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Abstract

Nearly 25 percent of low-income households in the United States are unbanked. High fees are often cited as a reason they remain unbanked, leading some to believe that limiting bank fees would improve financial inclusion. We use the federal preemption of state limits on overdraft fees to study the impact of fee ceilings on low-income households. After preemption, national banks raise overdraft fees relative to state-chartered banks in affected states. However, banks in affected states also provide more overdraft credit and bounce a smaller share of checks following preemption. The share of low-income households that are unbanked decreases, consistent with price ceilings causing the rationing of both overdraft and banking services.

Key words: banks, credit, overdraft, unbanked, inclusion, checks, price ceilings, usury

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This paper presents preliminary findings and is being distributed to economists and other interested readers solely to stimulate discussion and elicit comments. The views expressed in this paper are those of the author(s) and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System. Any errors or omissions are the responsibility of the author(s).

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I. Introduction

Nearly 25% percent of low-income households in the U.S. are unbanked, leaving them to obtain payment services from a variety of alternative financial service or "fringe banking" providers at which they pay dearly (Fellowes and Mbanta, 2009). 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 may also impede wealth accumulation and financial security (Bord, 2018; Celerier and Matray, 2019).

In light of these forgone benefits, it is noteworthy and concerning that so many low-income households go unbanked. What barriers prevent their financial inclusion? One prominent view is that costly overdrafts are the culprit. Depositors incur overdrafts when they write a check or make a debit card purchase that exceeds their account balance. When faced with such transactions, the depositor's bank can either fulfill the payment and extend credit to its depositor or reject the payment due to insufficient funds (NSF). In either case the bank charges a fee of up to $35 per overdraft event. In 2015 banks collected nearly $12 billion in overdraft and bounced check fees, constituting nearly two-thirds of their deposit account fees (CFPB, 2016). Federal legislators' concerns about punitive fees, opaque overdraft protocols and the targeting of financially vulnerable households have prompted the introduction of bills in both the House (The Overdraft Protection Act) and Senate (The Stop Overdraft Profiteering Act) to limit overdraft charges. As one sponsoring Senator

observed: "overdraft fees … push low-income consumers away from banking products altogether."[1]

Would a policy of limiting overdraft charges promote financial inclusion? Those endorsing overdraft limits argue that overdraft charges and protocols increase the share of unbanked both by dissuading the unbanked from opening new accounts and by causing involuntary account closures. On the surface, these views have merit. Nearly one-third of unbanked households cite fees that are too high as a reason for being unbanked (FDIC, 2019). Involuntary account closures by banks are also quite common and the typical cause is excessive overdrafts (Campbell, Martinez-Jerez and Tufano, 2012).

Research by economists on price ceilings and usury limits supports the opposite view, namely that overdraft restrictions would impede financial inclusion. Canonical economic models predict that price ceilings cause rationing, or a reduction in supply of the good or service subject to a price ceiling. Empirical studies of price ceilings on credit transactions, or usury limits, have shown that risky borrowers are more likely to be turned down for credit when interest rates are capped (Greer, 1975; Villegas, 1982; Rigbi, 2013; Nelson, 2020). Applied to this context, the models' predictions are that fee restrictions will cause banks to reduce the supply of overdraft credit and, potentially, the supply of checking accounts as well. Low-income individuals especially may face rationing because they overdraw more frequently. Under this view, overdraft supply restrictions will worsen, rather than improve, low-income households' access to banking services.

We take up these questions and provide the first empirical analysis of how overdraft fee restrictions affect the pricing and supply of banking services, including bank account

[1] Office of Senator Cory A. Booker, 2018).

ownership. To that end, we study a "natural experiment" in which state-imposed overdraft fee limits were relaxed for nationally chartered banks by their Federal regulator in 2001. Our research design follows that of Di Maggio and Kermani (2017) and Di Maggio, Kermani and Korgaonkar (2019), which study federal preemption of state anti-predatory lending laws. The overdraft preemption has several appealing features for our purposes. First, the relaxation of fee limits did not apply to all institutions and households uniformly. Because the "treatment" varied across institutions within a state, we are able to credibly establish the counterfactual of how deposit account offerings would have changed if the limits had remained. Second, the preemption event was not initiated by states themselves, reducing concerns about policy endogeneity, whereby changes in the overdraft market are viewed as the cause of the policy change rather than the effect. Third, national banks had roughly 50% deposit market share in the affected states, so it is plausible that the fee relaxation mattered for many households in obtaining and maintaining deposit accounts.

We uncover three key findings consistent with the hypothesis that overdraft fee caps constrained access to overdraft credit and bank accounts for low-income households. First, using branch-level overdraft survey data, we show that national banks raised their overdraft fees following the preemption but also were more willing to cover overdrafts. National banks in states with fee limits raised their overdraft fees by $2, or roughly 10%, relative to state-chartered banks following the preemption ruling. In isolation, that implies a cost to customers, but affected banks also expanded overdraft credit provision. As of the early 2000s, roughly 10% of banks still maintained a policy of "bouncing," or refusing to pay, overdraft transactions rather than paying them on customers' behalf and thereby

extending credit. After the preemption ruling the share of national banks that refused to pay customer overdrafts fell considerably.

Our second key finding is that returned check rates (per checks processed) at Federal Reserve check processing centers decline by 10% following preemption in states with overdraft fee limits relative to states without limits. The primary reason checks are returned ("bounced") is that the check writer's account has insufficient funds (NSF) and their bank declined to cover it i.e. extend overdraft credit. The decline in returned checks is therefore consistent with increased supply of overdraft credit by national banks in fee limiting states. Fewer returned checks also imply a potentially large savings to depositors in NSF fees they might have owed to check payees.

Third, to complete the picture, we use household survey data from the U.S. Census Bureau to evaluate the impact of overdraft restrictions on bank account ownership, or financial inclusion. Because excessive (unpaid) overdrafts are a leading cause of being unbanked, our prediction is that increased overdraft coverage should be associated with increased financial inclusion. Consistent with that prediction, we find that checking account ownership by low-income households (bottom quintile) rose by 4 percentage points in fee-limiting states relative to non-limiting states following the preemption ruling. This increase corresponds to a 10% increase in the probability that a low-income household has a bank account. By contrast, bank account ownership by higher income households does not change after preemption, implying the rationing of overdraft credit under fee caps affects only low-income households.

An important question is whether gaining access to a checking account (potentially with overdraft privileges) in exchange for higher overdraft fees is welfare-increasing for

newly banked households. In a classical, revealed preference framework, the answer would seem unambiguous: yes. However, overdraft credit may be a "shrouded attribute" of deposit services (Gabaix and Laibson, 2006), an add-on whose price and protocols are unobservable to consumers and along which banks may have little incentive to compete in price and quality. Recent empirical findings support this view of overdraft credit, under which consumers are inattentive (Stango and Zinman, 2014) and uninformed about prices (Alan et al., 2017), and that banks use opaque overdraft processing rules that extract surplus to the detriment of low-income depositors (Di Maggio, Ma and Williams, 2020). Under that behavioral model, unsuspecting households may sign up for a new account but find themselves unpleasantly surprised by the quantity and cost of overdrafts, leading them to close or lose the account, possibly worse off than before.

We address this important consideration by studying the persistence of the rise in bank account ownership following preemption. Though overdraft fees may be hidden at the time of account opening, they become unshrouded with experience. We show that not only are low-income households more likely to obtain accounts, they are also less likely to lose accounts following preemption. The increase in account ownership therefore persists and, if anything, rises for more than two years after preemption. The expansion of overdraft and checking account supply caused by preemption therefore seems to benefit those low-income households who obtain accounts *ex post* and not just in expectation.

