Who Pays the Price? Overdraft Fee Ceilings and the Unbanked*

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Abstract

Would a cap on overdraft fees increase financial inclusion? Studying an event in which state-level caps were relaxed for national banks, we find that caps constrain the supply of overdraft credit and deposit accounts. Absent caps, banks charge customers more for overdraft but bounce fewer checks and reduce required minimum deposits. Low-income households are both more likely to open accounts and less likely to lose them, suggesting they prefer being banked despite higher overdraft fees. Overdraft fee caps thus hamper, rather than foster, financial inclusion.

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 dearly (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. Banks charge a fee, about $30 these days, each time a customer overdraws their account balance. Overdraft fees totaled nearly $12 billion in 2019 and constituted the majority of deposit account fees (CFPB, 2021). The unbanked can attest; one-third of households without a bank account cite high fees as a reason (FDIC, 2020). Millions of depositors "bounce out" of the banking system each year when banks close their account due to excessive overdrafts (Campbell, Martinez-Jerez and Tufano, 2012). Two bills currently before Congress – The Overdraft Protection Act of 2021 and The Stop Overdraft Profiteering Act of 2021 – would limit or prohibit overdraft fees. As one sponsor observed: "overdraft fees … push low-income consumers away from banking products altogether."[1]

Our paper considers whether an overdraft fee cap might itself be exclusionary. Overdrafts are *de facto* credit and fee caps, like other usury limits, may cause rationing of

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[1] See "An Analysis of Bank Overdraft Fees" (Office of Senator Cory A. Booker, 2018).

credit to riskier depositors. Accounts may therefore become less valuable to depositors who benefit from the liquidity, credit provision and protection from penalty fees when they bounce payments.[2] 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 these hypotheses 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, the exemption was not initiated by states themselves, reducing concerns that the policy 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, which we capture within a triple-differences regression model. The model measures the differences in overdraft and deposit supply that emerge at national banks relative to state banks after being exempted from state 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.

Our four main findings support the hypothesis that overdraft fee caps inhibit financial inclusion. 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

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[2] 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. Section II provides detailed background on overdraft fees.

[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.

by 10% and their provision of overdraft credit by 16%. These findings confirm the basic rationing prediction. Second, national banks expanded deposit supply by lowering minimum balance requirements 25% 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. Third, the rate at which checks were returned unpaid declined by 15% in affected states. Since a check is returned when overdraft credit is denied, the decline in returned checks provides additional evidence of increased overdraft credit provision.[4] It also implies savings to depositors on fees associated with bouncing checks. 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.

Our findings reveal a policy trade-off not previously considered in the debate about overdrafts: any benefit of a fee limit may 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., 2017; Caflisch et al., 2018; Ru and Schoar, 2020). New depositors of that type may find themselves unpleasantly surprised by their overdraft charges, prompting them to close their account or have it closed by their banks, leaving them worse off than before.

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[4] The primary reason checks are returned (bounced) is that the check writer's account has insufficient funds and their bank declined to cover it by extending overdraft credit.

We investigate this possibility by studying the dynamics of account ownership. Using repeated observations of households over time, we find that low-income households are both more likely to gain accounts *and* less likely to lose them. The rise in account ownership persists for several years after preemption, suggesting the newly banked households are better off *ex post* – after learning about the costs and benefits of their account – and not just in expectation.[5]

As the first study to show how a usury limit can constrain deposit 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 consistent but differ in focusing on a usury limit pertinent to low-income depositors. Di Maggio, Ma and Williams (2020) find that banks' practice of processing depositors' largest transactions first increases overdraft charges and reliance on payday lenders. Our paper

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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 (Forthcoming) examine how account features such as commitment savings, group savings, electronic debit access and lottery interest payouts affect savings rates.

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]

For all the controversy, overdraft credit is understudied, so the next section provides background. Sections III elaborates on the preemption and our hypothesis. Section IV-VII present our results. Section VIII discusses the welfare and policy implications of our study.

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" (a trade name) programs to banks and credit unions as a revenue source and a benefit to depositors.

Depositors can overdraw the account – or attempt to – at four transaction nodes: ATM, point-of-sale (POS), checks, and recurring debits (Figure 1). The latter include monthly direct payments from depositors' accounts to landlords, creditors, utilities, and other payees. In all cases, if the bank allows an overdraft, they charge depositors their

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[7] Both overdraft bills before Congress 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).

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 insufficient funds (NSF) equivalent to their overdraft fee.[9] The payee may also charge the depositor an NSF fee that may rival the banks. Having the overdraft covered instead of "bounced" spares depositors that second NSF 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*.

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).

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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 can argue that overdraft is a service to depositors and that they are not paid incrementally for credit provision.

[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.

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 each.

