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Abstract

Would capping overdraft fees increase financial inclusion? Studying an event in which caps were relaxed, we find banks raised overdraft fees but also expanded overdraft coverage and deposit supply, leading more low-income households to open accounts. While inattentive depositors may not benefit from being banked, the rise in account ownership persists, suggesting newly banked households valued their account even after learning about its costs. We find no evidence that being banked weakens households' broader credit health, including delinquency, indebtedness, and credit scores. We conclude that overdraft fee caps hamper, rather than foster, financial inclusion.

Key words: overdraft, financial inclusion, unbanked, consumer credit, usury limit

I. Introduction

Nearly 25% percent of low-income households in the U.S. are unbanked (FDIC, 2020), leaving them to obtain payment services from alternative financial service or "fringe banking" providers at which they pay high prices (Barr, 2004; Fellowes and Mbanta, 2008). Whether they are cashing a paycheck, making a rent or utilities payment, obtaining a payment card for online purchases or transferring money to family and friends, the unbanked must pay for services that banked households routinely receive free of charge. Being unbanked can also impede wealth accumulation and financial security (Bord, 2018; Celerier and Matray, 2019).

Why, then, are so many low-income households unbanked? Some see costly overdrafts as a major barrier. One-third of households without a bank account cite high fees as a reason (FDIC, 2020). Overdraft fees, and related non-sufficient funds (NSF) fees, currently average around $30 per transaction. These fees constitute the majority of deposit account fees earned by banks and fall disproportionately on low-income households (FDIC 2008, CFPB 2021), who may be cross-subsidizing "free checking" accounts for high-income households (Gabaix and Laibson, 2006; Armstrong and Vickers, 2012; Fisher et al., 2023). Millions of depositors also "bounce out" of the banking system each year when banks close their account due to excessive overdrafts (Campbell, Martinez-Jerez and Tufano, 2012). In response, lawmakers have proposed limiting or prohibiting overdraft fees, observing that "overdraft fees … push low-income consumers away from banking products altogether."[1]

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[1] See "An Analysis of Bank Overdraft Fees" (Office of Senator Cory A. Booker, 2018). Bills recently proposed in Congress include The Overdraft Protection Act of 2021 and The Stop Overdraft Profiteering Act of 2021.

Research on usury limits and bank pricing decisions suggests, to the contrary, that overdraft fee caps might limit financial inclusion. Overdrafts are *de facto* credit and fee caps, like other usury limits, may cause rationing of credit to riskier depositors.[2] Accounts may therefore become less valuable to depositors who benefit from the liquidity, credit provision and protection from penalty fees when they bounce payments. Banks, for their part, may also increase other deposit fees and tighten terms when overdraft fees are capped (Udell, 1986; Ellison, 2005). Those spillovers from fee caps to deposit supply could lead to more, rather than fewer, unbanked households.

We investigate whether overdraft fee caps promote or hinder financial inclusion using an episode when national banks were exempted from state overdraft fee caps by their federal regulator, the Office of the Comptroller of the Currency (OCC).[3] Importantly, state policymakers themselves did not initiate the exemption, reducing concerns that the regulatory change was endogenous to state conditions in overdraft and deposit markets. The exemption created variation in overdraft fee caps over time, across states, and across institutions. Using triple-differences regression models, we estimate how national banks change overdraft and deposit supply relative to state banks after they are exempted from fee caps. To identify the effect on bank account ownership, we compare households in affected and unaffected states in a double-differences specification. Because national banks had roughly 50% deposit market share, the relaxation of fee caps potentially mattered for many households.

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[2] See, for example, Greer (1975), Villegas (1982), Benmelech and Moskowitz (2010), Rigbi (2013), Cuesta and Sepulveda (2019) and Nelson (2020).

[3] Our research design follows Di Maggio and Kermani (2017) and Di Maggio, Kermani and Korgaonkar (2019), who study the 2004 federal preemption of state anti-predatory lending laws.

We have four key findings. First, in the absence of fee caps national banks raised overdraft fees but also expanded overdraft credit. Relative to state banks, national banks increased their fees by 10% and their provision of overdraft credit by 20%. Second, the rate at which checks were returned due to insufficient funds declined by 15% in affected states. Since a check is returned when overdraft credit is denied, the decline in returned checks provides confirmation of increased overdraft credit provision and implies savings to depositors on bounced check fees.[4] Third, national banks exempted from overdraft fee caps expanded deposit account supply by lowering minimum balance requirements 30% or more relative to state banks. High minimum balance requirements rank first among reasons unbanked households are without an account (FDIC, 2020), so this result is notable. Fourth and foremost, the share of low-income households with a checking account rose by 10% following preemption. This increase in account ownership accords with the expansion in deposit supply and may also reflect increased demand from households who value overdraft coverage. Collectively, our findings suggest that overdraft fee caps cause rationing of overdraft credit and inhibit financial inclusion, revealing a policy trade-off not previously considered: the benefits of a fee limit come at the cost of more unbanked, low-income households.

The question remains, however, whether the newly banked households with overdraft privileges are necessarily better off. Overdraft credit may be a "shrouded" attribute of deposits about which some depositors are uninformed or inattentive (Gabaix and Laibson, 2006; Armstrong and Vickers, 2012; Stango and Zinman, 2014; Alan et al.,

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[4] Depositors still incur a "non-sufficient funds" fee when their bank refuses to cover an overdraft via check or recurring-debit transactions. In addition, the payee often incurs a "returned item" fee from their bank, which may be passed along to the payor.

2017; Caflisch et al., 2018; Ru and Schoar, 2020). New depositors of that type may be unpleasantly surprised by their overdraft charges, prompting them to close their account or have it closed by their bank. However, we find that low-income households are more likely to gain accounts *and* less likely to lose them. The persistent rise in account ownership suggests that newly banked households prefer to remain banked after learning through experience about the costs and benefits of their account.[5] We also investigate whether households that remain banked experience greater indebtedness or delinquency due to overdraft charges. Using the Federal Reserve Bank of New York's Consumer Credit Panel (CCP), we find no change in their credit scores, delinquencies, indebtedness, or searches for credit after overdraft fee caps are lifted.

As the first study to show how a usury limit can constrain deposit account access, we extend and bridge separate literatures on those topics. Usury restrictions have been studied by Greer (1975), Villegas (1982), Benmelech and Moskowitz (2010), Rigbi (2013), Melzer and Schroeder (2017), Cuesta and Sepulveda (2019), Nelson (2020), and Agarwal et al. (2015), with all but the latter finding negative credit supply effects. We find rationing effects in a different credit market as well as spillovers to deposit access. A separate literature has explored the causes and consequences of financial exclusion.[6] Kay, Manuszak and Vojtech (2018) and Mukharlyamov and Sarin (2019) find that banks raised deposit fees after regulation capped merchant fees on debit card networks. Our findings are

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[5] The welfare effects for households that already had accounts are more ambiguous; they may pay less per overdraft but more in maintenance and returned item fees.

[6] Agarwal et al., (2017), Brown, Cookson and Heimer (2019), Celerier and Matray (2019), Stein and Yannelis (2019), Celerier and Tak (2021) examine how bank account access affects savings, borrowing and human capital formation. Caskey (2005) and Washington (2006) discuss barriers to being banked and policies to improve access. Ashraf, Karlan and Yin (2006), Kearney et al. (2010), Dupas and Robinson (2013), Dupas et al. (2018), Bachas et al. (2020) and Cole, Iverson and Tufano (2022) examine how account features such as commitment savings, group savings, electronic debit access and lottery interest payouts affect savings rates.

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consistent but differ in focusing on a usury limit pertinent to low-income depositors. DiMaggio, Ma and Williams (2021) find that banks' practice of processing depositors' largest transactions first increases overdraft charges and reliance on payday lenders. Our paper complements theirs by focusing on the price (rather than quantity) of overdrafts and a different policy intervention. Our findings are not incompatible nevertheless; price limits may cost some depositors even if restrictions on processing order benefit them.[7]

The next section provides background on the overdraft market. Section III elaborates on the OCC preemption of state overdraft fee caps. Section IV explores the effects of the preemption on overdraft and deposit offerings, bounced checks and bank account ownership. Section V examines welfare consequences. Section VI concludes.

II. Overdraft Background

Depository institutions ("banks") provide overdraft credit whenever they allow a negative deposit balance. Overdraft credit has been around since the middle ages (Usher, 1943), but the business was transformed with the advent of electronic debiting in the 1990s.[8] Before then, bankers decided case by case whether to cover checks as a courtesy for trusted customers. As debit cards and automated teller machines (ATM) proliferated, banks began adopting automated programs that determine in real-time whether to allow or deny an overdraft attempt. Industry consultants marketed these "bounce protection" programs to banks and credit unions as a revenue source and a benefit to depositors.

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[7] Both previously cited overdraft bills would prohibit re-ordering from high-to-low.
[8] Diversification, scale economies and informational synergies can explain the joint production of liquidity and credit services within the same firm (Kashyap, Rajan, and Stein, 2002; Mester, Nakamura, and Renault, 2007).

Depositors can overdraw the account – or attempt to – at four transaction nodes: ATM, point-of-sale (POS), checks, and recurring debits. The latter include monthly direct payments from depositors' accounts to landlords, creditors, utilities, and other payees. The schematic in Figure 1 summarizes the fees assessed for various payment outcomes. In all cases, if the bank allows an overdraft, they charge depositors their standard overdraft fee. Matters differ with denied overdrafts, as the fees depend on the transaction type. For an ATM or POS transaction, banks simply withhold the cash or reject the purchase but do not charge depositors a fee. For recurring debits and checks, the bank returns the check or payment to the payee and charges the depositor a fee for non-sufficient funds (NSF) equivalent to their overdraft fee.[9] The payee may also charge an NSF fee. Having the overdraft covered instead of "bounced" spares depositors the second fee and any associated stigma.[10]

The frequency of overdrafts is highly skewed. Most depositors rarely or never overdraw while nine percent overdraw ten or more times per year (CFPB, 2017). Those frequent overdrafters generate about 75% of all bank overdraft and NSF fees. As a measure of consumer protection, regulators in 2010 began requiring banks to obtain affirmative consent before enrolling customers in overdraft programs for ATM and non-recurring debit (POS) transaction. About half of frequent overdrafters opted-in (CFPB, 2013), suggesting they valued the credit, at least *ex ante*.