Regarding public policy, our results highlight a trade-off that has not received due attention in the policy debate: consumer protection via overdraft restrictions comes at the cost of reducing banking services for low-income households. On the broader question of whether restrictions on overdraft pricing nonetheless improve consumer welfare, we

remain circumspect. In particular, our results do not evaluate the net benefit of overdraft restrictions for individuals who were already banked. For these individuals, the welfare impact of fee caps is uncertain. All else equal, paying more for overdraft transactions reduces their welfare. But the associated increase in overdraft supply provides benefits, for example in preventing bad check fees assessed by merchants.

Our work relates to recent studies of regulatory restrictions in overdraft and other consumer credit markets. Di Maggio, Ma and Williams (2020) study legal settlements that required banks to cease high-to-low transaction processing when determining overdraft charges. These settlements effectively reduced the overdraft fees charged for a given amount of overdraft credit. Following the settlements, consumers borrowed less from alternative high-cost providers such as payday lenders and affected banks closed branches in low-income areas. The authors conclude that banks' predatory overdraft practices drive consumers deeper into high-cost debt. They question whether low-income individuals benefit from bank accounts with overdraft credit services. Our analysis takes up this question by examining bank account ownership directly and documenting low-income consumers' revealed preference to be banked in a regime with less pricing restrictions. Agarwal et al. (2014) and Nelson (2020) study the limits on credit card fees and interest rates imposed by the 2009 CARD Act. Similar to our finding that bank account ownership declines, Nelson (2020) finds that pricing restrictions cause subprime borrowers to leave the market.

Section II below provides background on household overdraft credit. Sections III discussions state overdraft fee limits circa 2000 and the Federal exemption. Section IV, VI, and V develop the key evidence on how overdraft credit pricing and supply, account

maintenance fees, and low-income account ownership changed post-exemption. Section VII concludes.

II. Deposits and Overdraft Credit: Background

The connection between deposit taking and lending via overdrafts is fundamental to banking (Kashyap, Ragan, and Stein 2002, p.38):

> … the early private banks allowed depositors to borrow by overdrawing their account (e.g., Usher 1943)… From the perspective of the money changer, the overdraft facility (or its modern equivalent, the line of credit) was essentially the same as a deposit…With the overdraft facility, the money changer was not legally required to make the loan (he could refuse to allow the overdraft).

The consumer overdraft market has the same lineage as the commercial market but is less studied, so this section provides some background.

Faced with a new deposit applicant, a banker first checks her debit score at one or more bureaus that track depositors' account history (e.g. Chex Systems). A low debit score, due to frequent or unpaid overdrafts or (involuntary) account closures, makes banks less likely to accept the deposit and reduces the overdraft credit offered on accepted deposits.

If the banker accepts the deposit, the depositor may be charged a monthly maintenance fee if their balance falls below a minimum stipulated in the account contract. Account maintenance fees represent about one-tenth of overall checking account fees that banks collect (CFPB, 2014). ATM, check and debit card issuance and usage fees are of roughly similar importance, composing about 15% of account fees (CFPB, 2014). A much larger share of all account fees, about half, comes from overdrafts (CFPB, 2014).

The schematic in Figure 1 illustrates the overdraft fees entailed according to the type of transaction. If a depository allows an overdraft at an ATM or POS (point of sale) it charges an overdraft (OD) fee. If it refuses, depositors are not charged. Overdrawing via

check can be costlier. If the depository allows the overdraft (covers the check), it charges the same OD fee as on electronic transactions. If it refuses and returns the check it charges the depositor an insufficient funds (NSF) fee. The check payee may also charge the check writer an NSF fee as well.

The risk of a second NSF fee and associated non-pecuniary costs may make returned checks the costliest type of overdraft event. Merchants' NSF fees may rival banks' in which case the check writer is out $60-70.[2] There is also embarrassment and liquidity costs, as merchants will hesitate to accept or cash checks from chronic bad check writers. Overdraft credit mitigates those costs.

Before the advent of electronic debiting in the 1990s, overdraft credit was provided strictly on a manual basis with a bank officer deciding on the spot whether to cover the occasional "bad check" for its more trusted customers. As ATM and POS debiting proliferated, bankers needed real-time overdraft credit decisions and so began adopting automated overdraft programs. Under such "bounce protection" programs, banks enroll nearly all depositors for credit up to a limit and pay every overdraft transaction as long as the account balance remains within the credit limit (Joint Guidance on Overdraft Protection Programs, 2005). Developers of the programs marketed them as a source of revenues to banks and potential benefit to depositors.

Providing overdraft credit is not without risk to lenders because depositors may refuse to repay overdraft loans and related fees. Losses on overdraft credit accounted for accounted for 12.6% of gross losses on total loans and leases at financial institutions

[2] Data on state limits on merchant NSF fees are not readily available but Verichek, a payments processor publishes this list: https://www.vericheck.com/state-allowed-nsf-fees/

(FDIC, 2008). Depository institutions also closed 30 million accounts between 2001 and 2005 for due to unpaid overdrafts and fees (Campbell et al., 2011). The average loss per bad account in 2007 was $310 (FDIC, 2008).

The demand for overdrafts is very uneven across households. Most depositors rarely if ever attempt to overdraw their account while nine percent do so about ten times per year (CFPB (2017). The quasi bi-modal demand suggests that most households will be approximately indifferent to overdraft fees, capped or not. For those who overdraw frequently, however, fees and caps are likely of first order importance.

III. Federal Exemption of State Caps on Overdraft Fees

Although Congress considered capping overdraft fees in 2019, there is no federal cap at present. As of 2000 four states (Alaska, Illinois, Missouri, and Tennessee) capped overdraft fees at $15 to $25.[3] For federally chartered banks operating in one of these states, there is a question of whether they are bound by the state law. Federal law does not categorically preempt state law for national banks. Instead judicial precedent, in combination with regulatory rules or guidelines issued by the Office of the Comptroller of the Currency (OCC), establish the ground rules for national banks.

In 2001 the OCC revised the rule authorizing national banks to impose non-interest charges and fees on deposit accounts (12 CFR Part 7.4002). In the revision, the OCC made clear that it would not require banks to follow state restrictions. Instead, it would follow judicial precedent in which national banks, to that point, had been deemed exempt from

[3] 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.

such restrictions.[4] Prior to the rule change, the OCC's position had been ambiguous, as it suggested case-by-case review and approval was required for banks to gain exemption from state fee limits. The revised rule was introduced in January of 2001 and implemented in July of 2001 after an open comment period. We consider July 2001 the event date, except when data is at the annual frequency (Moebs) in which case we use January 2001 as the event date.

IV. Overdraft Credit

We use the national bank exemption from state overdraft fee limits to investigate three related questions. First, did national banks in those states raise overdraft fees after the exemption? Second, were national banks more willing to cover overdrafts rather than return checks for insufficient funds? Third, was the rate of returned checks at Federal Reserve check processing centers in operating in fee-limiting states lower afterwards?

For the analysis of overdraft pricing and supply, we obtained data from Moebs Services, an economic research and consulting firm that conducts an annual survey of bank deposit account fees and services. Moebs collects the data via telephone survey of branch locations for a stratified random sample of banks and credit unions. The Federal Reserve used the data for its Annual Report to the Congress on Retail Fees and Services of Depository Institutions between 1989 and 2002. Moebs continued the annual survey thereafter.