III. Preemption and Predictions

The dual chartering system in the U.S. – where banks can be chartered at the national or state level – provides the 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 limits in Alaska, Illinois, Missouri, and Tennessee.[11] In 2001, the OCC revised and clarified its 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

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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 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.

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.

Our first two predictions are about how national banks adjust their deposit account offerings following their exemption from fee caps. Economic analysis of price controls (Rockoff, 2008), including the literature cited earlier on usury limits, predicts that removing price ceilings will expand supply and reduce rationing. Accordingly, our first hypothesis relates to overdraft credit supply:

> *H1: National banks raise their overdraft fees and expand their supply of overdraft credit when exempted from overdraft fee caps.*

Overdraft and deposit supply may be closely linked in banks' pricing strategies. In general 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 the add-on (overdraft). In models of bank pricing, minimum balance requirements are used along with overdraft fees to distinguish potential depositors with high or low overdraft risk (Allen, Saunders, and Udell, 1991; Udell, 1986). Applied to this context, these pricing models suggest banks will expand deposit supply – e.g. by reducing minimum balances or lowering account maintenance fees – when overdraft fee caps are relaxed:

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[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.

H2: National banks increase checking account supply when exempted from overdraft fee caps.

Our final two hypotheses focus on consumers. As a consequence of national banks' increased supply of overdraft credit, we expect fewer bounced (or returned) checks. While check processing data is not disaggregated by bank or bank type, it is plausible that an effect could be observed in aggregates as national banks hold roughly 50% of deposits in affected markets:

H3: Returned check rates decline in states where national banks are exempted from overdraft fee caps.

Lastly, we consider the effect on household account ownership. As noted earlier, high minimum balance requirements rank first among reasons households report going without a bank account (FDIC, 2020). If, consistent with *H2*, national banks expand the supply of checking accounts in affected states by lowering monthly maintenance fees or minimum balance requirements, this could be pivotal to some prospective depositors, especially low-income households. Expanded overdraft coverage could also increase demand for deposits by households that value the increased liquidity, credit and savings on merchant bounced payment fees.[13] We are unable identify supply and demand effects separately, however, so we look only at the reduced form change in account ownership:

H4: Households' checking account ownership increases in states where national banks are exempted from overdraft fee caps.

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[13] 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.

The next four sections investigate the foregoing hypotheses; we describe the data for each, the regression model, and present results.

IV. Overdraft Access after Preemption

We begin by testing our first hypothesis about banks' overdraft prices and credit supply. Our data 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 3,000 branch-year observations, including 107 national bank branches located in fee limit states. The mean overdraft fee was $21 ($31 in current $) in the full sample and $22 at national banks. Mean fees rose almost $1.50 (nearly ten percent) over the sample period, a significant increase. If a bank did not report an overdraft fee to Moebs but did report an NSF fee, we inferred that the banks did not allow overdrafts as a regular business practice.[14] The indicator *OD Offered* is defined accordingly (1 if both fees reported, 0 if only NSF reported). That outcome is summarized in the bottom panel.

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[14] Moebs confirmed this interpretation in correspondence with the authors. We exclude banks that reported neither fee. Our sample for this analysis increases to 3,197 observations because we include banks that did not report a fee for overdrafts.

Overdraft programs were 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-in-differences regression model:

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

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

$$\beta_6 Post_t + \alpha_s + \alpha_t + \Gamma \cdot Controls + \varepsilon_{ist,}$$

where the dependent variable is the OD fee charged by bank *i* located in state *s* at year *t* *(OD Fee)* or an indicator *(OD Offered)* equal to one if the bank offered overdraft credit and zero otherwise. *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 and year fixed effects, α_s and α_t, control for differences in the average level of fees across states and years, including the upward national trend in fees. 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.[15]

Table 2 reports the regression estimates and standard errors (clustered by state) in parentheses. For brevity, we report coefficient estimates only for the key 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 term, are positive and significant at the 1 percent level across all models. Model 2, with all controls, implies national banks in limit states increased fees by \$1.80 in relative terms after the exemption, or about ten percent relative to the mean before. This result suggests the fee cap was constraining, particularly as fees at other banks in fee limits states declined significantly post exemption. The results for columns (3) and (4) indicate that national banks were also more willing to offer overdraft credit post exemption. *OD Offered* increased by 0.16 post exemption in fee limit states, or 18 percent relative to the mean.

Figure 2 plots dynamic estimates of the triple difference for *OD fee* and *OD Offered*. Consistent with the (maintained) 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 but is significantly positive and large even at the end of the sample.

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[15] Branch deposit data are from the FDIC (Federal Deposit Insurance Corp) Summary of Deposits. Bank holding company data are from their regulatory filings with the Federal Reserve (Y-9C). County unemployment and median income are from the Bureau of Labor Statistics. County demographic data are from the Census American Community Survey.