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[9] Banks may charge equivalent overdraft and NSF fees (despite incurring credit risk only with the former) to avoid regulation of their overdraft programs under the Truth in Lending Act and state usury law. With equivalent fees, banks historically could argue that overdraft is a service to depositors for which they are not paid incremental fees for credit provision (relative to bouncing the payment).

[10] According to payments processor Verichek, most states allow merchant NSF fees of $25 or more (see https://www.vericheck.com/state-allowed-nsf-fees/). In the case of returned checks or recurring debit payments, the payee is charged a returned item fee by their banks.

Providing overdraft credit is risky to banks because depositors may fail to repay the credit and fees. Banks closed 30 million accounts between 2001 and 2005 due to unpaid overdrafts (Campbell, Martinez-Jerez and Tufano, 2012). The average loss per closure in 2007 was $310, with such losses accounting for 12.6 percent of total loan losses at financial institutions (FDIC, 2008).

Banks manage this credit risk in part by screening potential depositors. Before opening a new checking account, they review the applicant's debit score on a shared deposit registry. A low debit score, reflecting a history of unpaid overdrafts, may lead the bank to reject the application. For accepted depositors, banks also set overdraft prices and deposit terms, including minimum balance requirements and maintenance fees, to compensate for and mitigate asymmetric information (Allen, Saunders, and Udell, 1991; Udell, 1986). This interplay between the deposit and credit side of the bank ledger informs our hypothesis on how overdraft fee caps will affect both.

III. Federal Preemption of State Overdraft Fee Caps

The dual chartering system in the U.S. – where banks can be chartered at the national or state level – provides the natural experiment we use to study fee caps. Whether national banks are bound by state law is a recurring question in banking law. Typically, judicial precedent, in combination with rules or guidelines issued by the Office of the Comptroller of the Currency (OCC), establish the ground rules for national banks. The question of jurisdiction arose anew around 2000 over state-mandated overdraft price limits in Alaska, Illinois, Missouri, and Tennessee.[11] In 2001, the OCC revised and clarified its

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[11] Aside from overdraft fees, deposit accounts sometimes entail other non-interest charges and fees (e.g., monthly maintenance fees, ATM fees, etc.). At the time of our study, these were not commonly limited by

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rule authorizing national banks to charge fees on deposit accounts (12 CFR Part 7.4002). The revision made clear that the OCC would not require banks to abide by state fee limits. Instead, the OCC would follow judicial precedent which, to that point, had exempted national banks from such restrictions.[12] Prior to the rule change, the OCC's position had been ambiguous, as it suggested case-by-case review and approval was required for national banks to gain exemption from state limits. The revised rule was introduced in January 2001 and implemented in July 2001. We use July 2001 as the event date except for annual data, for which we use January 2001.

IV. Analysis and Findings

The preemption event lets us identify the effect of overdraft fee caps by studying how national banks behaved relative to state banks once unconstrained by caps. First, we examine their overdraft terms – both fees and willingness to cover overdrafts. Second, we study a proxy for banks' *un*willingness to cover overdrafts – returned checks. Third, we investigate changes in national banks' deposit supply, as reflected in monthly account fees and minimum balance requirements. Finally, we look at whether low-income households were more likely or less likely to have checking accounts absent fee caps. For each analysis, we describe the data and empirical strategy before discussing findings.

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state laws. A handful of states require banks to offer basic banking accounts for certain types of customers (e.g., minors, seniors, etc.) viewed as more vulnerable or less financially sophisticated. Washington (2006) finds modest impact of such requirements on the number of unbanked households.

[12] The revised rule states: "the OCC applies preemption principles derived from the United States Constitution, as interpreted through judicial precedent, when determining whether state laws apply that purport to limit or prohibit charges and fees." In further discussion of the relevant judicial precedent, the OCC references the standards articulated in *Barnett Bank of Marion County, N.A. vs. Nelson*, 517 U.S. 25 (1996), in which the Supreme Court upheld the right of Barnett Bank to sell insurance products in Florida, as explicitly permitted under federal law, even though sale of those products was prohibited by the state.

IV.A. Overdraft Terms

Standard price theory (Rockoff, 2008), including the literature cited earlier, shows how usury limits will constrain credit supply and induce rationing. Therefore, our first prediction is that, absent fee ceilings, national banks will increase their provision of overdraft credit.

Our data on overdraft terms are from Moebs Services, an economic research and consulting firm that conducts an annual survey of deposit account fees and services. Moebs collects the data via an annual telephone survey of a stratified random sample of bank and credit union branches. The Federal Reserve relied on these data for its Annual Report on Retail Fees and Services of Depository Institutions until 2002. Moebs continued the survey thereafter.

Table 1 summarizes the data. We study the period of 1999 to 2003, a five-year window centered around the exemption and preceding a more general OCC exemption in 2004 (Di Maggio and Kermani, 2017). We exclude credit unions for comparability with later analysis. The final sample has 2,936 branch-year observations, including 107 national bank branches located in fee limit states. The mean overdraft fee is about $21 ($31 in current $) in the full sample and $22 at national banks. Mean fees rose by about $2.80 over the sample period. Some banks report that they do not offer overdraft coverage when queried about their OD fee. We define the indicator variable *OD Offered* accordingly, as 1 for banks that report an OD fee and 0 for those that do not offer overdraft coverage. That outcome is summarized in the bottom panel. Overdraft programs were already common two decades ago, but about ten percent of banks had not adopted one.

We identify the effect of the exemption by estimating a triple-differences regression model:

(1) $Y_{ist} = \alpha + \beta_0 National_i \times Limit_s \times Post_t + \beta_1 National_i \times Limit_s +$

$\quad \beta_2 National_i \times Post_t + \beta_3 Limit_s \times Post_t + \beta_4 National_i + \beta_5 Limit_s +$

$\quad \beta_6 Post_t + \alpha_{s,t} + \Gamma \cdot Controls + \varepsilon_{ist,}$

where the dependent variable is the OD fee charged by bank i located in state s at year t *(OD Fee)* or the indicator *OD Offered*. *National* is 1 for national banks and 0 for other banks; *Post* equals 1 in 2001 and after and 0 before; *Limit* is 1 for limit states and 0 for others. The main coefficient of interest, β_0, measures the triple-difference in each outcome, i.e., the change at national banks relative to other banks post-exemption in limit states.

The state-by-time fixed effects, $\alpha_{s,t}$ control for trends in fees at the state level. The controls include branch, bank, and economic and demographic characteristics of the county where the branch is located each year. For the branch we include total deposits (the only branch level variable available in regulatory data). To control for competitive conditions, we include the HHI (Herfindahl-Hirschman index) of deposit concentration in each county. At the bank level, we control for size (log of bank assets), profitability (return on assets), capital (total equity capital/total assets) and an indicator for savings banks. At the county level, we include the unemployment rate, log of median income, the homeownership rate, log of population, the share of population that is white, Black, or Hispanic, and foreign born.[13]

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[13] Branch deposit data are from the FDIC (Federal Deposit Insurance Corp) Summary of Deposits. Bank data are from their regulatory filings (The Call Report). County unemployment and median income are from the Bureau of Labor Statistics. County demographic data are from the Census American Community Survey.

Table 2 reports the regression estimates and standard errors (clustered by state) in parentheses. For brevity, we report coefficient estimates only for the variables of interest. We report estimates for baseline models without controls (columns 1 and 3) and with all controls and fixed effects (columns 2 and 4). The estimates for β_0, the triple difference coefficient, are positive and significant at the 1 percent level across all models. Model 2, with all controls, implies that national banks in limit states increased fees by $1.72 in relative terms after the exemption, or about nine percent relative to the mean before. The results for columns (3) and (4) indicate that more national banks offered overdraft credit post exemption. The estimate for the model with all controls (column 4) implies that the fraction of national banks offering overdraft credit increased by 0.18 post exemption in fee limit states, or 20 percent relative to the mean.

Figure 2 plots estimates of the triple-difference coefficients each year (2000 is the omitted year). Consistent with the assumption of parallel trends, the differences are small (negative, even) and insignificant before the exemption. The size and significance of the treatment effect fluctuates somewhat for fees but is significantly positive and large even at the end of the sample. The treatment effect for overdraft credit supply is consistently around 0.2, and statistically significant, for each post-treatment year.

IV.B. Returned Checks

Banks return checks due to insufficient funds whenever they refuse to offer overdraft credit (see Figure 1). Thus, national banks' increased overdraft supply after the

OCC preemption implies lower rates of returned checks in states where caps were in force.[14]

Our data on checks are from the Federal Reserve, which operated 46 check processing (CPC) in 35 states over our sample period, six of which were in states with fee limits.[15] While these data are not bank-level, national banks held about half of deposits in those states, so their increased willingness to cover overdrafts should be evident at the state level.

Table 3 summarizes the check data. We observe, at quarterly frequency, the number and value of checks processed by each CPC as well as the number and value of checks returned. On average, about 1.2 million checks were returned per quarter in states with fee limits and in states without. The returned check rate, defined as the number (or value) of checks returned divided by the number (or value) processed, was higher in fee limit states.

We estimate the effect of the preemption on returned check rates with a difference-in-differences model:

(2) $C_{cst} = \alpha + \beta \, Limit_s \times Post_t + \alpha_c + \alpha_t + \Gamma \cdot Controls_{ct} + \varepsilon_{cst}.$

The dependent variable is the returned check rate at CPC c in state s in quarter t. $Limit_s$ is defined as above. $Post$ equals 1 in 2001q3 and afterwards, and zero before. The model includes fixed effects for the CPC and year-quarter and the county economic and demographic controls as (where the CPC is located) used in the previous models. The time

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[14] While check transactions are less common now than in our study period, the average checking account holder still writes about 7 checks per month (Gerdes, Hamburg and Liu, 2016) and lower income account holders, our focus, write more than average (Greene et al. 2020). Moreover, recurring debit payments, such as mortgage and utilities payments, are returned due to insufficient funds the same as checks are and with comparable fees.