[4] 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.1 Overdraft Fees

We study bank overdraft (OD) fees from 1999 to 2003, a five-year period roughly centered at the OCC exemption in 2001. We truncate in 2003 to avoid confounding the effects with those of a more sweeping OCC exemption in 2004 (Di Maggio and Kermani, 2014). We limit the sample to commercial and savings banks, excluding credit unions to maintain a comparable sample as our subsequent analysis of account maintenance fees. Table 1 reports the sample statistics. We observe fees at 2,936 bank branch-years, of which 884 were owned by national banks and 2,092 were owned by other banks. The average overdraft fee during the sample period was about $20. National banks charged higher fees than other banks on average ($22 versus $19.44). Fees overall rose faster than inflation nationwide, increasing from $17.34 over 1999-2000 to $21.31 over 2001-2003.

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

$$(1)\ OD\ Fee_{ist} = \alpha + \beta_0 National_i \times Fee\ Limit\ State_s \times Post_t + \beta_1 National_i \times Fee\ Limit\ State_s + \beta_2 National_i \times Post_t + \beta_3 Fee\ Limit\ State_s \times Post_t + \beta_4 National_i + \beta_5 Fee\ Limit\ State_s + \beta_6 Post_t + \alpha_s + \alpha_t + \Gamma \cdot Controls + \varepsilon_{ist.}$$

The dependent variable is the OD fee charged by bank *i* located in state *s* at year *t. 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 model includes all pairwise combinations of these indicator variables as well as the indicator variables themselves. The coefficient β_0 on $National_b \times Fee\ Limit\ State_s \times Post_t$ measures any differential change in overdraft prices at national banks relative to state banks post-exemption and within states that limit

overdraft fees. 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 control set includes 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 the branch competitive conditions, we include the HHI (Harshman-Herfindahl index) of deposit concentration across all branches in each county. For the bank that owns the branch we control for size (log of assets), profitability (return on assets), capital (total equity capital/total assets) and an indicator if for savings banks. At the county level, we control the unemployment rate, log(median income), the homeownership rate, log(population), the share of population that is white, Black, or Hispanic, an foreign born.[5]

Table 2 reports the regression estimates on all the indicators and standard errors (clustered by state) in parentheses. The estimated triple-difference coefficient is positive and significant at 1 percent across all models. The estimate with all controls in column (2) implies that national banks in limit states increased fees by $1.80 on average after the exemption, about ten percent relative to the mean overall. That increase is starker by contrast to the $1.06 decline in OD fees at other (non-national) banks in limits states. This result suggests the fee cap was constraining, and when relaxed for national banks, they raised overdraft fees. Next, we evaluate whether national banks were more willing to allow overdrafts at that higher price.

[5] 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.

IV.2 Overdraft Supply

Banks can increase overdraft supply by allowing larger overdrafts, or by allowing them at all. The Moebs data provides a measure of supply along the latter, extensive margin. When queried about their overdraft pricing, some banks reported that an NSF fee for returned checks but did not report an overdraft fee. We take that as indication the bank did not make it a practice of allowing overdrafts and defined an indicator, *OD offered*, equal to one for banks reporting both an NSF and overdraft fee and zero for banks reporting only an NSF fee. The bottom panel of Table 1 provides sample statistics on *OD offered.*[6] Over the full sample, 91 percent offered overdrafts.

To investigate how that fraction changed after national banks were exempted from state fee caps, we re-estimate model (1) with *OD offered* as the dependent variable. Those estimates are reported in columns (3) and (4) of Table 2. The coefficient on *National x Fee Limit State* is significantly negative, indicating national banks were less willing to allow overdrafts in fee limit states when the caps were in force. By contrast, the coefficient on *National x Fee Limit State x Post* is significantly positive, implying they more willing to allow overdrafts in those state post-exemption. The coefficient estimate implies the share of national banks offering overdraft in those states rose 1.6 percentage points after the exemption. That evidence of increased supply along the extensive margin could be indicative of increased supply along the intensive margin as well.

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

[6] We interpret banks that report neither fee as missing and exclude them from the analysis. Our sample for this analysis increases to 3,197 observations because we include banks that did not report a fee for overdrafts

and insignificant before the exemption. The size and significance of the effect fluctuates somewhat but is significantly positive and large even at the end of the sample.

IV.3 Returned Checks

All else equal, increased overdraft coverage should imply fewer returned checks. This section tests that prediction using data from Federal Reserve (Fed) regional check processing centers (CPC). Clearing checks between banks and other depository institutions is a core role of the Federal Reserve in overseeing the U.S. payments system. The Fed operated 46 CPC in 35 states continuously over 1999-2003, six of which were in states with overdraft fee limits.[7] We observe the number and $ volume of checks each CPC processed every quarter and the percent that were returned due to NSF.

Table 3 provides simple statistics at the CPC and state level. The average CPC cleared between 90 and 105 million checks every quarter. About a million checks were returned every quarter due to insufficient funds. Returns *per* number or volume processed, our main outcome of interest, averaged about 1.4 percent in fee limit states and 1.2 percent in other states.

Since we do not observe check activity separately for national banks, we identify the effect of fee caps using a difference-in-difference model estimated at the CPC level:

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

The dependent variable equals the rate of returned checks at CPC *c* in state *s* during quarter *t*, or (for interest) the log of checks processed. $Fee\ Limit\ State_s$ is defined as above. *Post* here equals 1 in 2001q3 and afterwards, and zero before. The model includes CPC and year

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

x quarter fixed effects and controls for economic and demographic characteristics in the county where the CPC is located (the same controls as above). We expect lower returned check rates in fee limit states after the exemption, $\beta < 0$, based on the evidence above that national banks increased overdraft supply afterwards. National banks accounted for about half the deposit share in limit states, so their increased willingness to cover overdrafts should plausibly register at the aggregate (CPC) level. CPCs may process checks drawn on out-of-state banks, which creates additional measurement error. However, all but two states bordering the limit states had a CPC, which tends to minimize the error. Any remaining errors tend to attenuate our β estimates.

Table 4 reports results. CPCs in fee limit states processed significantly more checks post-exemption (column 1). The estimate of 0.05 represents a 4 percent increase relative to average overall the sample (reported in the table). The estimate for processing volume ($) appears larger but is insignificant (column 2). Those findings (the first at least) are more relevant later in the paper when we study financial inclusion. More pertinent here are columns (3) and (4) showing that returned check rates in fee limit states declined significantly, relatively, after fee caps were relaxed for national banks. Both estimates are highly significant and sizable; returns per number processed falls 15% and returns per $ processed falls 22%, relatively.

Figure 3 plots the difference (fee limit states minus others) each period. The difference in unit terms (top panel) emerged before the fee cap, contrary to the assumption of parallel trends. However, the difference in $ volume (bottom panel), emerged after the exemption.

To summarize, this section found that national banks offered more overdraft credit and raised fees absent a fee cap. Both changes are entirely predictable by textbook price theory. We also found evidence of lower returned check rates in states with fee caps after national banks were exempted. The second finding is more mixed in terms of the parallel trends assumption but is at least consistent with the first. The next section investigates if national banks changed other deposit terms when unconstrained by fee caps.

V. Minimum Balances and Maintenance Fees

Depositors must keep a minimum balance in their checking account to avoid a monthly fee. Using bank branch level data from RateWatch, this section investigates if national banks relaxed either term after raising overdraft fees. Households with checking accounts rank "minimum balances too high" as a main reason they are unbanked (FDIC 2019) so these outcomes are of interest.[8]

Table 5 provides summary statistics for both outcomes (in 2001 dollars). The sample period and control variables match the overdraft fee analysis above, except the RateWatch data we study are observed semiannually and begin in the second half of 2000. Not surprisingly, interest-earning accounts on average have higher minimum balances and maintenance fees; the average monthly fee on interest checking accounts is $8.40 with a minimum balance of $1,345 versus $3.00 and $497 for non-interest accounts. While less than 5% of branches offer "free" interest checking accounts (i.e., a monthly fee of zero regardless of balance), around 40% of branches offer "free" non-interest checking accounts. Roughly 20% of observations come from branches in fee-limit states while 43%

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

come from branches of nationally chartered banks. The data is about evenly split between the time period before and after preemption.