V. Deposit Supply after Preemption

Our second hypothesis is that national banks subject to state overdraft limits increase their supply of checking accounts following the OCC exemption. To test this hypothesis, we use data from RateWatch on checking account maintenance fees and the minimum balance required to avoid them.[16] We observe both outcomes separately, at the branch level, for interest bearing accounts and non-interest checking accounts.

Table 3 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 $1,119 versus $4.13 and $542 for non-interest accounts. Our prior is that households at risk of going unbanked are more likely to select non-interest accounts. Roughly 15% of observations come from branches in fee-limit states while 57% 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 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 4 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 checking account. The negative point estimates are consistent with a decline in fees but are

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

very imprecisely estimated and not statistically significant. 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 28% to 83%, depending on the type of account. Based on average minimum balance requirements (shown in the previous table), this amounts to $928 (83% of $1,119) and $152 (28% of $542) less that customers need to keep in interest and non-interest checking accounts, respectively, in order to avoid a monthly fee. For non-interest checking accounts, the effect is only statistically significant at the 10% level because, as we show in the next analysis, it appears that minimum balances are modified at a slight lag to overdraft prices.

Figure 3 plots estimates of the 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 (40-50%) and statistically significantly lower by the beginning of 2002 (the second half-year period after preemption). They remain lower, in some cases even trending further down, for the remainder of the event window. The upper left panel shows that monthly fees on those accounts also tended downward and were significantly lower by the end of the sample period.

To summarize, we find that national banks charged more for overdrafts but were also more willing to allow them when fee caps were relaxed. We also find support for the

hypothesis that banks relieved from overdraft fee caps lower the cost of checking accounts on other dimensions, particularly minimum balance requirements.

IV. Returned Checks after Preemption

In the third part of our analysis, we analyze market-level data on returned checks. Our data are from the Federal Reserve (Fed), which operated 46 check processing (CPC) in 35 states continuously over our 1999-2003 sample period.[17] Six CPCs were located in the states with fee limits.[18] We observe the amount of checks processed (number and value) and the amount returned each quarter over that period.

Table 5 provides summary statistics. The average CPC cleared between 90 and 105 million checks worth $70 to $93 billion per quarter. About a million checks worth $100 million were returned per quarter. We define the "returned check rate" as the amount returned divided by the amount processed. Returned check rates appeared higher in states with fee limits.

We estimate the effect of the preemption on returned check rates with a difference-in-difference 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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[17] Clearing checks for depository institutions is a core role of the Fed in overseeing the U.S. payments system.
[18] Illinois (Chicago and Peoria); Missouri (Kansas City and St. Louis); Tennessee (Memphis and Nashville). Alaska did not have a CPC.

fixed effects control for the secular decline in check usage. National banks accounted for about half of deposits in limit states, so their increased willingness to cover overdrafts should plausibly register at the aggregate (CPC) level, so we predict lower returned check rates in affected states after the preemption: $\beta < 0$.[19]

Table 6 reports 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%, relatively.

Figure 4 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.

Given the dominance of debit transactions these days, why study checks? First, because recurring debit payments are returned due to insufficient funds just as checks are and the fees to consumers are similar (see Figure 1). Any effects found for checks in 2001 are therefore relevant to the recurring debits that may have replaced those checks in 2021. Second, the death of checks has been somewhat exaggerated; the average account holder still writes about 7 checks a month (Gerdes, Hamburg and Liu, 2016) and those with low income, our focus, write more than average (Greene et al. 2020).

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[19] 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.

Our results thus far confirm the conjectured spillovers from lifting fee caps: expanded overdraft and deposit supply and lower returned check rates. Next, we investigate the corresponding effect on bank account ownership.

V. Financial Inclusion After Preemption

Our fourth and final hypothesis is that bank account ownership increases when overdraft fee caps are relaxed. As context for this analysis, we note that the unbanked 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 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.

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.[20]

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 over this period that Celerier

and Matray (2019) found to increase account ownership.

We evaluate the effect of the OCC preemption of overdraft fee limits on checking

account ownership with a differences-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.

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.

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[20] 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.

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 limits states increased states 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.

We have found that more low-income households had accounts post-preemption, but a fundamental question remains: are they better off? Given behavioral concerns about shrouded overdraft costs and inattentive depositors, revealed preference as welfare guide is arguable. Indeed, once new depositors learn the truth about overdraft costs, they may prefer being unbanked and revert to that state.

We present two additional results to address this welfare ambiguity. We look first at churn – accounts gained and lost. Lost accounts, especially, may reveal depositor dissatisfaction. We infer if households gained or lost an account from the SIPP data by

whether they transitioned from "no account" to "have account" or vice-versa over a four-month interview period.

Table 10 shows difference-in-difference regressions of gained and lost accounts. Unsurprisingly (given earlier results), low-income households were more likely to gain accounts after preemption in affected states. More notable is that were also less likely to lose accounts. This goes against the premise that newly banked households closed or lost accounts once they realized overdraft costs.