[15] Illinois (Chicago and Peoria); Missouri (Kansas City and St. Louis); Tennessee (Memphis and Nashville). Alaska did not have a CPC.

fixed effects control for common trends, including the secular decline in check usage. We predict lower returned check rates in affected states after the preemption: $\beta < 0$.[16]

Table 4 reports the results. CPCs in fee limit states processed significantly more checks post-exemption (column 1). The estimate of 0.05 represents a 5 percent increase. The estimate for processing volume ($) appears larger but is statistically insignificant (column 2). More pertinent here are columns (3) and (4) showing that returned check rates in fee limit states declined significantly relative to others after fee caps were relaxed for national banks. The estimates imply returns per number of checks processed fell 15% and returns per dollar processed fell 22%, relative to the mean rate of returned checks.

Figure 3 reports time-varying estimates of β. Returns per number of checks processed declined somewhat before preemption so caution is needed there. However, returns per value processed meets the parallel trend test.

This second finding of lower returned check rates reinforces our first finding of increased overdraft supply by national banks, and also implies savings on returned check fees to low-income. Next, we investigate how deposit supply by national banks changed after preemption.

IV. C. Checking Account Supply

Overdraft and deposit supply may be closely linked in banks' pricing strategies. In models of add-on pricing (Ellison, 2005; Gabaix and Laibson, 2006), firms charge lower prices for the base good (checking) when able to raise the price of an add-on, such as overdraft. In models of bank pricing, minimum balance requirements are used along with

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[16] CPCs may process checks on out-of-state banks, measurement error that tends to attenuate β estimates. All but two states bordering affected states had a CPC which tends to minimize the error.

overdraft fees to distinguish potential depositors with high or low overdraft risk (Allen, Saunders, and Udell, 1991; Udell, 1986). Applied to our context, these models suggest banks may expand deposit supply – e.g. by reducing minimum balances or lowering account maintenance fees – when overdraft fee caps are relaxed.

To test this hypothesis, we use data from RateWatch on checking account maintenance fees and the minimum balance required to avoid them.[17] We observe both outcomes separately, at the branch level, for interest bearing and non-interest bearing checking accounts. Table 5 provides summary statistics. These data are semiannual and begin in the second half of 2000. Not surprisingly, interest-earning accounts have higher minimum balances and maintenance fees; the average monthly fee on interest checking accounts is $9.74 with a minimum balance of $1,117 versus $4.13 and $542 for non-interest accounts. Our prior is that households at risk of going unbanked are more likely to select low-cost, non-interest accounts. Roughly 15% of observations come from branches in fee-limit states while 56% come from branches of nationally chartered banks. The data is about evenly split between the time period before and after preemption.

To examine the effect of the preemption, we re-estimate Equation (1) using either maintenance fees or minimum balance requirements as the dependent variable. The controls and fixed effects (state-by-time) are the same as in the most saturated overdraft fee regressions in Table 2. The dependent variables are logged, and we add one to monthly maintenance fees before taking the log due to frequent zero-fee observations.

Table 6 presents the results. As seen in columns (1) and (3), we find no (relative) change in account maintenance fees at national banks after preemption for either type of

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[17] Overdraft fee data is not available in RateWatch until several years after our sample period.

checking account. However, we find that minimum balance requirements were reduced, as seen in columns (2) and (4). The coefficient estimates suggest that minimum balance requirements were reduced by 36% to 64%, depending on the type of account. Both coefficients are statistically significant at the 1% level and economically significant. Based on average minimum balance requirements (shown in the previous table), this amounts to $715 (64% of $1,117) and $195 (28% of $542) less that customers need to keep in interest and non-interest checking accounts, respectively, in order to avoid a monthly fee.

Figure 4 plots estimates of the time-varying triple difference coefficients (*National x Limit x Half-Year)* for each type of account and outcome. We observe no significant differences in any outcome pre-exemption, consistent with our identifying assumption of parallel trends. The decline in minimum balances is evident in the upper right panel for interest-bearing accounts, and the lower right panel for non-interest-bearing accounts. For both types of accounts, minimum balance requirements were economically (about 20-35%) and statistically significantly lower by the beginning of 2002 (within six months to one year of preemption). They remain lower, in some cases even trending further down, for the remainder of the event window.

To summarize, we find that national banks charge more for overdrafts but are also more willing to allow them when fee caps are relaxed. We also find that national banks increased deposit supply by lowering minimum balance requirements.

IV. D. Bank Account Ownership

Having characterized the impact of overdraft fee caps on banks' overdraft and deposit supply, we now turn to financial inclusion. As context for this analysis, we note

that the unbanked in the U.S. are almost exclusively low-income households. Figure 5 displays the proportion of unbanked households by income. Nearly all households above $75,000 of annual income are banked, whereas more than one-quarter of households with annual income below $15,000 are unbanked. Our analysis of bank account ownership thus focuses on low-income households.

Our finding that national banks reduce minimum balance requirements when exempted from overdraft fee caps suggests an increase in deposit supply that could be pivotal to some prospective depositors, especially low-income households. High minimum balance requirements rank first among reasons households report going without a bank account (FDIC, 2020). Expanded overdraft coverage could also increase demand for deposits by households that value the increased liquidity, credit and savings on merchant bounced payment fees.[18] We analyze the reduced form change in account ownership but are unable to separately identify supply and demand effects.

Our data source is the U.S. Census Bureau's Survey of Income and Program Participation (SIPP). Each SIPP panel covers more than 30,000 households observed over a four-year period. SIPP respondents complete three "core" interviews per year about their household composition, income, and program participation over the prior four months. They also complete periodic "topical" interviews on liabilities and assets, including bank account ownership. We focus on checking account ownership since overdraft fees are most relevant to transaction accounts. No single SIPP panel spans covers our 1999-2003 window. We use the panel initiated in 1996 for the pre-period and the one initiated in 2001 for the post-exemption period.

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[18] More speculatively, merchants may also be more willing to accept checks and ACH payments from customers if fewer are returned, thus also preserving the liquidity value of the account.

Table 7 displays summary statistics. Checking account ownership is lower among low-income households; just 44 percent of households in the bottom income quintile (below \$16,100) had checking accounts compared to 66 percent of households overall.[19] Low-income households also differed by race, wealth, educational attainment, and age. These traits correlate with account ownership, so we control for those differences in our regressions as well as the (geographic) banking deregulation index that Celerier and Matray (2019) found to increase account ownership over a time period that included, but largely preceded, our sample period.

We evaluate the effect of the OCC preemption of overdraft fee limits on checking account ownership with a difference-in-differences model:

$$(3) \; Checking \; Account_{ist} = \alpha + \beta Limit_s \times Post_t + \delta_t + \gamma_s + \boldsymbol{\theta}' \boldsymbol{X_{it}} + \varepsilon.$$

The dependent variable indicates whether anyone in household *i*, located in state *s*, has a checking account in year *t*. *Post* here is equals one in 2001 and after, and zero otherwise. *Limit* is defined as previously. The coefficient β measures how the share of banked households changed following preemption in fee limit states relative to others. The year fixed effects, δ_t, account for any nationwide variation in account ownership while the state fixed effects, γ_s, absorb cross-state variation due, for example, differences in banking laws or market structures. The vector **X** contains income, net worth, age, and fixed effects for education (five categories) and race (four categories). We employ least squares estimation with sample weights, and cluster standard errors by state.

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[19] The SIPP share with checking accounts is lower than the FDIC share with bank accounts for three reasons. First, some banked households only have non-checking accounts, such as savings or money market accounts. Second, the FDIC data are from 2019, nearly a decade after the SIPP, and bank account ownership has been rising over time. Third, the SIPP may underestimate account ownership as Cox, Whitten and Yogo (2021) show when comparing surveys to IRS administrative data.

Table 8 reports estimates for the low-income sample. Those results show that checking account ownership increased substantially in fee-limiting states following the preemption. The parsimonious model in column (1) excludes all fixed effects and controls. The estimate of -2.5 ($p < 0.05$) on *Post* implies lower account ownership in non-fee limit states after the preemption. The β estimate of 5.2 ($p < 0.05$) on *Limit x Post* implies account ownership in fee limit states increased relative to other states after preemption. Including state and time fixed effects increases the β estimate slightly to 5.5 ($p < 0.05$) (Column 2). Adding household characteristics does not significantly change β (Column 3), though many of those characteristics are significant determinants of account ownership. The most saturated model (Column 4), which also controls for banking deregulation, implies that the share of banked low-income household affected states rose 4.8 percentage points relative to control states after the preemption. That is a ten percent increase relative to the 44% of low-income households that had accounts overall the sample period.

In Table 9, we repeat the analysis including all income subsamples. Among moderate- and higher-income households, we find no statistically significant relationship between account ownership and the relaxation of fee limits. While the point estimates for some moderate- and higher-income households are positive, they are statistically insignificant and are considerably smaller than the estimates for low-income group.

V. Welfare Considerations

Increased financial inclusion is usually seen as a positive outcome but in this context that view is arguable. If overdraft costs are shrouded, or if newly banked households are inattentive, they may not recognize the true cost of their account. We

investigate these concerns using two approaches. First, exploiting the panel structure of the SIPP data, we examine whether newly banked low-income households eventually lose or close their account. Second, using credit bureau data, we investigate whether low-income households incur additional debt to cover overdraft costs, thus causing their broader credit conditions to deteriorate.

V. A. The Dynamics of Bank Account Ownership

Our first test examines account churn – accounts gained and lost. Lost accounts can reflect either voluntary closures by depositors or involuntary closures by banks, usually due to excessive unpaid overdrafts (Campbell et al. 2012). We infer whether households gained or lost an account from the SIPP data by whether they transitioned from "no account" to "have account" or vice-versa between four-month interview periods.

Table 10 shows difference-in-differences regressions of gained and lost accounts. Unsurprisingly, given our earlier results, low-income households were more likely to gain accounts after preemption in affected states. More notably, they were also less likely to lose accounts.

Studying whether the gain in account ownership persists provides another indication of the value of accounts to the newly banked. If inattentive depositors eventually realize their overdraft costs and close (or lose) their account, we would expect the preemption effect on account ownership to wane. To test this, we replace the $Post_t$ indicator in the model with year-by-quarter dummies. The β coefficients on their interactions with *Limit* measure the difference-in-difference in account ownership by low-income households over time; if new depositors were learning they preferred being

unbanked, we would expect declining β. On the contrary, Figure 6 shows the estimates rise throughout the post-preemption period. By 2003 the difference-in-difference was 8.3 percentage points, above the average effect of 4.8 percentage in Table 8.

These results – reduced churn and account persistence – go against the premise that newly banked households closed or lost accounts once they realized their overdraft costs.