To examine how maintenance fees and minimum balances change around preemption, we estimate Equation (1) using the log of each as the dependent variables. We add one to the observed month fee before taking the log due to frequent zero-fee observations.

Table 6 presents the results. The regressions include all controls and fixed effects. As seen in columns (1) and (3) we find no (relative) change in account maintenance fees at national banks after the exemption for either type of checking account. The negative point estimates are consistent with a decline in fees but are very imprecisely estimated, so not statistically significant. We find some evidence that minimum balance requirements were reduced, however. As shown in column 2, following preemption, national banks in fee limit states reduced minimum balance requirements on interest checking accounts by 83% on average. Compared to the average minimum balance of $1,119, this amounts to $928 less that customers need to keep in interest checking accounts in order to avoid a monthly fee. As shown in column (4), minimum balance requirements also decline on non-interest checking accounts but this change is not statistically significant.

Figure 3 plots estimates of the difference-in-difference (*National x Fee Limit State)* in each outcome over time. We observe no significant differences in any outcome pre-exemption, consistent with our identifying assumption of parallel trends. The decline in minimum balances on interest-bearing accounts post-exemption is evident in the lower right panel. The lower left panel shows that monthly fees on those accounts also tended downward and were significantly lower by the end of the sample period, if not on average.

In summary, these results show only modest support for the possibility that lifting overdraft fee ceilings led to cheaper checking accounts on other dimensions.

VI. Low-Income Households' Access to Bank Accounts After the Preemption

We now turn our analysis away from bank pricing and toward households. We use household survey data from the U.S. Census Bureau to evaluate whether the relaxation of overdraft fee restrictions affects the share of unbanked households.

Basic economic models predict that price ceilings cause rationing. Applied to our context, such theories predict that removing fee restrictions will cause national banks to increase the supply of checking accounts. An increase in checking account supply by national banks should, in turn, reduce the share of unbanked households, especially given national banks' prominence in the banking market.[9] Moreover, given that low-income households overdraw their accounts much more frequently than middle- and high-income households, the removal of overdraft fee restrictions should increase checking account supply and account ownership the most for those with low incomes.

We test these predictions using data from the Census Bureau's Survey of Income and Program Participation (SIPP). Each SIPP panel provides data on more than 30,000 households over a four-year period. The sample includes a disproportionate share of low-income households in order to provide reliable information on their transfer program participation. SIPP respondents complete three "core" interviews per year about their household composition, income and transfer program participation over the prior four months. They also complete periodic "topical" interviews on topics such as their assets and liabilities. The resulting financial information is quite extensive. For deposit accounts,

[9] National banks had nearly 50% market share of deposits in 2001.

respondents report both individually- and jointly-owned checking accounts, savings accounts and money market deposit accounts. Our analysis focuses on ownership of checking, or transaction, accounts because they are the accounts within which overdraft and bounced check fees are most commonly imposed.

We analyze a four-year sample period, from 1999 to 2003, centered at the July 2001 federal preemption of state overdraft fee restrictions. The timing of the preemption event is such that a single SIPP panel does not span the pre- and post-event periods. Consequently, we observe different households before and after the event, with the pre-event data drawn from the SIPP panel initiated in 1996 and the post-event data drawn from the SIPP panel initiated in 2001. The oversampling of low-income households proves useful for our analysis, since we pay particular attention to low-income households' bank account ownership. We divide the sample into income quintiles and consider bottom-quintile individuals – those with annualized income below $16,100 – in our analysis of low-income households.

Table 7 displays summary statistics for households in the SIPP sample. Two-thirds of households have checking accounts. The average household has an annualized income of $51,900 and a net worth of $171,800. Three-quarters of households are headed by someone who is white, 12% are headed by someone who is black, and 9% are headed by someone who is Hispanic. Slightly more than half of household respondents have attended or completed college in addition to completing a high school diploma. The average respondent is 49 years old. Within the low-income subsample, there is significantly lower checking account ownership, as only 44% of households have at least one account. In

addition, the low-income households have lower net worth and are more likely to be headed by an individual who is older, black or Hispanic, and has less education.

We evaluate the change in checking account ownership by estimating a differences-in-differences model:

(3) $Checking\ Account_{ist} = \alpha + \beta Fee\ Limit\ State_s \times Post_t + \delta_t + \gamma_s + \zeta DeregIndex_{st} + \boldsymbol{\theta}'\boldsymbol{X_{it}} + \varepsilon.$

The dependent variable indicates whether anyone in household *i*, located in state *s*, has a checking account at time *t*. *Fee Limit State* equals one for households in states with overdraft fee caps and zero otherwise. *Post* equals zero before the July 2001 preemption regulation and one otherwise. The coefficient of interest, β, measures the change in the share of banked households following preemption in states with fee limits relative to states without fee limits. The year fixed effects, δ_t, account for any nationwide variation in checking account ownership that occurs through time, for example as economic conditions change. The state fixed effects, γ_s, meanwhile absorb cross-sectional differences in account ownership that result from differences in state banking laws or banking market structures that are fixed through the sample period. We also control for the state-level banking deregulation index, which varies over time and is known to affect bank account ownership (Celerier and Matray, 2019). Finally, the model includes individual-level demographic and economic characteristics that explain differences in account ownership; 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, clustering observations by state in the calculation of standard errors.

The estimation results reported in Table 8 show a substantial increase in checking account ownership in fee limiting states following the federal preemption. In this portion of the analysis we restrict the sample to low-income households. The first model includes only *Fee Limit State*, *Post* and their interaction. The estimated *Post* coefficient of -2.5 (*p*-value < 0.05) indicates that account ownership in states without fee limits generally trended downward after the Federal preemption. The estimated interaction coefficient of 5.2 (*p*-value < 0.05), by contrast, implies that checking account ownership increased in fee limiting states relative to non-limiting states during that time. The models in the subsequent three columns illustrate the robustness of these estimates to additional control variables. The second model includes state and time fixed effects in place of the *Fee Limit State* and *Post* indicators. The *Fee Limit State* x *Post* coefficient estimate increases modestly to 5.5 (*p*-value < 0.05). The third model includes household controls. Although income, age, education and race all correlate strongly with checking account ownership, their inclusion does not significantly reduce the *Fee Limit State* x *Post* coefficient estimate. The final specification includes a measure of the state-level bank deregulation index.

The model implies a 4.8 percentage point increase in account ownership due to federal preemption in fee limiting states. This increase is economically meaningful, as it represents a more than 10% proportional rise in account ownership relative to the 44% baseline prevalence of account ownership among low-income households.

In Table 9, we repeat the analysis for higher-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, the estimates are not statistically

significant and they are considerably smaller than the estimated increase in account ownership for the low-income group.

It is an important question whether low-income consumers benefit from their account access. On the one hand, it is beneficial to have access to banking services that are cheaper than non-bank alternatives such as check cashing. On the other hand, individuals might be naïve about the price and frequency of overdraft charges they face, particularly when opening a new account. Overdraft and bounced check fees fit the definition of "shrouded" add-on prices characterized by Gabaix and Laibson (2006). In light of the fact that banks are induced to serve these marginal individuals through higher overdraft fees, it might turn out that the new accounts are not beneficial.