Our second test looks at the persistence of account ownership. The idea is that over time, shrouded overdraft costs will eventually become clear even to inattentive depositors. If they eventually realize they were better off unbanked, the preemption effect on account ownership will 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, notably higher that the average of 4.8 percentage in Table 8.

To summarize, we find the federal preemption of state overdraft fee limits increased checking account ownership among low-income households. The increase reflected more households gaining accounts and fewer households losing them, whether voluntarily or otherwise. The increase was also persistent, suggesting to us that the newly included households preferred being banked to being unbanked.

VI.   Conclusion

After payday loans, overdraft credit is 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. No wonder then that many consumer groups and some lawmakers want to cap fees to rein in overdraft costs and promote financial inclusion.

Our study finds, on the contrary, 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.

The positive result in our paper is that expanding overdraft credit increases financial inclusion, suggesting that policies promoting competition and transparency might be a better path than fee caps. Banks are known to increase overdraft supply when competing against payday lenders (Melzer and Morgan, 2004), but intra-bank competition has not been studied. Recent developments 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 comers 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)

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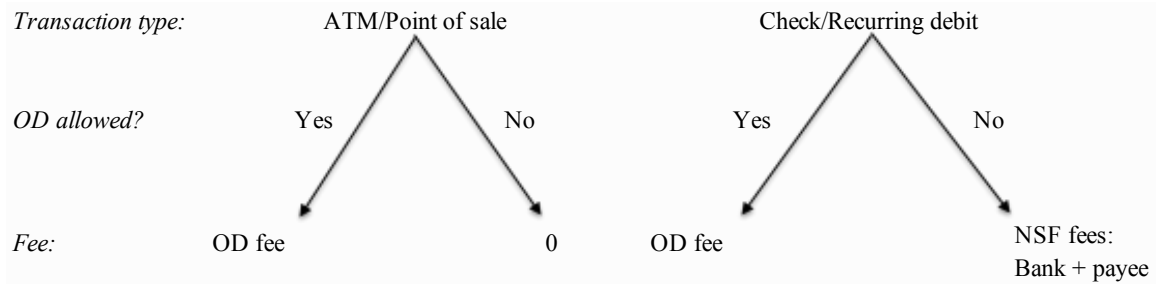
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Figure 1. Overdraft Fees Depend on Transaction Type and Bank Credit Provision

Transaction type:　　　　ATM/Point of sale　　　　　　　Check/Recurring debit

OD allowed?　　　Yes　　　　　No　　　　　Yes　　　　　No

Fee:　　　OD fee　　　　0　　　OD fee　　　NSF fees:
　　　　　　　　　　　　　　　　　　　　　　　　　　　Bank + payee

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. Triple-difference Coefficients: Overdraft Fees (top) and Overdraft Offered (bottom)