V.B. Broader Financial Conditions of Low-Income Households

Even if newly banked households retain their accounts, they may wind up borrowing elsewhere or experiencing delinquency on other debts to pay overdraft charges (DiMaggio, Ma, and Williams 2021).

We investigate that concern using data from the Federal Reserve Bank of New York/Equifax Consumer Credit Panel (CCP). The CCP comprises credit bureau data at the household level and quarterly frequency. While rich in credit data, the CCP lacks household income or characteristics apart from age and zip code, so we merge the CCP with U.S. Census data from 2000 by zip code. For our analysis, we define low-income areas as zip codes with median income in the bottom quintile of all zip codes in 2000.

We study five outcomes: credit inquiries, open accounts, total debt, delinquency rates, and credit scores. Credit inquiries are requests by lenders to see a borrower's credit file; so-called "hard" inquiries (those pursuant to a credit application) indicate the borrower is actively searching for additional credit. Open accounts are the number of credit accounts, including credit cards, retail accounts, mortgages, auto loans, and personal loans. Total debt equals the sum of balances each quarter across all credit accounts. Delinquency rates

equal total balances past due 90 days divided by total debt.[20] Credit scores are summary measures of financial health created to assess creditworthiness and future loan default.

Table 11 provides summary statistics over our 1991q1 to 2003q4 observation window. We use the 1% sample of the CCP with a constant panel of households over time. This yields roughly 30 million observations overall and 5 million for the low-income subsample. Mean zip code-level income for households in the bottom income quintile is about $26,000 versus about $45,000 for the full sample. Those households also had lower credit scores and debt balances but higher delinquency rates, more credit inquiries, and fewer open accounts. Lower-income zip codes also differed demographically, with higher shares of Hispanic and Black households and lower shares of high school or college graduates.

To see how households' credit behaviors changed in low-income areas after the preemption, we estimated a triple-difference model:

$$(4)\ Y_{hzst} = \alpha + \beta_0\, Low_z \times Limit_s \times Post_t + \beta_1 Low_h \times Limit_s + \beta_2 Low_h \times Post_t +$$
$$\beta_3 Limit_s \times Post_t + \beta_4 Low_h + \beta_5 Limit_s + \beta_6 Post_t + a_h + \alpha_{s,t} + \Gamma \cdot$$
$$Controls + \varepsilon_{hst,}$$

The dependent variable is one of the five credit outcomes. Low_z indicates if household h resides in a zip code z with median income in the bottom quintile of all zip codes. $Limit_s$ and $Post_t$ are defined as in Equations (1)-(3). The model includes fixed effects for the household, a_h, and state-by-quarter, $a_{s,t}$, as well as controls for household age, and zip code median income, racial composition and educational attainment. The coefficient of

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[20] Payday lenders do not report to Equifax.

interest, β_0, measures the relative effect of the preemption on credit outcomes for households in low-income zip codes in states with overdraft fee limits after preemption.

Table 12 reports coefficient estimates with state-clustered standard errors in parentheses. The β_0 estimates for all outcomes are small, statistically insignificant and estimated with precision, allowing us to rule out even modest negative consequences. The 95% confidence interval for β_0 in the credit score analysis is [-0.47, 1.05], for example, which is small compared to the mean credit score of 681.

To summarize, in low-income areas where bank account ownership increased following the removal of overdraft fee caps, we see no indication of increased indebtedness, credit search, delinquency or risk of future default (as proxied by credit score). These findings suggest that increased access to deposit accounts and overdraft credit did not weaken newly banked households' financial health.

VI. Conclusion

After payday loans, overdraft credit may be the most controversial corner of the small dollar loan market. The fees are high, possibly shrouded, and borne largely by a small group of frequent overdrafters. Many consumer groups and some lawmakers therefore have suggested capping fees to rein in overdraft costs and promote financial inclusion.

Our study finds, however, that overdraft fee caps hinder financial inclusion. When constrained by fee caps, banks reduce overdraft coverage and deposit supply, causing more returned checks and a decline in account ownership among low-income households. While the welfare impact of becoming banked is potentially ambiguous if fees are shrouded up front, our evidence suggests low-income households prefer being banked. They are not

only more likely to open accounts but also less likely to lose them, leading to a persistent increase in account ownership and no evident decline in financial health as reflected in credit scores.

Our findings should not be read as implying that high overdraft fees are good for depositors. While fee caps succeed in reducing overdraft fees, they also trigger adjustments by banks that limit the financial inclusion of low-income households. Instead, policies promoting increased competition and transparency may be more effective in keeping overdraft fees in line with costs and risk. Recent trends hint at emerging price competition in overdraft credit, with a few banks and fintech payment providers announcing "zero" overdraft fees.[21] While this development is seemingly positive for depositors, our findings raise a question: will banks and fintechs offer risky overdrafts, without charge, to all depositors or will they limit overdraft and deposit access as they do when subject to mandated fee limits?

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[21] Capital One and online bank Ally Financial both eliminated overdraft fees in 2021, matching the zero-fee overdraft policy of fintech Chime (Adamczyk, 2021)

References

Adamczyk, Alicia, 2021, Banks like Capital One and Ally are eliminating overdraft fees, *CNBC.com*, December 3, retrieved from https://www.cnbc.com/2021/12/03/banks-like-capital-one-and-ally-are-eliminating-overdraft-fees.html.

Agarwal, Sumit, Shashwat Alok, Pulak Ghosh, Soumya Ghosh, Tomasz Piskorski, and Amit Seru, 2017, Banking the Unbanked: What Do 255 Million New Bank Accounts Reveal about Financial Access?, Columbia Business School Research Paper No. 17-12.

Agarwal, Sumit, Souphala Chomsisengphet, Neale Mahoney, and Johannes Stroebel, 2015, Regulating Consumer Financial Products: Evidence from Credit Cards, *The Quarterly Journal of Economics*, 130(1): 111-164.

Alan, Sule, Mehmet Cemalcilar, Dean Karlan, and Jonathan Zinman, 2017, Unshrouding: Evidence from Bank Overdrafts in Turkey, *The Journal of Finance*, 73(20): 481-522.

Allen, Linda, Anthony Saunders, and Gregory F. Udell, 1991, The Pricing of Retail Deposits: Concentration and Information, *Journal of Financial Intermediation*, 1: 335-361.

Armstrong, Mark and John Vickers, 2012, Consumer Protection and Contingent Charges, *Journal of Economic Literature*, 50(2): 477-93.

Ashraf, Nava, Dean Karlan, and Wesley Yin, 2006, Tying Odysseus to the Mast: Evidence From a Commitment Savings Product in the Phillipines, *Quarterly Journal of Economics*, 121 (2): 635–672.

Bachas, Pierre, Paul Gertler, Sean Higgins, and Enrique Seira, 2020, How Debit Cards Enable the Poor to Save More, *Journal of Finance*, 76 (4): 1913–1957.

Barr, Michael S., 2004, Banking the Poor, *Yale Journal on Regulation*, 21(1): 121–237.

Benmelech, Efraim and Tobias J. Moskowitz, 2010, The Political Economy of Financial Regulation: Evidence from U.S. State Usury Laws in the 19th Century, *Journal of Finance*, 65(3): 1029–1073.

Bord, Vitaly M., 2018, Bank Consolidation and Financial Inclusion: The Adverse Effects of Bank Mergers on Depositors, Working paper, Retrieved from https://scholar.harvard.edu/files/vbord/files/vbord_-_bank_consolidation_and_financial_inclusion_full.pdf

Brown, James R., J. Anthony Cookson, and Rawley Z. Heimer, 2019, Growing up without finance, *Journal of Financial Economics*, 134 (3): 591–616.

Caflisch, Andrea, Michael Grubb, Darragh Kelly, Jeroen Nieboer, and Matthew Osborne, 2018, Sending out an SMS: The impact of automatically enrolling consumers into overdraft alerts, FCA Occasional Paper No. 36.

Campbell, Dennis, F. Asis Martinez-Jerez, and Peter Tufano, 2012, Bouncing Out of the Banking System: An Empirical Analysis of Involuntary Bank Account Closures, *Journal of Banking & Finance*, 36(4): 1224-1235.

Caskey, John P., 2005, Reaching Out to the Unbanked, in Michael Sherraden, ed.: *Inclusion in The American Dream: Assets, Poverty, and Public Policy* (Oxford University Press).

Celerier, Claire and Adrien Matray, 2019, Bank Branch Supply, Financial Inclusion and Wealth Accumulation, *Review of Financial Studies*, 32(12): 4767-4809.

Celerier, Claire and Purnoor Tak, 2021, The Impact of Financial Inclusion on Minorities: Evidence from the Freedman's Savings Bank, Working paper.

Cole, Shawn, Benjamin Iverson, and Peter Tufano, 2022, Can Gambling Increase Savings? Empirical Evidence on Prize-Linked Savings Accounts, *Management Science*, 68(5): 3282–3308.

Consumer Financial Protection Bureau (CFPB), 2013, *CFPB Study of Overdraft Programs*, https://files.consumerfinance.gov/f/201306_cfpb_whitepaper_overdraft-practices.pdf.

Consumer Financial Protection Bureau (CFPB), 2017, *CFPB data point: Frequent overdrafts*, https://www.consumerfinance.gov/data-research/research-reports/cfpb-data-point-frequent-overdrafters/.

Consumer Financial Protection Bureau (CFPB), 2021, *Data Point: Overdraft/NSF Fee Reliance Since 2015 – Evidence from Bank Call Reports*, https://files.consumerfinance.gov/f/documents/cfpb_overdraft-call_report_2021-12.pdf

Cuesta, Jose I., and Alberto Sepulveda, 2019, Price Regulation in Credit Markets: A Trade-off Between Consumer Protection and Credit Access, Working paper, Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3282910.

Di Maggio, Marco and Amir Kermani, 2017, Credit Induced Boom and Bust, *The Review of Financial Studies*, 30 (11): 3711-3758.

Di Maggio, Marco, Amir Kermani, and Sanket Korgaonkar, 2019, Partial Deregulation and Competition: Effects on Risky Mortgage Origination, *Management Science*, 65(10): 4451-4949.

Di Maggio, Marco, Angela Ma, and Emily Williams, 2021, In the Red: Overdrafts, Payday Lending and the Unfderbanked, NBER Working Paper No. w28242.

