45.52)		(5.34)		(15.75)
unbanked		0.868***		0.936***		1.080***		1.075***
		(82.58)		(75.52)		(65.11)		(58.01)
alternative credit user		0.599***		0.550***		0.953***		0.959***
		(78.86)		(61.83)		(95.00)		(86.89)
recent rate cap * nonprime		0.061*		–0.520***		0.146***		–1.108***
		(1.76)		(–12.20)		(2.66)		(–17.50)
quarters w rrc * nonprime		–0.015***		0.048***		–0.178***		–0.112***
		(–3.07)		(8.94)		(–21.48)		(–17.90)
recent rate cap * lowest income decile		–0.121***		0.079*		1.017***		0.775***
		(–3.15)		(1.66)		(12.47)		(9.22)
quarters w rrc * lowest income decile		0.006		–0.016		–0.115***		–0.056***
		(0.77)		(–1.37)		(–7.78)		(–3.87)
recent rate cap * unbanked		–0.111***		0.055		0.473***		0.321***
		(–2.90)		(1.11)		(6.52)		(3.58)
quarters w rrc * unbanked		–0.032***		–0.062***		–0.061***		–0.019
		(–3.29)		(–5.92)		(–4.73)		(–1.08)
recent rate cap * alternative credit user		–0.437***		–0.496***		–0.661***		–0.333***
		(–15.77)		(–16.26)		(–12.67)		(–5.88)
quarters w rrc * alternative credit user		–0.048***		–0.031***		0.011		–0.007
		(–6.84)		(–4.23)		(1.03)		(–0.72)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
regression	Poisson	Poisson	Poisson	Poisson	Poisson	Poisson	Poisson	Poisson
consumer random effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
consumer-quarter observations	696,740	641,542	696,740	641,542	696,740	641,542	696,740	641,542

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 29: Impact of Rate Cap on Bank Access in Alternative Credit Subsample

The estimates are from regression models estimated on the subsample of panel credit bureau data during 2016-2019 for which alternative credit usage data is available. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1)	(2)	(3)	(4)	(5)	(6)
	has bank account	**has bank account**	**number of distinct bank accounts**	**number of distinct bank accounts**	**number of distinct bank accounts 3m**	**number of distinct bank accounts 3m**
recent rate cap	0.285***	1.872***	0.040***	0.446***	–0.121***	0.303***
	(12.91)	(11.51)	(49.83)	(89.04)	(–30.61)	(13.65)
quarters w recent rate cap	0.033***	0.695***	–0.012***	0.051***	0.006***	0.057***
	(8.24)	(28.73)	(–49.17)	(30.32)	(7.90)	(13.80)
nonprime		0.558***		0.264***		1.047***
		(11.69)		(150.29)		(223.57)
lowest income decile		–0.465***		–0.082***		–0.034***
		(–10.14)		(–54.67)		(–10.75)
unbanked		0.000		1.544***		0.856***
		(.)		(532.36)		(223.96)
alternative credit user		–0.138***		0.094***		0.497***
		(–3.08)		(82.06)		(198.06)
recent rate cap * nonprime		0.257**		0.100***		–0.257***
		(1.98)		(45.37)		(–16.41)
quarters w rrc * nonprime		–0.065***		–0.014***		–0.067***
		(–3.27)		(–20.14)		(–24.18)
recent rate cap * lowest income decile		–0.213**		–0.056***		0.099***
		(–2.23)		(–21.79)		(7.36)
quarters w rrc * lowest income decile		0.050***		–0.004***		0.000
		(3.38)		(–4.77)		(0.14)
recent rate cap * unbanked		–3.994***		–0.452***		–0.239***
		(–61.05)		(–105.77)		(–19.24)
quarters w rrc * unbanked		–0.909***		–0.049***		0.018***
		(–88.39)		(–34.43)		(7.03)
recent rate cap * alternative credit user		0.234**		–0.063***		–0.110***
		(2.45)		(–31.05)		(–11.26)
quarters w rrc * alternative credit user		0.018		–0.009***		–0.015***
		(1.11)		(–14.34)		(–7.11)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Logit	Logit	Poisson	Poisson	Poisson	Poisson
consumer random effects	Yes	Yes	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	No	No	Yes	Yes	Yes	Yes
consumer-quarter observations	696,740	641,542	696,740	641,542	696,740	641,542

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.