OD Fees

Note: Bands around point estimates are 95% confidence intervals

OD Offered

Note: Bands around point estimates are 95% confidence intervals
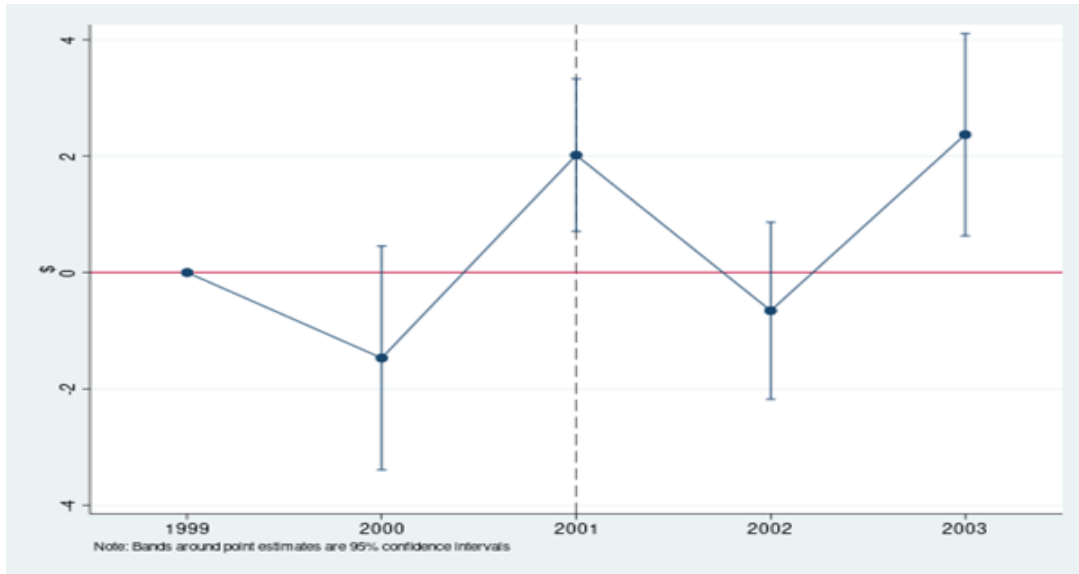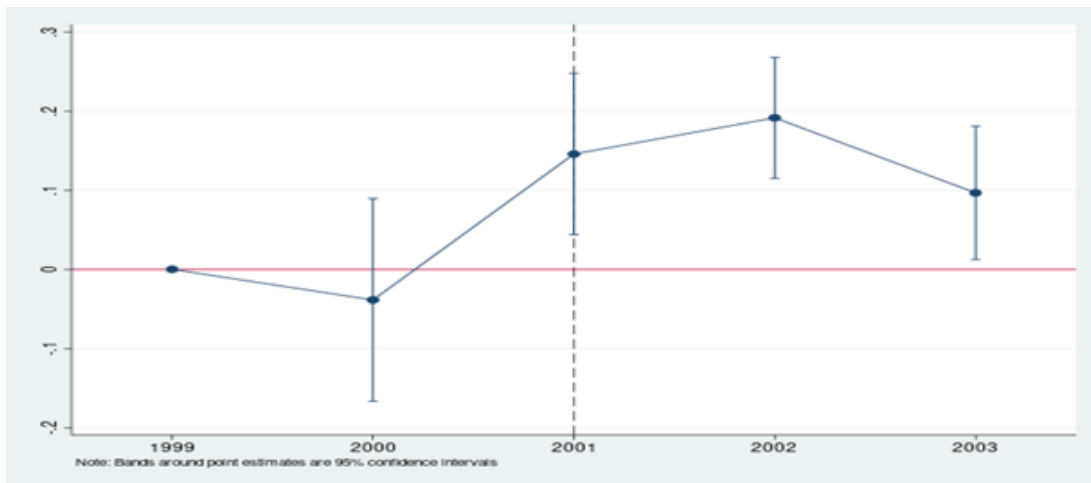
Note: Plotted are estimates of the coefficient on *National* x *Limit* x *Year* from Equation (1) (1999 excluded) and 95% confidence bands for the outcome indicated. The dashed line indicates when national banks were exempted from state fee caps by the OCC preemption.

Figure 3. Triple-difference Coefficients: Monthly Maintenance Fees and Minimum Balance Requirements

Interest Checking Accounts
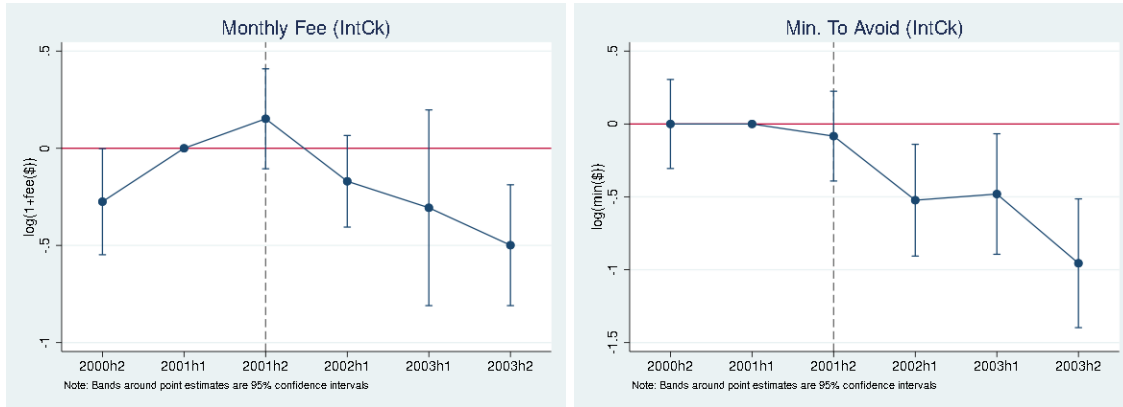
Non-interest Checking Accounts

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 4. Difference-in-Difference Coefficient Estimates: Returned Check Rates