Dupas, Pascaline, Dean Karlan, Jonathan Robinson, and Diego Ubfal, 2018, Banking the Unbanked? Evidence from Three Countries, *American Economic Journal: Applied Economics*, 10(2): 257–97.

Dupas, Pascaline and Jonathan Robinson, 2013, Why Don't the Poor Save More? Evidence from Health Savings Experiments, *American Economic Review*, 103 (4): 1138–1171.

Federal Deposit Insurance Corporation (FDIC), 2008, *FDIC Study of Bank Overdraft Programs*, Retrieved from https://www.fdic.gov/bank/analytical/overdraft/fdic138_report_final_v508.pdf

Federal Deposit Insurance Corporation (FDIC), 2020, *How America Banks: Household Use of Banking and Financial Services, 2019 FDIC Survey.*

Fellowes, Matt and Mia Mbanta, 2008, Banking on Wealth: America's New Retail Banking Infrastructure and Its Wealth-Building Potential, Brookings Research Brief, Retrieved from https://www.brookings.edu/wp-content/uploads/2016/06/01_banking_fellowes.pdf

Fisher, Jack, Alessandro Gavazza, Lu Liu, Tarun Ramadorai, and Jagdish Tripathy, 2023, Refinancing Cross-Subsidies in the Mortgage Market, Working paper, Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3962433

Gabaix, Xavier and David Laibson, 2006, Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets, *The Quarterly Journal of Economics*, 121(2): 505-540.

Gerdes, Geoffrey R., Jonathan Hamburg, and Xuemei (May) Liu, 2016, The Federal Reserve Payments Study 2016: Recent Developments in Consumer and Business Payment Choices, Retrieved from https://www.federalreserve.gov/newsevents/pressreleases/files/2016-payments-study-recent-developments-20170630.pdf

Greene, Claire, Marcin Hitczenko, Brian Prescott, and Oz Shy, 2020, U.S. Consumers' Use of Personal Checks: Evidence from a Diary Survey, Federal Reserve Bank of Atlanta Research Data Points, Retrieved from https://www.atlantafed.org/-/media/documents/banking/consumer-payments/research-data-reports/2020/02/13/us-consumers-use-of-personal-checks-evidence-from-a-diary-survey/rdr2001.pdf

Greer, Douglas F., 1975, Rate Ceilings and Loan Turndowns, *Journal of Finance*, 30(5): 1376–1383.

Kashyap, Anil K., Raghuram Rajan, and Jeremy C. Stein, 2002, Banks as Liquidity Providers: An Explanation for the Co-Existence of Lending and Deposit-Taking, *Journal of Finance*, 57 (1): 33–73.

Kay, Benjamin S., Mark D. Manuszak, and Cindy M. Vojtech, 2018, Competition and complementarities in retail banking: Evidence from debit card interchange regulation, *Journal of Financial Intermediation*, 34: 91-108.

Kearney, Melissa, Peter Tufano, Jonathan Guryan and Erik Hurst, 2010, Making Savers Winners: An Overview of Prize-Linked Savings Products, NBER Working Paper No. 16433.

Melzer, Brian T. and Aaron Schroeder, 2017, Loan Contracting in the Presence of Usury Limits: Evidence from Automobile Lending, Consumer Financial Protection Bureau Office of Research Working Paper No. 2017-02.

Mester, Loretta J., Leonard I. Nakamura, and Micheline Renault, 2007, Transactions Accounts and Loan Monitoring, *Review of Financial Studies*, 20(3): 529–556.

Nelson, Scott T., 2020, Private Information and Price Regulation in the US Credit Card Market, Working paper, Retrieved from https://faculty.chicagobooth.edu/-/media/faculty/scott-nelson/research/private-information-and-price-regulation-in-the-us.pdf.

Mukharlyamov, Vladimir and Sarin, Natasha, 2019, The Impact of the Durbin Amendment on Banks, Merchants, and Consumers, Georgetown McDonough School of Business Research Paper No. 3328579.

Office of Senator Cory A. Booker, 2018, An Analysis of Bank Overdraft Fees, Retrieved from https://www.scribd.com/document/385303657/An-Analysis-of-Bank-Overdraft-Fees-Final.

Rigbi, Oren, 2013, The Effects of Usury Laws: Evidence from the Online Loan Market, *Review of Economics and Statistics*, 95(4): 1238–1248.

Rockoff, Hugh, 2008, Price Controls, in David R. Henderson, ed.: *The Concise Encyclopedia of Economics* (The Liberty Fund).

Ru, Hong and Antoinette Scholar, 2020, Do credit card companies screen for behavioral biases?, BIS Working Papers No. 842.

Stango, Victor and Jonathan Zinman, 2014, Limited and Varying Consumer Attention: Evidence from Shocks to the Salience of Bank Overdraft Fees, *Review of Financial Studies*, 27(4): 990-1030.

Stein, Luke C. D. and Constantine Yannelis, 2019, Financial Inclusion, Human Capital, and Wealth Accumulation: Evidence from the Freedman's Savings Bank, *The Review of Financial Studies*, 33(11): 5333–5377.

Udell, Gregory F., 1986, Pricing Returned Check Charges under Asymmetric Information, *Journal of Money, Credit and Banking*, 18(4): 495-505.

Villegas, Daniel J., 1982, An Analysis of the Impact of Interest Rate Ceilings, *Journal of Finance*, 37(4): 941–954.

Washington, Ebonya, 2006, The Impact of Banking and Fringe Banking Regulation on the Number of Unbanked Americans, *The Journal of Human Resources*, 41(1): 106-137.

Figure 1. Overdraft Fees Depend on Transaction Type and Bank Credit Provision
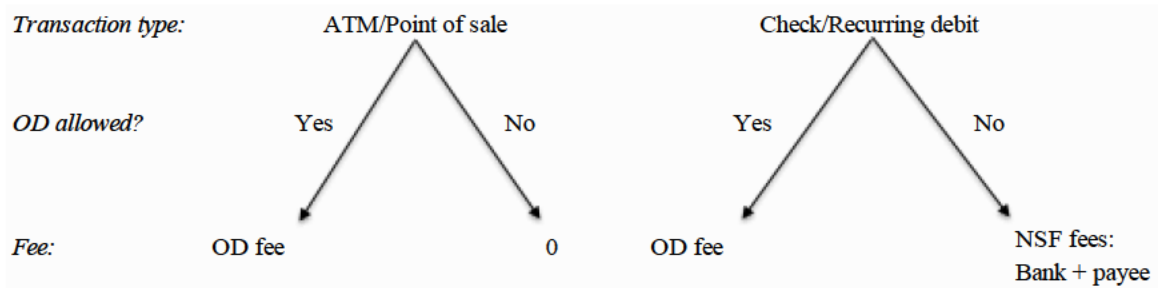
Note: This figure summarizes the fees charged on overdraft attempts by type of transaction and the bank's response. With ATM and point-of-sale transactions banks charge an OD fee if they allow the overdraft but not if they refuse. With check and recurring debit transactions, banks charge an OD fee if they cover the payment. If the bank refuses, it returns the payment and charges the payor a fee for nonsufficient funds (NSF). The payee may also charge an NSF fee. Recurring debit transactions are regular, direct payments cleared through automated clearing house (ACH) from customers' deposit accounts to merchants such as landlords, utilities, insurers and creditors.

Figure 2. Difference-in-Difference Coefficient Estimates: Overdraft Fees and Availability

OD Fees

OD Offered
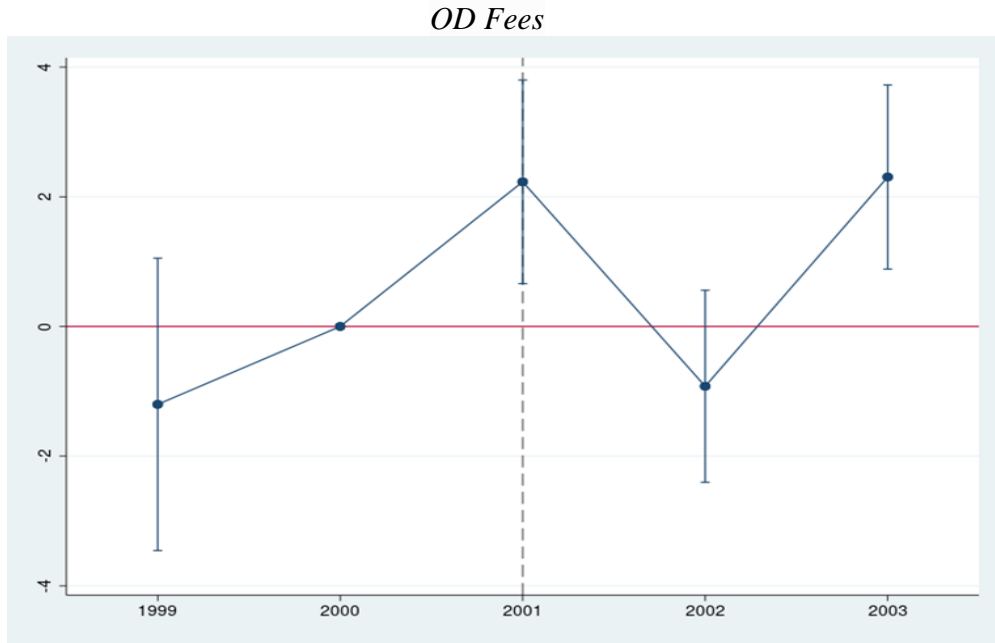
Note: Plotted are estimates of the coefficient on *National* x *Limit* x *Year* from Equation (1) (2000 excluded) and 95% confidence bands for the outcome indicated. The year 2000 is excluded category. The dashed line indicates when national banks were exempted from state fee caps by the OCC.