Table 30: Impact of Rate Cap on Income, Delinquencies, and Bankruptcy in Alternative Credit Subsample

The estimates are from regression models estimated on the subsample of panel credit bureau data during 2016-2019 for which alternative credit usage data is available. The independent variables include either recent rate cap, which equals one in a quarter in a state if there is a cap of less than 100% introduced in or after 2016, and zero otherwise, or quarters w rrc, which equals the number of quarters after the introduction in 2016 or later of a rate cap in the state of the consumer, and its interactions with: nonprime, which equals one for a consumer whose credit square in the first quarter of 2016 was less than 660; lowest income decile (or quartile), which equals one if the consumer's income in the first quarter of 2016 was in the first decile (or quartile), and zero otherwise; unbanked which equals one if the consumer had no bank accounts in the first quarter of 2016, and zero otherwise; alternate financing user, which equals one if the consumer had at least one alternate financing account with a positive balance in the first quarter of 2016, and zero otherwise. The observations are weighted to reflect sample selection probability. All models include quarter fixed effects. Consumer random or fixed effects are included and standard errors are clustered by consumer when feasible.

	(1) **log income**	(2) **log income**	(3) **number of chargeoffs**	(4) **number of chargeoffs**	(5) **lender reported bankruptcy**	(6) **lender reported bankruptcy**
recent rate cap	0.235***	–0.113	0.077***	0.677***	–0.300	–10.476
	(40.69)	(–0.61)	(25.05)	(45.10)	(–1.03)	(–0.00)
quarters w recent rate cap	–0.017***	0.059	–0.008***	0.068***	0.239***	–1.257
	(–15.79)	(1.54)	(–8.43)	(16.09)	(4.68)	(–0.00)
nonprime		–0.102**		0.838***		–0.612
		(–1.99)		(84.47)		(–1.41)
lowest income decile		0.040		0.144***		–0.429
		(1.10)		(11.93)		(–1.25)
unbanked		0.263***		0.726***		0.466
		(8.30)		(59.95)		(1.14)
alternative credit user		–0.034		1.568***		2.051***
		(–0.94)		(380.77)		(7.70)
recent rate cap * nonprime		0.437***		–0.199***		–2.549
		(2.86)		(–19.04)		(–1.38)
quarters w rrc * nonprime		–0.041		0.004***		0.572
		(–1.32)		(2.75)		(1.06)
recent rate cap * lowest income decile		–0.040		0.015*		–3.963***
		(–0.42)		(1.76)		(–3.65)
quarters w rrc * lowest income decile		–0.017		0.007**		0.684*
		(–0.83)		(2.13)		(1.87)
recent rate cap * unbanked		–0.059		–0.037***		16.313
		(–0.80)		(–3.81)		(0.00)
quarters w rrc * unbanked		–0.026*		–0.024***		0.473
		(–1.73)		(–8.03)		(0.00)
recent rate cap * alternative credit user		0.099		–0.612***		–2.127*
		(0.97)		(–101.61)		(–1.73)
quarters w rrc * alternative credit user		–0.009		–0.099***		–0.512**
		(–0.40)		(–55.02)		(–2.09)
quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
control for initial value	Yes	Yes	Yes	Yes	Yes	Yes
regression	Tobit	Tobit	Poisson	Poisson	Logit	Logit
consumer random effects	Yes	No	Yes	Yes	Yes	Yes
consumer fixed effects	No	No	No	No	No	No
weights	Yes	Yes	Yes	Yes	Yes	Yes
se cluster by consumer	No	Yes	Yes	Yes	No	No
consumer-quarter observations	696,740	641,542	696,740	641,542	696,515	641,317

*** significant at the 0.01 level; ** significant at the 0.05 level; * significant at the 0.10 level.