Rate per number processed

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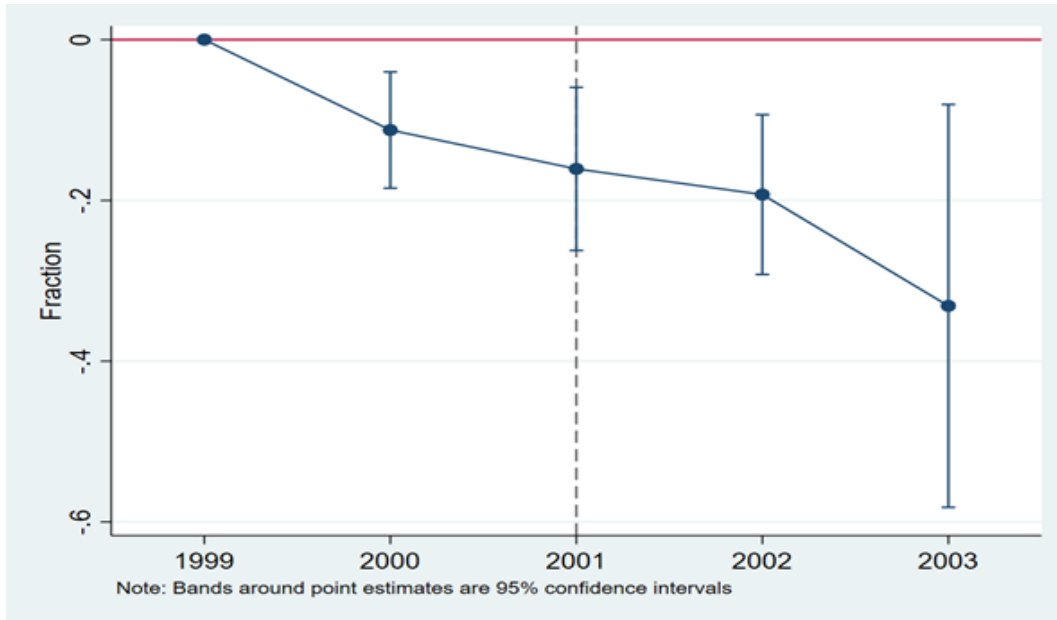
Rate per $ volume processed

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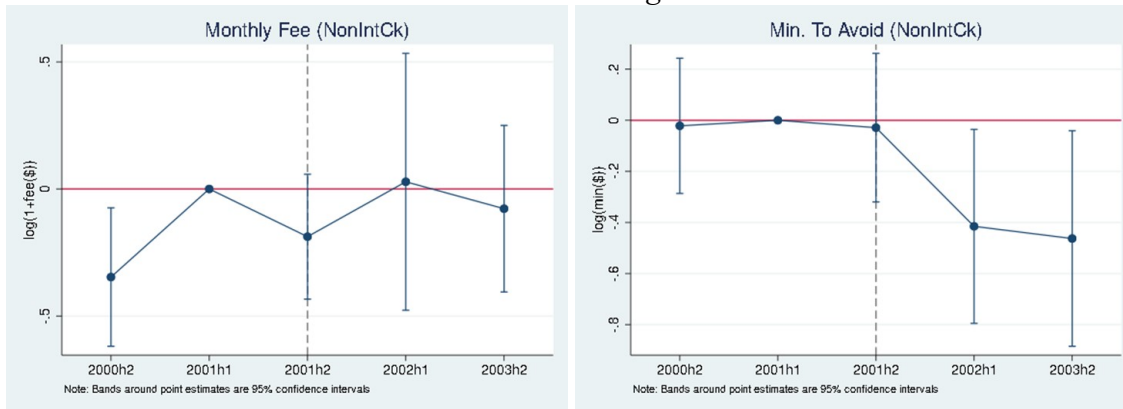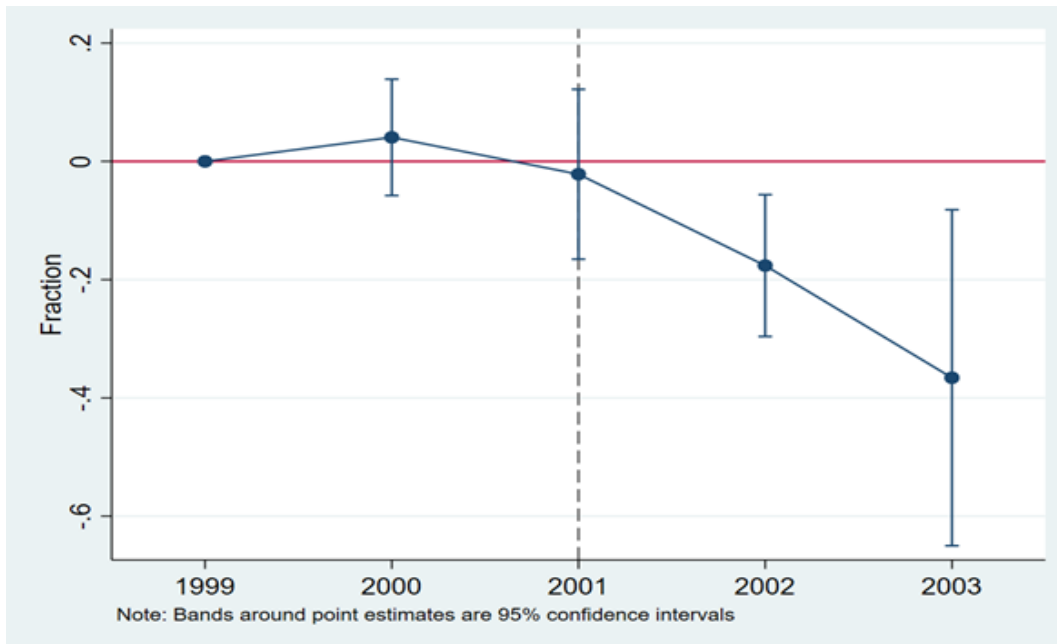
Note: Plotted are estimates of coefficients on *Limit* x *Year* from Equation (2) (excluding 1999) and 95% confidence bands for the outcome indicated atop each panel. The dashed line indicates when the OCC exempted national banks from state fee limits.