We believe the persistence of the account provides information about the consumer's revealed preference for the account over time. If over time the consumer learns that fees are higher than expected, she can close the account. We examine persistence in two ways. First, we look for account churning – whether the overall increase in account ownership goes hand in hand with increased turnover – greater account openings but also greater account closures. We do not observe account openings and closing directly, but we do observe households' banking status repeatedly at a four-month frequency. In each interview, we classify households as gaining an account if they transition from no account to having an account over a four-month period. Conversely, a household loses an account if they transition from having an account to not having an account over a four-month period. Table 10 shows the results of our analysis of account churning. We find that following preemption households in affected states are more likely to gain accounts but also less likely to lose accounts. The latter decline may reflect fewer households "bouncing

out of the system" when overdraft coverage expands and banks are able to charge more for overdraft events. If anything, the results show that low-income households are more likely to maintain accounts after the overdraft fee limits are relaxed.

Our second test of persistence supports the same conclusion. We replace $Post_t$ in the model above with year-by-quarter dummies. The coefficients on the *FeeLimit*-by-Quarter interactions, plotted in Figure 4, show that the share of low-income households with a bank account continues to trend upward in fee-limiting states compared to non-limit states for more than two years following the preemption event. Whereas the average increase in account ownership is 4.8 percentage points, as noted above, the difference in account ownership by the end of 2003 is 8.3 percentage points.

To summarize, we find the Federal preemption leads to an economically meaningful increase in the share of low-income households with checking accounts. This increase persists for multiple years following the regulatory change, consistent with newly banked households showing a revealed preference to maintain their accounts despite higher overdraft fees.

VII. Conclusion

With goals of improving the value of banking services and promoting financial inclusion, federal legislators have introduced several bills in recent years (The Overdraft Protection Act of 2019 and The Stop Overdraft Profiteering Act of 2018) that would ban or otherwise limit overdraft fees. Our paper highlights the ways in which well-meaning attempts to protect consumers by limiting overdraft fees could have unintended effects.

We find that fee caps limit fees as intended, but also constrain the supply of overdraft credit and reduce financial inclusion among lower income households.

In light of concerns about the opacity of overdraft pricing and protocols, it is fair to ask whether the expansion of overdraft credit and deposit accounts benefits consumers. Our results speak most directly to the welfare impact on newly banked households. We find that newly banked households maintain deposit accounts for multiple years after the fee relaxation. Their revealed preference to maintain their accounts even after learning, through experience, about the costs and benefits of the account suggests that relaxing fee caps is beneficial for them. For individuals who were already banked, on the other hand, the welfare impact of fee caps is uncertain. They pay more for overdraft transactions but they also may benefit from increased overdraft supply. In particular, increased overdraft coverage implies a potentially substantial savings to check writers who would have paid bounced check fees not only to the bank but also to the merchant to whom they wrote the bad check.

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.[10] Competition in overdraft is largely unstudied. Banks are known to increase overdraft supply when competing against payday lenders (Melzer and Morgan 2004), but intra-bank competition has not been studied. Advertising of overdraft polices (fees and limits) is virtually non-existent so it is not obvious how banks would compete. We recommend competition in overdraft as a topic for research and policymakers' attention.

[10] While competition may not completely unshroud overdraft costs (Gabaix and Laibson (2006), more of it could still benefit depositors.

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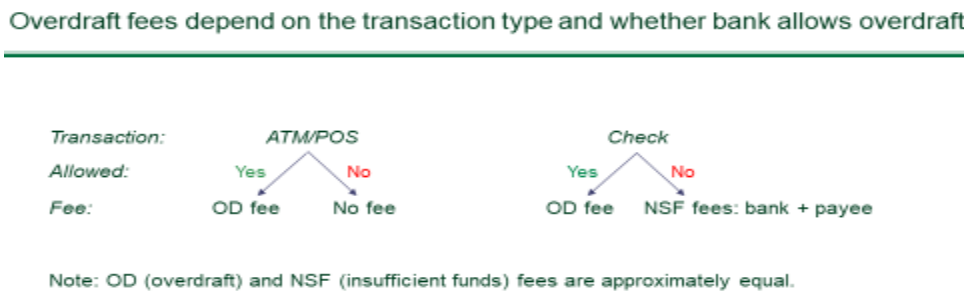
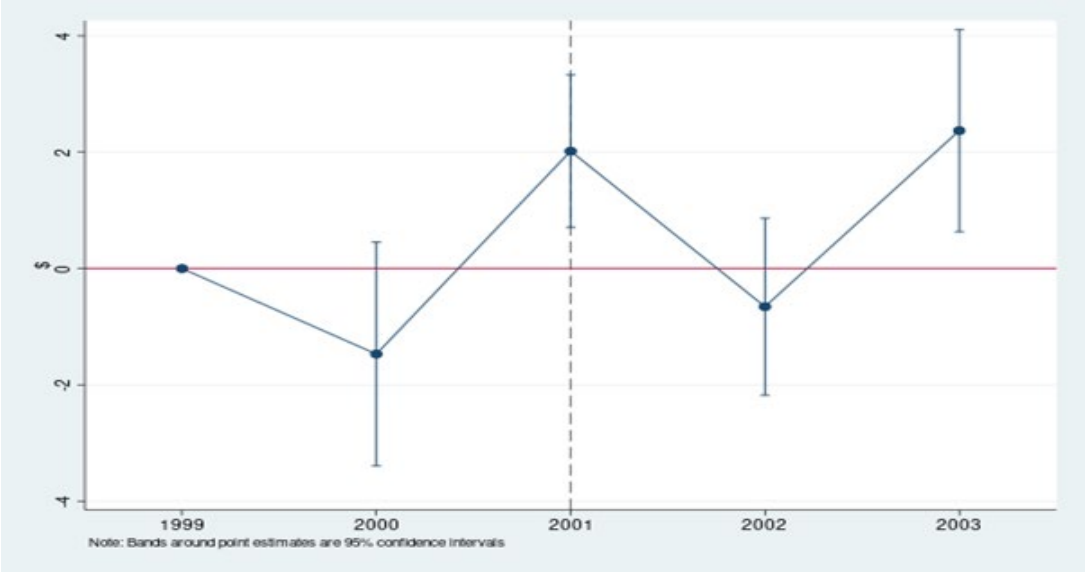
Figure 1. Schematic on Incidence of Overdraft and Bounced Check Fees



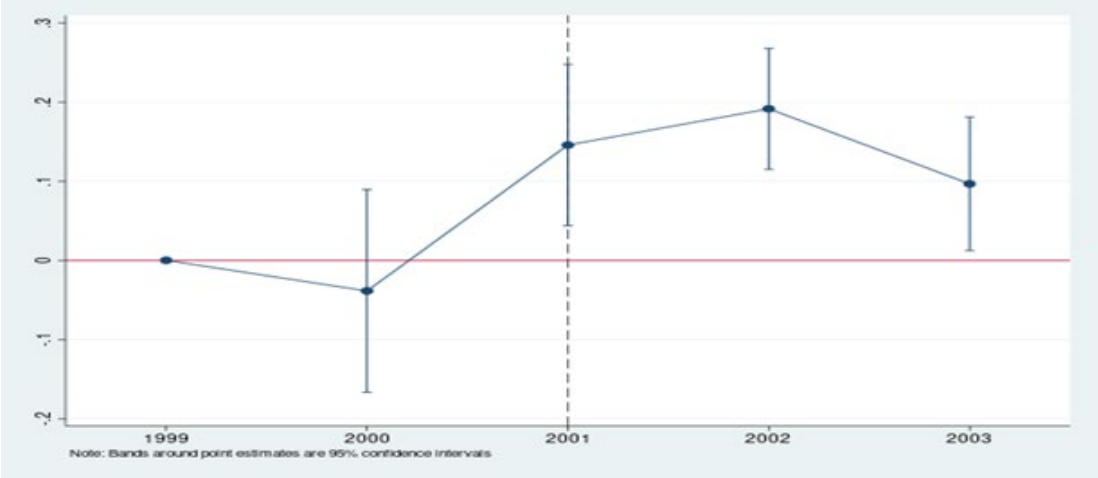
Note: This figure illustrates the fee (s) charged depositors given an overdraft attempt. With electronic transactions (ATM/POS) they are charged an overdraft fee if banks allow the overdraft; they are not charged if banks refuse the overdraft. With a check transaction that exceeds depositors' account balance, they are charged an overdraft off if the bank covers the check. If the bank refuses to cover the check and returns (bounces) it, they charge the borrow an NSF. The payee may also charge an NSF fee.