Figure 3. Difference-in-Difference Coefficient Estimates: Returned Check Rates

Rate per number processed

Note: Bands around point estimates are 95% confidence intervals
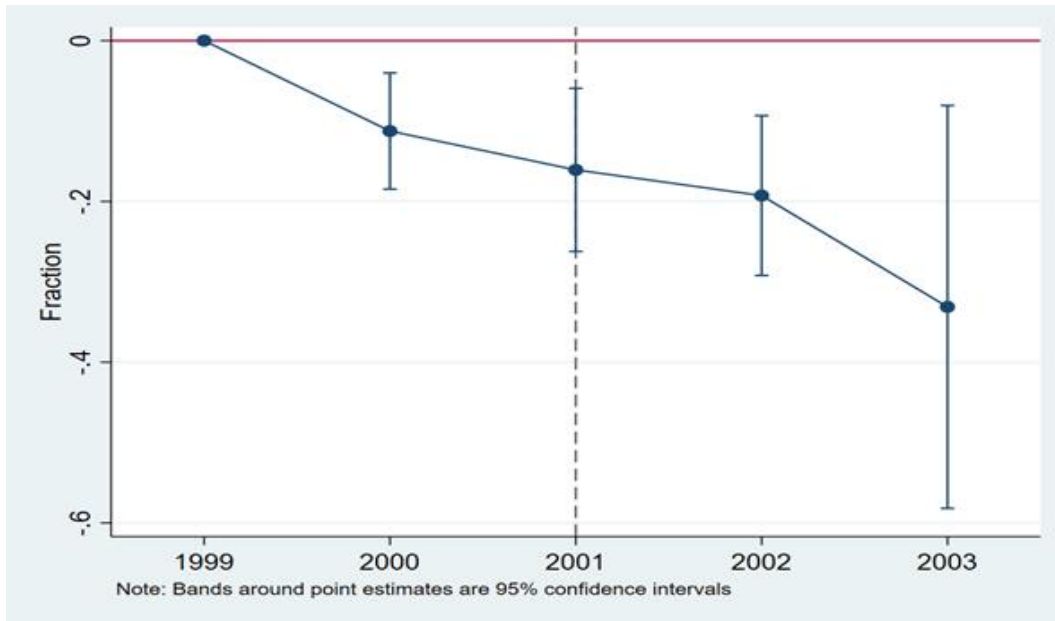
Rate per $ volume processed

Note: Bands around point estimates are 95% confidence intervals
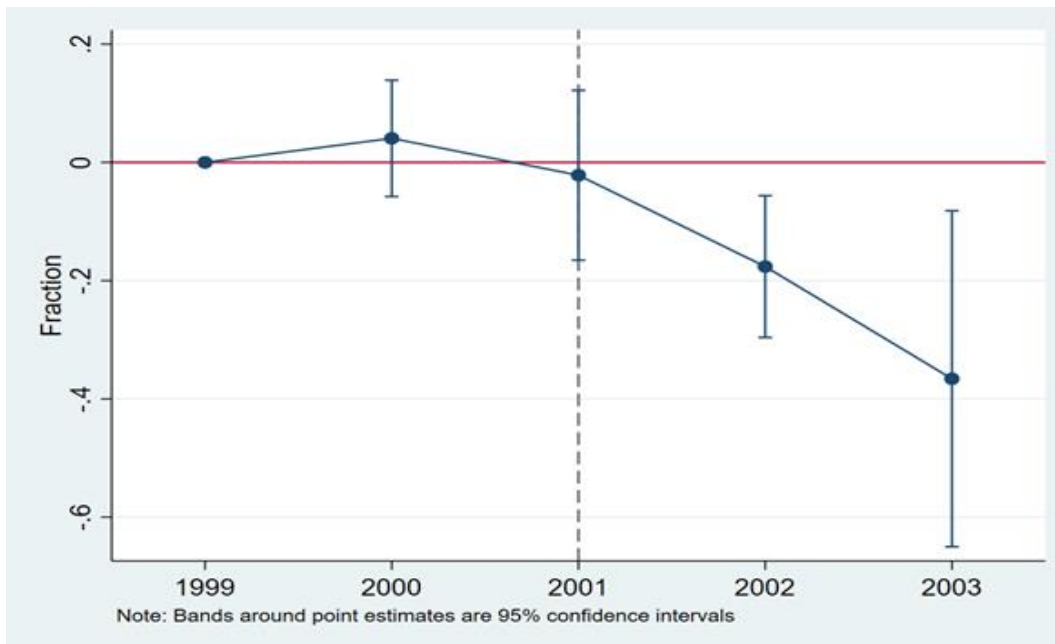
Note: Plotted are estimates of coefficients on *Limit* x *Year* from Equation (2) (excluding 1999) and 95% confidence bands for the outcome indicated atop each panel. The dashed line indicates when the OCC exempted national banks from state fee limits.

Figure 4. Triple-difference Coefficients: Monthly Maintenance Fees and Minimum Balance Requirements

Interest Checking Accounts
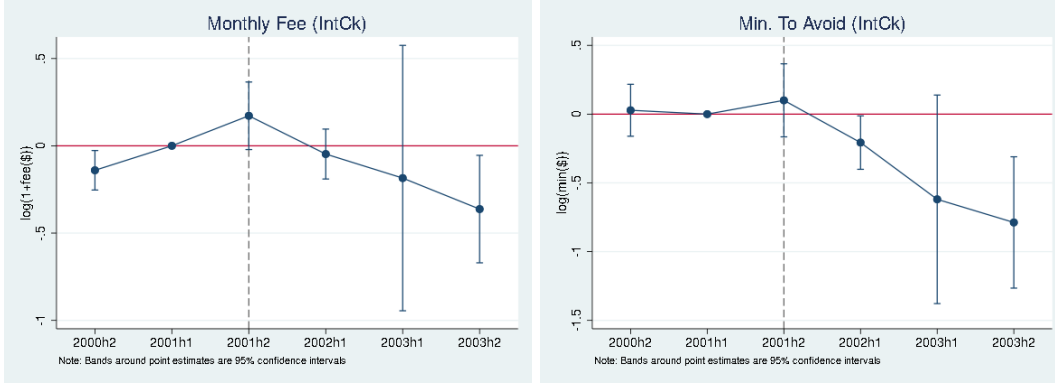
Non-interest Checking Accounts
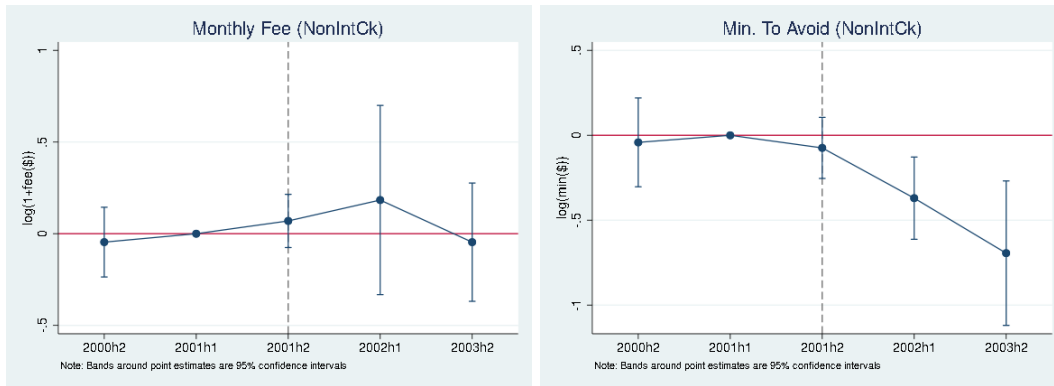
Note: These figures report the coefficients on *National* x *Limit* x *Half-Year* in Equation (1) for the dependent variable indicated (2001H1 excluded). The dashed line indicates when the OCC exempted national banks from state fee limits.

Figure 5. Share of Unbanked Households by Income
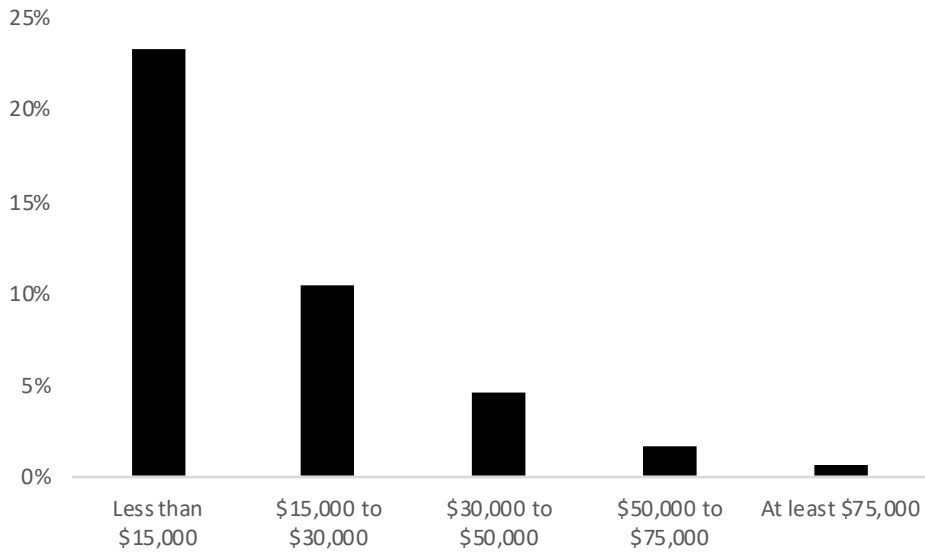
Note: Displayed above are the shares of unbanked households in each income group from the 2019 FDIC Survey of Household Use of Banking and Financial Services.