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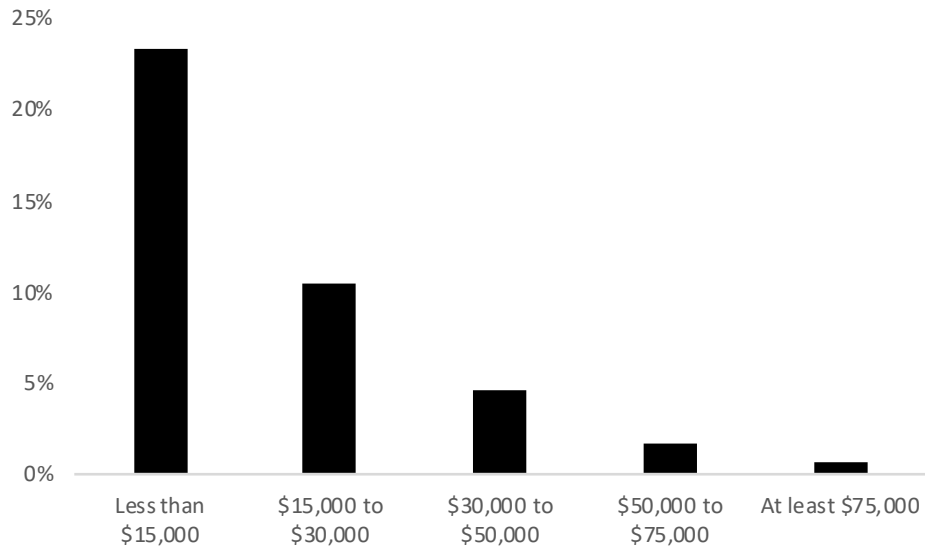
Note: Displayed above are the shares of unbanked households in each income group from the 2019 FDIC Survey of Household Use of Banking and Financial Services.

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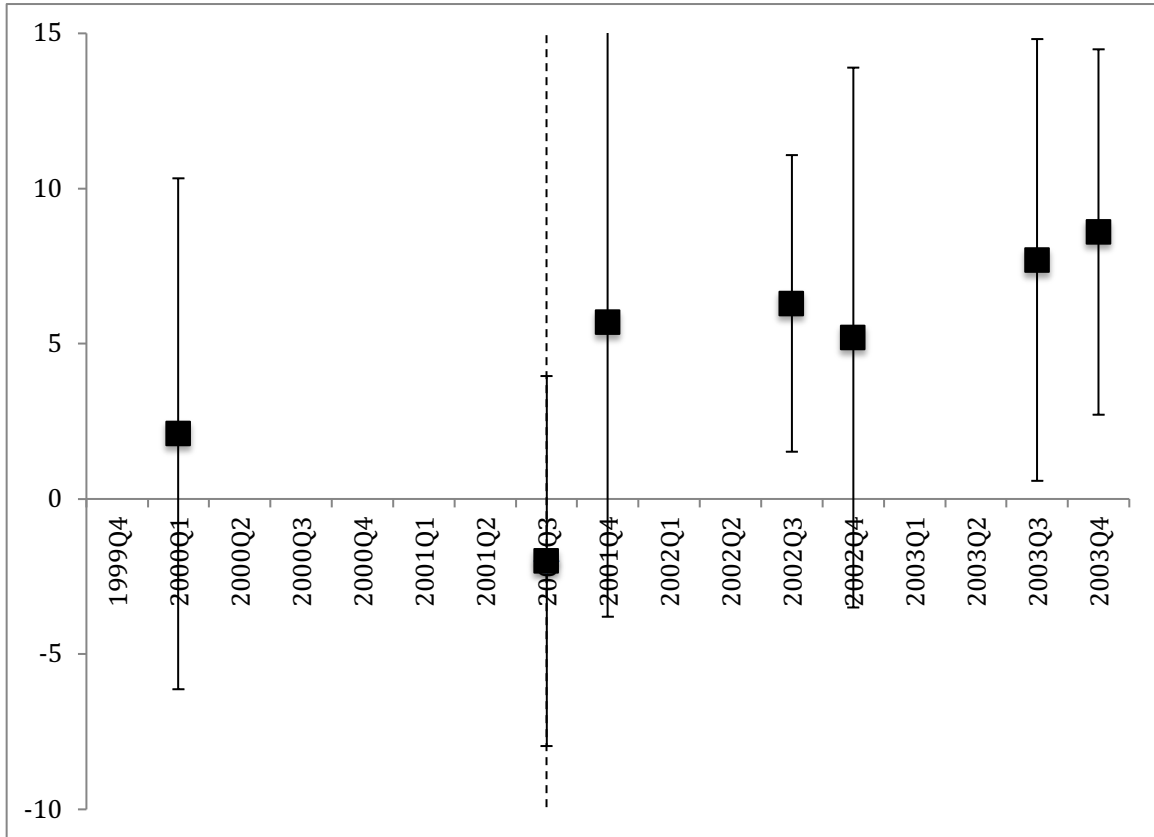
Note: We estimate the dynamic impact of state fee limits on low-income bank account ownership by interacting quarter dummies (excluding 1999:q4) with the indicator for fee-limit state. We plot the coefficient estimates and 95% confidence intervals above. The dashed line indicates the timing of the OCC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