Figure 2. Triple-difference Coefficients: Overdraft Fees (top) and Overdraft Offered (bottom)

OD Fees



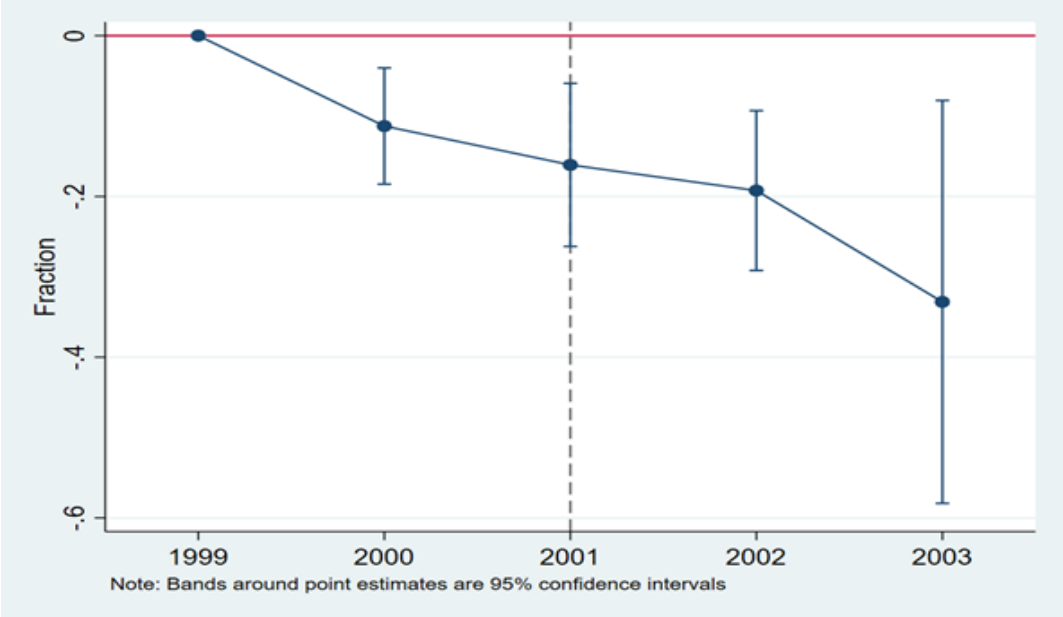
OD Offered



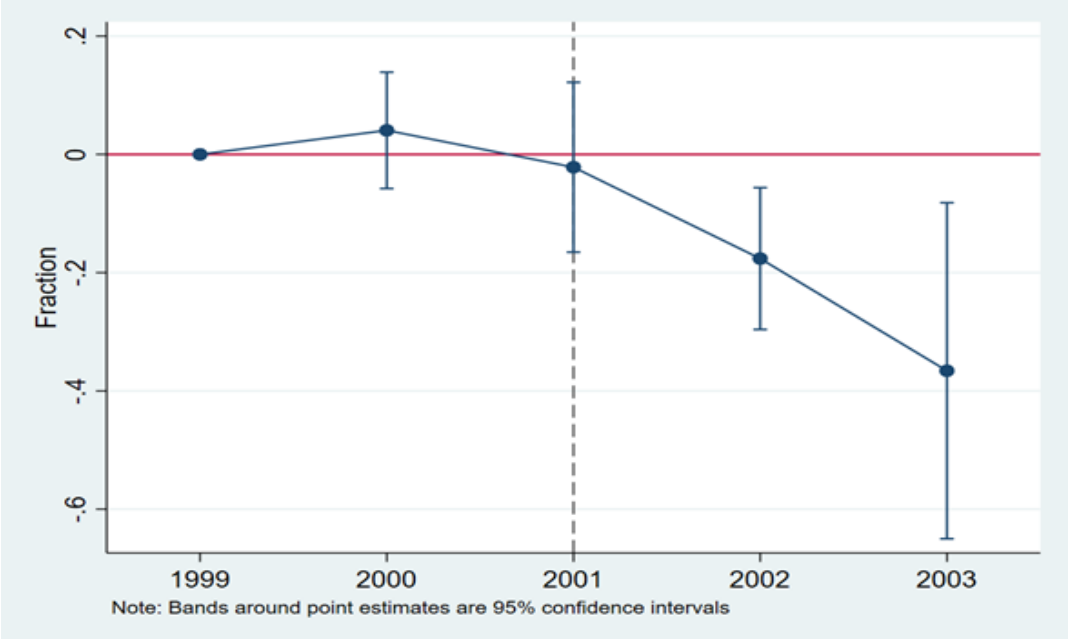
Note: Plotted are estimates of the coefficient on *National* x *Fee Limit State* x *Year* from Equation (1) (1999 excluded) and 95% confidence bands for the outcome indicated. The dashed line indicates when national banks were exempted from state fee caps by the OCC preemption.