Figure 6. Differences-in-Differences Coefficients: Checking Account Ownership by Low-income Households
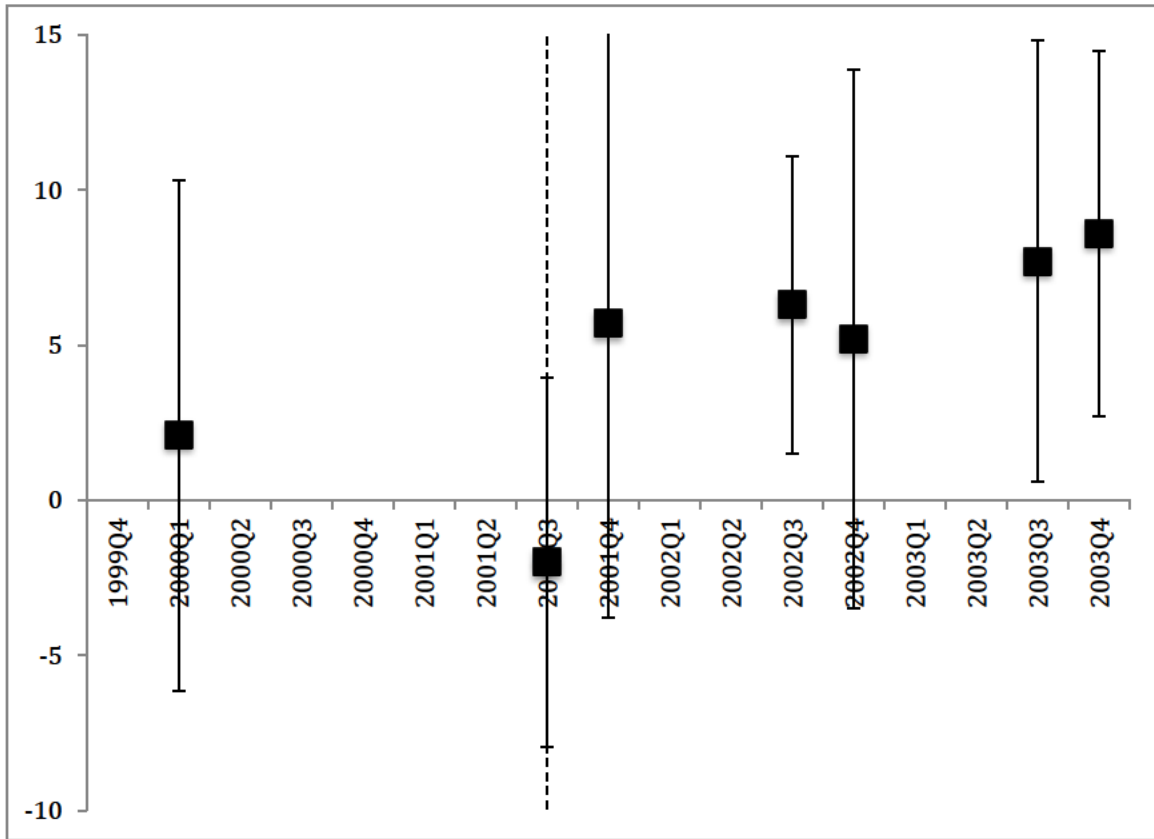
Note: We estimate the dynamic impact of state fee limits on low-income bank account ownership by interacting quarter dummies (excluding 1999:q4) with the indicator for fee-limit state. We plot the coefficient estimates and 95% confidence intervals above. The dashed line indicates the timing of the OCC preemption.

Table 1: Sample Statistics on Bank Overdraft Fees and Availability

	N	Mean	Median	Std. Dev.
Overdraft fee ($)				
All banks	2,936	21.02	20.00	6.02
National banks	844	22.13	22.50	5.66
Other banks	2,092	20.58	20.00	6.11
By time period				
1999-2000	1,051	19.22	20.00	6.04
2001-2003	1,885	22.03	22.50	5.77
Overdraft offered (binary)				
All banks	3,243	0.90	1.00	0.30
National	933	0.90	1.00	0.30
Other	2,310	0.90	1.00	0.30
By period				
1999-2000	1,155	0.90	1.00	0.30
2001-2003	2,088	0.90	1.00	0.30

Note: Reported are sample statistics over 1999-2003 using annual, branch level survey data from Moebs. Overdraft fees are in 2001 dollars. Overdraft offered indicates whether the branch provides overdraft credit for a fee. We report the statistics by type of bank charter and period (pre- and post-OCC exemption).

Table 2. Change in Overdraft Fees and Availability after Fee Caps Are Relaxed

	(1)	(2)	(3)	(4
	OD Fee	*OD Fee*	*OD Offered*	*OD Offered*
National X Limit X Post	1.94***	1.72***	0.17***	0.18***
	(0.58)	(0.42)	(0.03)	(0.04)
National X Limit	-0.85	0.08	-0.15***	-0.17***
	(0.58)	(0.41)	(0.03)	(0.03)
National X Post	-0.57	-0.04	-0.04	-0.03
	(0.42)	(0.41)	(0.03)	(0.03)
Limit X Post	-1.86***	6.48***	-0.06*	-0.02
	(0.34)	(0.37)	(0.03)	(0.02)
National Bank	1.89***	0.53*	0.04	0.03
	(0.46)	(0.31)	(0.02)	(0.02)
Limit	-0.15		0.07**	
	(0.88)		(0.03)	
Post	3.13***		0.02	
	(0.33)		(0.03)	
Observations	2,936	2,915	3,243	3,215
R-Squared	0.07	0.49	0.00	0.06
State and year FE	No	Yes	No	Yes
County, bank and branch controls	No	Yes	No	Yes

Note: This table reports regression cofficient estimates showing the relative change in overdraft fees and credit supply at national banks after they were exempted from state-level fee caps. OD Fee is measured in 2001 dollars. *OD offered* indicates whether the bank branch reported providing overdraft credit for a fee. *National* indicates a national bank branch. *Limit* equals 1 for branches located in states that capped overdraft fees at the time of the OCC's preemption or 0 otherwise. *Post* equals 1 in 2001 and thereafter, and 0 otherwise. The regression is estimated using branch level data over 1999-2003 and includes county controls (unemployment rate, log median income, homeownership rate, log population, % of population urban, % Black, % White, % Hispanic), deposit market concentration (deposit HHI), and bank controls (log assets), ROA, and equity capital ratio, log branch deposits. Standard errors are clustered by state and reported in parentheses.. *, ** and *** indicate signficance at the 1%, 5%, and 10% levels.

Table 3. Sample Statistics on Returned Check Rates at Check Processing Centers

	Limit States (N = 120)		Other States (N =780)	
	Mean	Std. Dev.	Mean	Std.Dev.
Checks in millions				
Returned	1.21	0.60	1.23	0.80
Processed	91.54	32.40	104.60	51.94
Checks in $100 millions				
Returned	0.93	0.78	1.03	0.91
Processed	70.65	46.99	93.12	74.94
Return rate (%)				
per #	1.34	0.56	1.16	0.52
per $	1.28	0.54	1.11	0.54

Note: This table summarizes quarterly check activity at 46 check processing center (CPCs) operated by the Federal Reserve between 1999:q1 and 2003:q4. Six CPCs were located in three states with overdraft fee caps, two in each. Alaska did not have a CPC. Processed checks include those that cleared or were returned unpaid, most commonly due to insuffucient funds. Checks that overdraw the account balance but are covered with ovedraft credit are cleared rather than returned. The return rate is the ratio of checks returned to checks processed.

Table 4. How do Returned Checks Rates Change After Overdraft Fee Caps are Relaxed?

	(1) *log(# processed)*	(2) *log($ processed)*	(3) *% Returned (#)*	(4) *% Returned ($)*
Limit X Post	0.05**	0.07	-0.15***	-0.22***
	(0.02)	(0.05)	(0.04)	(0.07)
R^2	0.98	0.98	0.71	0.73
Observations	900	900	900	900
Year X Quarter FE	Yes	Yes	Yes	Yes
CPC Fixed Effect	Yes	Yes	Yes	Yes
County controls	Yes	Yes	Yes	Yes

Note: This table reports regression coefficients showing how checks processed and returned change after national banks were exempted from state fee caps. *Limit* equals 1 if state limited overdraft fees and zero otherwise. *Post* equals 1 in 2001:q3 and after, and 0 before. The model is estimated over 1999:q1 to 2003:q4 with Federal Reserve Check Processing Center (CPC) data. Each specification includes time and CPC fixed effects as well as county controls (unemployment rate, log median income, homeownership rate, log population, % of population urban, % Black, % White, % Hispanic). Standard errors are clustered by state and reported in parentheses. *, ** and *** indicate signficance at the 1%, 5%, and 10% levels.

Table 5. Sample Statistics on Maintenance Fees and Minimum Balances

	N	Mean	Std. Dev.	Median
Interest Checking				
Monthly Fee	6,576	9.74	4.20	9.84
Minimum required balance	2,609	1117.09	1212.79	721.64
Non-interest Checking				
Monthly Fee	6,463	4.13	3.93	4.81
Minimum required balance	3,118	541.67	207.74	500.00
Fee Limit State	6,600	0.14	0.35	0.00
Post	6,600	0.58	0.49	1.00
National Bank	6,600	0.56	0.50	1.00
HHI	6,600	2139.18	1165.93	1860.07

Note: This table reports summary statistics for account maintenance fees and required minimum balances using semiannual, branch-level data from Ratewatch between 2000 and 2003. Maintenance fees are monthly fees charged when account balances fall below a minimum set by the bank. Pricing is reported separately for accounts that pay interest and those that do not. Both fees and required minimum balances are in 2001 dollars.

Table 6. How Do Maintenance Fees and Minimum Balances Change After Overdraft Fee Caps Are Relaxed?

	Interest Accounts		Non-Interest Accounts	
	(1)	*(2)*	*(3)*	*(4)*
	log(1+Fee)	*log(MinToAvoid)*	*log(1+Fee)*	*log(MinToAvoid)*
National x Limit x Post	0.00	-0.64***	-0.20	-0.36***
	(0.15)	(0.23)	(0.50)	(0.11)
National x Limit	-0.33***	-0.07	0.10	0.18*
	(0.07)	(0.06)	(0.26)	(0.10)
National x Post	-0.15	0.38***	-0.38	0.06
	(0.08)	(0.17)	(0.24)	(0.08)
Limit x Post	--	--	--	--
National	0.27***	-0.10	0.27	-0.08
	(0.06)	(0.06)	(0.21)	(0.09)
Observations	6,575	2,598	6,463	3,103
Adjusted R-squared	0.56	0.61	0.45	0.56
State-by-time fixed effects?	Yes	Yes	Yes	Yes
County, bank and branch controls	Yes	Yes	Yes	Yes

Note: This table reports regression coefficient estimates showing the relative change in monthly fees and required minimum balances at national banks after they were exempted from state-level fee caps. *National* equals 1 for national bank branches and 0 otherwise. *Limit* equals 1 for branches located in states that capped overdraft fees at the time of the OCC's preemption and 0 otherwise. *Post* equals 1 in 2001h2 and thereafter and 0 otherwise. The regression is estimated using branch level data over 2000-2003 (1999 data are unavailable) and includes county controls (unemployment rate, log median income, homeownership rate, log population, % of population urban, % Black, % White, % Hispanic), deposit market concentration (deposit HHI), and bank controls (log assets, ROA, and equity capital ratio, log branch deposits). Standard errors are clustered by state and reported in parentheses. *, ** and *** indicate signficance at the 1%, 5%, and 10% levels.