Table 1. Sample Statistics on Overdraft (OD) Fees and Availability

	N	Mean	Std. Dev.
OD Fee			
All banks	2,936	21.19	5.97
National	844	22.31	5.61
Other	2,092	20.73	6.06
By period			
1999-2000	1,051	20.30	6.39
2001-2003	1,885	21.68	5.67
OD Offered			
All banks	3,197	0.91	0.28
National	2,270	0.91	0.29
Other	927	0.92	0.28
By period			
1999-2000	1,133	0.92	0.28
2001-2003	2,064	0.91	0.28

Note: This table reports sample statistics calculated over 1999-2003 using annual, branch level survey data from Moebs. *OD Fee* is in 2001 dollars. *OD Offered* indicates if the branch provides overdraft credit for a fee. We break out the statistics by treatment (the OCC exemption from state fee caps applied to national banks) and period (pre- and post-exemption).

Table 2. How Do Overdraft Fees and Supply Change After Overdraft Fee Caps Are Relaxed?

	(1) OD Fee	(2) OD Fee	(3) OD Offered	(4 OD Offered
National X Limit X Post	2.07***	1.80***	0.16***	0.16***
	(0.59)	(0.45)	(0.03)	(0.03)
National X Limit	-0.92	-0.13	-0.13***	-0.15***
	(0.63)	(0.48)	(0.02)	(0.02)
National X Post	-0.91**	-0.01	-0.04	-0.02
	(0.43)	(0.37)	(0.03)	(0.03)
Limit X Post	-1.85***	-1.06***	-0.05**	-0.05*
	(0.38)	(0.39)	(0.03)	(0.03)
National Bank	2.14***	0.55*	0.02	0.02
	(0.5)	(0.28)	(0.02)	(0.02)
Limit	-0.12		0.04**	
	(0.93)		(0.02)	
Post	1.81***		0.01	
	(0.36)		(0.02)	
Observations	2,936	2,914	3,197	3,174
R-Squared	0.033	0.477	0.003	0.061
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 supply at national banks after they were exempted from state-level fee caps. OD Fee is measured in 2001 dollars. *OD offered* indicates if the bank branch reported providing overdraft credit for a fee, and zero otherwise. *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, 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 Maintenance Fees and Minimum Balances

	N	Mean	Std. Dev.	Median
Interest Checking				
Monthly Fee	6,587	9.74	4.2	9.84
Minimum required balance	2,614	1119.00	1216.00	721.00
Non-interest Checking				
Monthly Fee	6,471	4.13	3.93	4.81
Minimum required balance	3,122	541.63	207.61	500.00
Fee Limit State	6,719	0.14	0.35	0
Post	6,719	0.58	0.49	1
National Bank	6,719	0.57	0.5	1
HHI	6,719	2135.59	1162.59	1857.72

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 4. 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	-0.03	-0.83***	-0.17	-0.28*
	(0.16)	(0.22)	(0.47)	(0.15)
National x Limit	-0.31***	0.09	0.08	0.20
	(0.07)	(0.1)	(0.24)	(0.13)
National x Post	-0.08	0.57***	-0.35	0.03
	(0.09)	(0.15)	(0.21)	(0.08)
Limit x Post	-0.06	0	-0.16	-0.12
	(0.11)	(0.12)	(0.40)	(0.11)
National	0.26***	-0.24**	0.25	-0.11
	(0.06)	(0.1)	(0.19)	(0.09)
Observations	6586	2612	6470	3119
Adjusted R-squared	0.50	0.58	0.35	0.50
State and half-year 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 5. 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 6. 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 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

Notes: 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

Notes: 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

Notes: 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

Notes: 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.