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

Rate per number processed



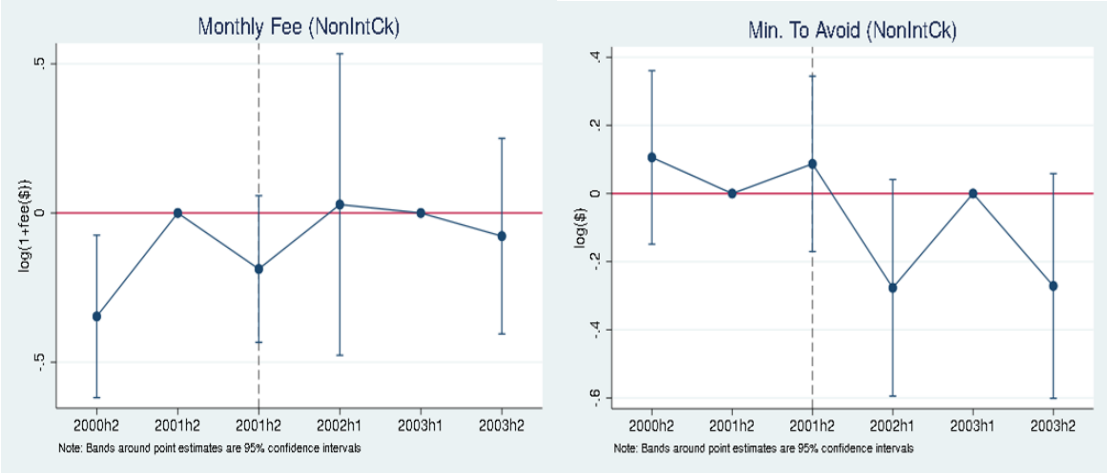
Rate per $ volume processed



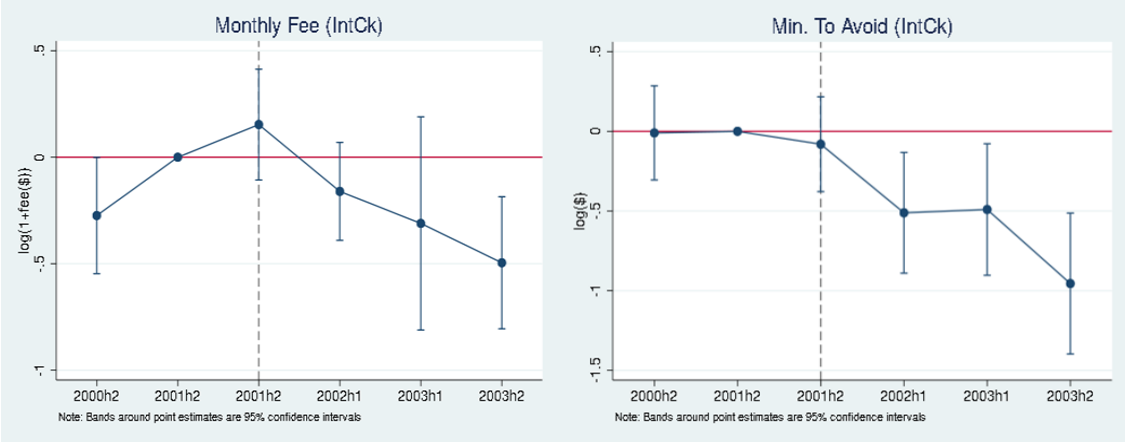
Note: Plotted are estimates of coefficients on *Fee Limit State* x *Year* from Equation (2) (excluding 1999) and 95% confidence bands for the outcome indicated atop each panel. The dashed line indicates when the OCC exempted national banks from state fee limits.

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

Non-interest Checking Accounts

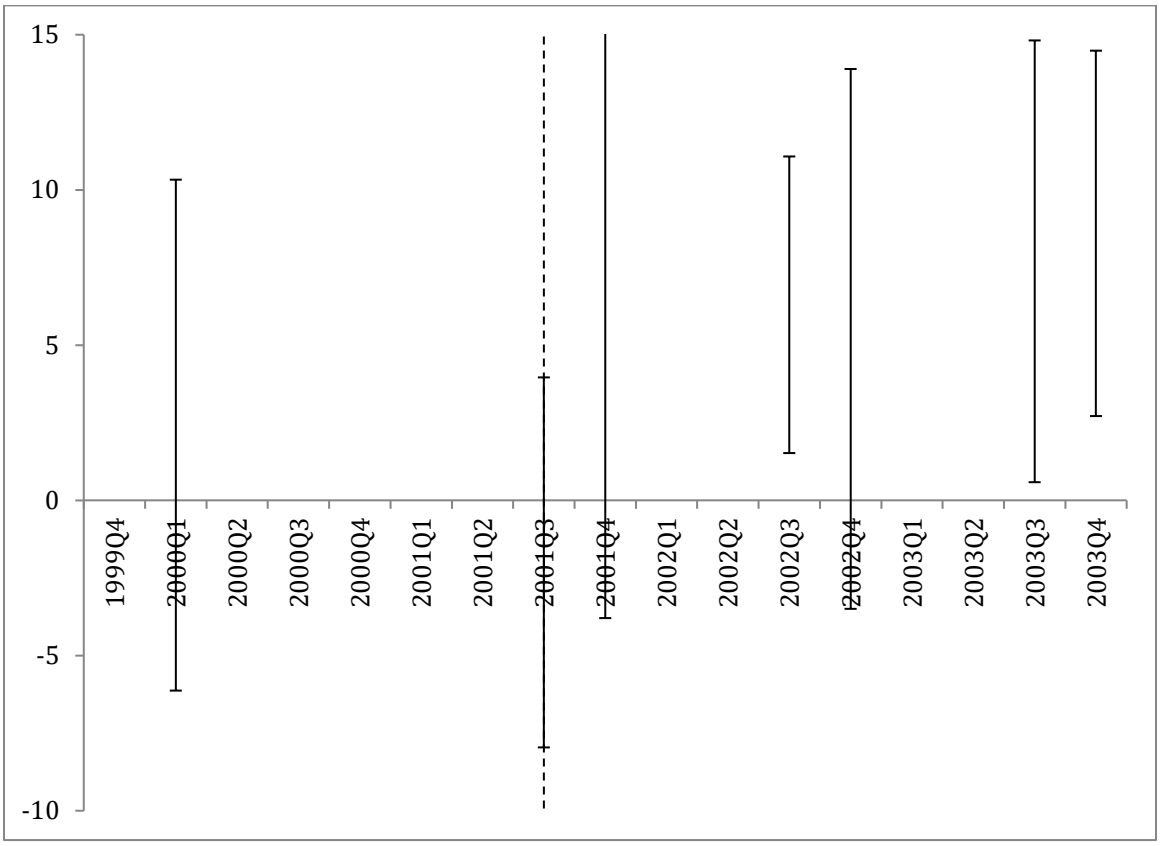


Interest Checking Accounts



Note: These figures report the coefficients on *National* x *Fee Limit State* x *Year* in Equation (1) for the dependent variable indicated (2001 excluded). The dashed line indicates when the limits the OCC exempted national banks from state fee limits.

Figure 4. Differences-in-Differences Coefficient Estimates for Checking Account Ownership by Low-income Households



Note: We estimate the dynamic impact of state fee limits on low-income bank account ownership. To do so, we interact quarter dummies with the indicator for fee-limit state and plot the resulting coefficients and 95% confidence intervals above. The dashed line indicates the timing of the OCC preemption.

Table 1: Sample Statistics on Overdraft Fees and Supply

	N	Mean	Std. Dev.
Overdraft fee			
All banks	2,936	19.95	6.38
National banks	844	22.04	5.87
Other banks	2,092	19.44	6.4
By time period			
1999-2000	1,051	17.34	5.79
2001-2003	1,885	21.31	6.25
Overdraft offered?			
All banks	3,197	0.91	0.28
National banks	2,270	0.91	0.29
Other banks	927	0.92	0.28
By time period			
1999-2000	1,133	0.92	0.28
2001-2003	2,064	0.91	0.28

Note: Sample statistics calculated over 1999-2003 using annual, branch level survey data from Moebs. Overdraft fee are in constant (2001) $. Overdraft offered is a binary indicator if indicating if the branch reported it was willing to allow overdrafts in exchange for a fee. We break out the statistics by treatment (the OCC exemption from state fee caps) and period (pre- and post-exemption).

Table 2. How Do OD Fees and Supply Change After Relaxation of Fee Ceilings?

	(1) OD Fee	(2) OD Fee	(3) OD Offered	(4) OD Offered
National X Fee Limit State X Post	2.07***	1.80***	0.16***	0.16***
	-0.59	-0.45	-0.03	-0.03
National X Fee Limit State	-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
Fee Limit State 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
Fee Limit State	-0.12		0.04**	
	-0.93		-0.02	
Post	1.81***		0.01	
	-0.36		-0.02	
Observations	2,395	2,914	3,197	3,174
R-Squared	0.03	0.48	0.00	0.06
Mean of outcome	21.28	21.26	0.91	0.91
Year FE	No	Yes	No	Yes
State FE	No	Yes	No	Yes
County Controls	No	Yes	No	Yes
Bank and Branch Controls	No	Yes	No	Yes

Note: Reported are regression coefficient estimates (standard errors) showing the relative change in overdraft fees and credit supply at national banks after they were exempted from state-level fee caps. Fees are measured in 2001 constant dollars. *OD offered* is a binary variable that takes the value 1 if the surveyed branch provides overdraft credit in exchange for a fee and is 0 otherwise. *National* equals 1 for national bank branches, 0 otherwise. *Fee Limit State* equals 1 for branches located in states that capped overdraft fees at the time of the OCC's preemption, 0 otherwise. *Post* equals 1 in 2001h2 and thereafter, 0 otherwise. The regression is estimated using branch-level data over 1999-2003 and includes county controls (unemployment rate, log of median income, homeownership rate, log of population, % of population urban, % Black, % White, % Hispanic), deposit market concentration (deposit HHI), and bank controls (log of assets, ROA, and equity capital ratio, log of branch deposits). Standard errors are clustered by state. *, **, and ** indicate signficance at the 1%, 5%, and 10% levels.