Table 7. Sample Statistics on Household Checking Account Ownership

	Income in Bottom Quintile		Full Sample	
	Mean	Std. Dev.	Mean	Std. Dev.
Income and Finances				
Checking account? (%)	43.8	49.6	66.0	47.4
Income ($ thousands)	8.9	7.9	51.9	51.6
Net worth ($ thousands)	82.6	1,081.4	171.8	1,169.2
Race/Ethnicity (%)				
White	65.4	47.6	74.6	43.6
Black	20.2	40.1	12.2	32.8
Hispanic	10.4	30.5	8.9	28.5
Asian	2.6	15.9	3.2	17.7
Other	1.4	11.6	1.1	10.2
Education (%)				
Less than HS diploma	33.4	47.2	15.5	36.2
HS diploma	33.1	47.0	28.9	45.3
Some college	21.5	41.1	26.1	43.9
College degree	9.3	29.0	20.2	40.2
Graduate degree	2.8	16.4	9.3	29.0
Age	54.8	20.2	49.2	16.9
Bank deregulation index	2.0	1.3	2.0	1.3

Note: This table reports summary statistics for households in the Survey of Income and Program Participation between 1999 and 2003. The full sample includes 106,408 tri-annual observations on 63,640 households and the low-income subsample (bottom income quintile) includes 20,740 observations on 14,903 households. Checking account ownership is an indicator for whether anyone in the household has a joint or individual checking account. Income and net worth are measured at the household level, while race and ethnicity, education and age are measured for the household head. We also include the bank deregulation index for the household's state of residence following the measurement approach of Rice and Strahan (2010). The index varies at the state level, from 0 when interstate branching is unlimited to 4 when interstate branching is most restricted.

Table 8. Low-income Checking Account Ownership After Fee Caps Are Relaxed

	Dependent Variable: *Checking Account*			
Limit x Post	5.2**	5.5**	5.0***	4.8***
	(2.1)	(2.5)	(1.5)	(1.7)
Limit	-0.6			
	(3.7)			
Post	-2.5**			
	(1.0)			
Income ($ thousands)			0.3**	0.3**
			(0.1)	(0.1)
Net worth ($ millions)			0.8	0.8
			(0.5)	(0.5)
Age			0.4***	0.4***
			(0.0)	(0.0)
Black			-22.9***	-22.9***
			(1.2)	(1.2)
Hispanic			-18.3***	-18.3***
			(1.2)	(1.2)
Asian			-4.4**	-4.4**
			(2.0)	(2.0)
No HS diploma			-34.1***	-34.1***
			(3.1)	(3.1)
HS diploma			-23.1***	-23.1***
			(2.7)	(2.7)
Some college			-15.1***	-15.1***
			(2.7)	(2.7)
College degree			-4.9**	-4.9**
			(2.3)	(2.3)
Banking deregulation index				1.3
				(1.9)
N	20,746	20,746	20,740	20,740
R^2	0.00	0.03	0.16	0.16
Year-month and state FE?	N	Y	Y	Y

Note: This table reports coefficient estimates from regressing an indicator of checking account ownership on an indicator for whether the household's state of residence restricted overdraft fees (*Limit*), an indicator for whether the interview occurred after the OCC's 2001 exemption ruling (*Post*), their interaction and control variables. The sample is composed of SIPP households in the bottom income quintile interviewed between 1999 and 2003. The control variables include household annualized income and net worth, the head of household's age, indicators for the head of household's race and educational attainment, and the Strahan and Rice (2010) state-level banking deregulation index. The final three specifications include state and year-by-month fixed effects. We estimate the model using ordinary least squares and report standard errors, clustered by state, in parentheses. *, ** and *** indicate signficance at the 1%,5%, and 10% levels.

Table 9. Change in Account Ownership after Fee Caps are Relaxed, by Income

| | Dependent Variable: Checking Account | | | | | |
| | Income quintile: | | | | | |
	1st	2nd	3rd	4th	5th	Full sample
Limit x Post	4.8***	-1.5	2.4	1.9	-0.8	0.8
	(1.7)	(2.4)	(4.3)	(2.5)	(1.4)	(2.4)
Limit x Post x 1st Income Quintile						4.0***
						(1.4)
N	20,740	20,560	20,451	21,381	23,251	106,383
R^2	0.16	0.13	0.08	0.06	0.05	0.16
Year-month and state FE?	Y	Y	Y	Y	Y	Y
Household and state controls?	Y	Y	Y	Y	Y	Y

Note: This table reports coefficient estimates from regressing an indicator of checking account ownership on an indicator for whether the household's state of residence restricted overdraft fees (*Limit*), an indicator for whether the interview occurred after the OCC's 2001 exemption ruling (*Post*), their interaction and control variables. The overall sample is composed of SIPP households interviewed between 1999 and 2003. The first five specifications are estimated on sub-samples varying from the lowest income quintile to the highest income quintile, as indicated at the top of the table. The final specification is estimated in the full sample and includes an interaction of *Limit* x *Post* with an indicator for whether the household is in the bottom income quintile. The control variables include household annualized income and net worth, the head of household's age, indicators for the head of household's race and educational attainment, and the Strahan and Rice (2010) state-level banking deregulation index. The final three specifications include state and year-by-month fixed effects. We estimate the model using ordinary least squares and report standard errors, clustered by state, in parentheses. *, ** and *** indicate signficance at the 1%, 5%, and 10% levels.

Table 10. Does Checking Account Churn Increase after Fee Ceilings are Relaxed?

| | Dependent Variable: | |
	Gained Checking Account	Lost Checking Account
Limit x Post	2.1***	-1.5*
	(0.7)	(0.8)
N	12,427	12,427
R^2	0.01	0.01
Year-month and state FE?	Y	Y
Household and state controls?	Y	Y

Note: This table reports coefficient estimates from regressing an indicator of gaining (losing) a checking account on an indicator for whether the household's state of residence restricted overdraft fees (*Limit*), an indicator for whether the interview occurred after the OCC's 2001 exemption ruling (*Post*), their interaction and control variables. A household gains a checking account if it has an account in the current period but did not have an account in the prior interview. A household loses a checking account if it does not have an account in the current period but did have an account in the prior interview. The sample is composed of SIPP households in the bottom income quintile interviewed between 1999 and 2003. The control variables include household annualized income and net worth, the head of household's age, indicators for the head of household's race and educational attainment, and the Strahan and Rice (2010) state-level banking deregulation index. All specifications include state and year-by-month fixed effects. We estimate the model using ordinary least squares and report standard errors, clustered by state, in parentheses. *, ** and *** indicate signficance at the 1%, 5%, and 10% levels.

Table 11. Summary Statistics on Household Credit and Zip-Code Characteristics

	Lowest Income Quintile			Full Sample		
	Mean	*St.Dev.*	*N*	*Mean*	*St.Dev.*	*N*
Credit Outcomes						
Credit Score	649.37	110.19	5,431,522	686.10	106.33	30,103,467
Total Debt ($1000s)	16.61	36.07	5,784,842	31.86	60.26	31,347,021
Delinquency Rate	0.15	0.33	4,479,070	0.08	0.26	26,115,501
# Credit Inquiries	1.93	2.70	5,580,826	1.75	2.48	30,531,430
# Accounts Open	5.49	5.12	5,580,826	7.08	5.59	30,531,430
Controls						
Median Income ($1000s)	26.20	4.76	5,784,842	45.65	17.38	31,347,021
Age	48.22	16.95	5,784,842	48.42	16.50	31,347,021
% Hispanic	0.19	0.29	5,782,578	0.11	0.18	31,344,757
% Black	0.24	0.28	5,782,578	0.12	0.19	31,344,757
% Asian	0.02	0.04	5,782,578	0.03	0.07	31,344,757
% some high school	0.40	0.10	5,778,940	0.28	0.11	31,341,119
% high school degree	0.27	0.06	5,778,940	0.25	0.07	31,341,119
% some college	0.20	0.05	5,778,940	0.24	0.06	31,341,119
% college degree	0.08	0.05	5,778,940	0.14	0.08	31,341,119

Note: Credit outcomes and age statistics are over 1999q1-2003q4 using a constant panel from the Federal Reserve Bank of New York's Equifax Consumer Credit Panel. All other variables are from the 2000 U.S. Census and are at the zip-code level. The lowest income quintile subsample comprises households living in zip codes with median income in the bottom quintile of median income across all zip codes. # Credit Inquiries is the number of lender inquiries made in the past year to Equifax about borrowers' or applicants' credit condition. Delinquency rate equals credit balances past due by 90 days divided by total credit balances.

Table 12. How Do Household Credit Conditions Change after the Preemption?

	(1)	(2)	(3)	(4)	(5)
	Log of	Credit	Open Credit	Delinquency	Credit
	Total Debt	Inquiries (#)	Accounts (#)	Rate (%)	Score
Low x Limit x Post	0.02	-0.00	-0.02	-0.00	0.29
	(0.01)	(0.05)	(0.06)	(0.00)	(0.38)
Low x Limit	-0.02	0.03	-0.02	-0.00	-0.87*
	(0.02)	(0.05)	(0.05)	(0.00)	(0.48)
Low x Post	0.03***	-0.10***	-0.06***	0.02***	-2.42***
	(0.01)	(0.01)	(0.02)	(0.00)	(0.22)
Low	-0.04***	0.02***	0.01	-0.01***	1.41***
	(0.01)	(0.01)	(0.02)	(0.00)	(0.20)
Limit x Post					
Limit					
Post					
N	26,092,224	30,520,875	26,092,224	26,092,224	30,092,455
R^2	0.73	0.56	0.65	0.65	0.87
Household FE?	Y	Y	Y	Y	Y
State-by-date FE?	Y	Y	Y	Y	Y
Age & zip code controls?	Y	Y	Y	Y	Y

Note: This table reports regression coefficient estimates showing the relative change in credit conditions for households in low-income (bottom quintile) zip codes in states that limited overdraft fees after national banks were exempted from those limits. State-clustered standard errors are reported in parenthesis. Low equals 1 for households in low-income zip codes and 0 for others. Limit equals 1 for states that capped overdraft fees at the time of the OCC's preemption and 0 otherwise. Post equals 1 in 2001q3 and thereafter and 0 before. The regression is estimated using a constant panel of quarterly household data from 1999q1-2003q4. The controls include household age and, at the zip-code level, median income, ethnicity, and education (see Table 11 for details). *, ** and *** indicate signficance at the 1%, 5%, and 10% levels.