Table 3. Sample Statistics on Checks Processed and Returned ("Bounced")

	Limit States (N = 120)		*Other States (N =780)*	
	Mean	Std. Dev.	Mean	Std.Dev.
Number processed (1,000s)	90,695	32,891	105,462	52,782
Value processed ($100,000s)	66,058	46,170	88,030	68,118
Number returned (1,000s)	1,308	669	1,281	841
Value returned ($100,000s)	1,013	890	1,051	944
Number returned /number processed (%)	1.44	0.55	1.17	0.42
Value returned /value processed (%)	1.44	0.54	1.16	0.48

Note: This table reports statistics on checks drawn on depository institutions processed by the Federal Reserve at its 46 check processing center (CPCs) in operation over 1999q1-2003q4. It shows the mean number and dollar value of checks processed per CPC per value and the mean number and dollar value were returned ("bounced") due to insufficient funds. There were 6 CPCs located in three states that limited overdraft fees in 2000.

Table 4. How Do Check Volumes and Returned Check Rates Change after Fee Caps are Relaxed?

	(1)	(2)	(3)	(4)
Dependent variable:	Log of Number Processed	Log of Dollars Processed	% Returned (Number)	% Returned (Dollars)
Fee Limit State X Post	0.05**	0.07	-0.15***	-0.22***
	(0.02)	(0.05)	(0.04)	(0.07)
Income	0.78**	0.72*	0.88	1.05
	(0.32)	(0.39)	(1.32)	(1.22)
Unemployment	0.01	0.01	-0.01	-0.01
	(0.01)	(0.02)	(0.02)	(0.03)
Log(Population)	0.58*	0.17	0.26	-0.07
	(0.31)	(0.64)	(1.49)	(1.35)
Outcome mean	11.42	11.17	1.18	1.14
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: Reported are regression coefficients (standard errors) showing how checks processed and returned (bounced) change after national banks were exempted from state fee caps. *Fee Limit State* equals 1 if state limited overdraft fees, zero otherwise. *Post* equals 1 in 2001q3 and after and 0 before. Models estimated over 1999q1-2003q4 with Federal Reserve Check Processing Center (CPC) data. Standard errors are clusteed by state. *,**, 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
Fee (IntCk, $)	3,277	8.4	3.6	8.0
MinToAvoid (IntCk, $)	3,063	1,345	1,488	1,000
Fee (NonIntCk, $)	3,268	3.0	3.5	0.0
MinToAvoid (NonIntCk, $)	1,388	497	309	500
Fee Limit State	3,308	0.21	0.41	0
Post	3,308	0.45	0.50	0
National Bank	3,308	0.43	0.49	0
HHI	3,308	2,336	1,395	1,945

Note: Maintenance fees (*Fee*) are monthly fees charged when account balances fall below a minimum threshold set by the bank (*MinToAvoid*). Pricing is reported for accounts that pay interest (IntCk) and those that do not (NonIntChk). Statistics are caclulated using semiannual, branch-level data over 2000-2003 from Ratewatch.

Table 6. How Do National Banks Change Maintenance Fees and Minimum Balances Overdraft Fee Ceilings are Relaxed?

	Interest Accounts		*Non-Interest Accounts*	
	Log of (1 + Fee)	Log of MinToAvoid	Log of (1 + Fee)	Log of MinToAvoid
National Bank X Fee Limit State X Post	-0.03	-0.83***	-0.2	-0.25
	-0.16	-0.22	-0.48	-0.15
National Bank X Fee Limit State	-0.31***	0.09	0.08	0.19
	-0.07	-0.1	-0.24	-0.13
National Bank X Post	-0.08	0.57***	-0.33	0.01
	-0.09	-0.15	-0.21	-0.09
Fee Limit State X Post	-0.06	0	-0.13	-0.14
	-0.11	-0.12	-0.41	-0.1
National Bank	0.26***	-0.24**	0.24	-0.11
	-0.06	-0.1	-0.18	-0.09
Time fixed effects?	Yes	Yes	Yes	Yes
State fixed effects?	Yes	Yes	Yes	Yes
Observations	6,586	2,612	6,578	3,172
Adjusted R-squared	0.50	0.58	0.35	0.58
County Controls	Yes	Yes	Yes	Yes
Banks and Branch Controls	Yes	Yes	Yes	Yes

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

Table 7. Sample Statistics on Household Checking Account Ownership

	Full Sample		Income in Bottom Quintile	
	Mean	Std. Dev.	Mean	Std. Dev.
Income and Finances				
Checking account? (%)	66.0	47.4	43.8	49.6
Income ($ thousands)	51.9	51.6	8.9	7.9
Net worth ($ thousands)	171.8	1,169.2	82.6	1,081.4
Race/Ethnicity (%)				
White	74.6	43.6	65.4	47.6
Black	12.2	32.8	20.2	40.1
Hispanic	8.9	28.5	10.4	30.5
Asian	3.2	17.7	2.6	15.9
Other	1.1	10.2	1.4	11.6
Education (%)				
Less than HS diploma	15.5	36.2	33.4	47.2
HS diploma	28.9	45.3	33.1	47.0
Some college	26.1	43.9	21.5	41.1
College degree	20.2	40.2	9.3	29.0
Graduate degree	9.3	29.0	2.8	16.4
Age	49.2	16.9	54.8	20.2
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, taking a value of 0 when interstate branching is unlimited (fully deregulated) to 4 when interstate branching is most restricted.

Table 8. How Does Low-Income Checking Account Ownership Change After Relaxation of Fee Ceilings?

	Dependent Variable: *Checking Account*			
Fee Limit State X Post	5.2**	5.5**	5.0***	4.8***
	(2.1)	(2.5)	(1.5)	(1.7)
Fee Limit State	-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
State fixed effects?	N	Y	Y	Y
Year-month fixed effects?	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 (*Fee Limit State*), 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 (White is the excluded category) and educational attainment (Graduate degree is the excluded category), 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. Comparing the Account Ownership-Impacts of Fee Ceiling Relaxation Across Income Groups

	Dependent Variable: Checking Account					
Sample:	Income Quintile 1	Income Quintile 2	Income Quintile 3	Income Quintile 4	Income Quintile 5	Full Sample
Fee Limit State 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)
Fee Limit State X Post X Income Bottom 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
State fixed effects?	Y	Y	Y	Y	Y	Y
Year-month fixed effects?	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 (*Fee Limit State*), 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 Churning Increase Following Relaxation of Fee Ceilings?

	Dependent Variable:	
	Gained Checking Account	Lost Checking Account
Fee Limit State X Post	2.1***	-1.5*
	(0.7)	(0.8)
N	12,427	12,427
R^2	0.01	0.01
State fixed effects?	Y	Y
Year-month fixed effects?	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 (*Fee Limit State*), 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. Al 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.