

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

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April 15, 2021

[PRELIMINARY DRAFT]

## **Abstract**

Nearly 25% 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.

\* Dlugosz: Federal Reserve Board of Governors; Melzer: Dartmouth College; Morgan: Federal Reserve Bank of New York. The views expressed in this paper are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System. We thank Moebs Services for sharing overdraft fee data and seminar participants at Stanford, Baruch, the Federal Reserve (Board and New York) for helpful comments.

## **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 (H.R. 4254, 2019) and Senate (S. 1595, 2019) to limit overdraft charges. As one sponsoring Senator observed: “overdraft fees ... push low-income consumers away from banking products altogether” (Office of Senator Cory A. Booker, 2018).

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 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.

We provide further analysis of banks’ supply of overdraft credit using Federal Reserve check processing data. Our second key finding is that returned check rates (per

checks processed) decline by 10% following preemption in states with overdraft fee limits relative to states without limits. The primary reason for a check to be returned unpaid in the settlement process is that the check writer's account has insufficient funds and their bank declines to extend overdraft credit. The decline in returned checks is therefore consistent with increased supply of overdraft credit by national banks in fee limiting states.

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 is 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 for 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. Deposit Taking and Household Overdraft Credit: Background**

The connection between storing money (deposit taking) and lending it by allowing overdrafts is a deep one dating to medieval times (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 overdraft market for households that we study has the same lineage as the commercial market but is less transparent and studied so this section provides essential 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.

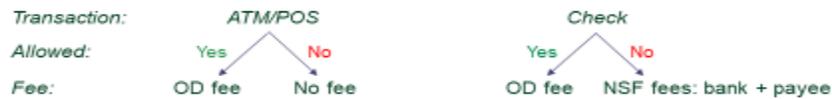
If opened, depositors may be charged a monthly maintenance fee if their balance falls below a minimum stipulated in the account contract. Account maintenance fees represent about one-tenth of overall checking account fees that banks collect (CFPB, 2014). ATM, check and debit card issuance and usage fees 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 figure below 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.

**Overdraft fees depend on the transaction type and whether bank allows overdraft**

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Note: OD (overdraft) and NSF (insufficient funds) fees are approximately equal.

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.<sup>1</sup> There is also embarrassment, as some may know, and liquidity costs, as merchants will hesitate to accept or cash checks from chronic bad check writers. Overdraft credit mitigates all those costs, as explained by this bank:

Simmons Bank offers an overdraft privilege plan so that your checks may not bounce. With this plan you'll still pay an ... overdraft fee to the bank for each item, but you will avoid the merchant's returned check fee and will stay in good standing with the people you do business with.<sup>2</sup>

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<sup>1</sup> Data on state limits on merchant NSF fees are not readily available but Vericheck, a payments processor publishes this list: <https://www.vericheck.com/state-allowed-nsf-fees/>

<sup>2</sup> <https://www.simmonsbank.com/faqs/overdraft-protection>

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.

Like most credit, overdraft credit is risky as depositor may refuse to repay the overdraft and related fees. Losses on overdraft credit accounted for 12.6% of gross losses on total loans and leases at financial institutions (FDIC, 2008). Depository institutions also closed 30 million accounts between 2001 and 2005 for “recidivist” check bouncing, and the trend is upward (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 suggest most households will be approximately indifferent to overdraft fees, whether capped or not. For frequent overdrafters, however, fees and caps are likely 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.<sup>3</sup> 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 such restrictions.<sup>4</sup> 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 (Moeb's) in which case we use January 2001 as the event date.

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<sup>3</sup> 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.

<sup>4</sup> 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. Overdraft Credit Pricing and Supply**

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, did the rate of returned checks at Federal Reserve check processing centers located in fee-limiting states decline after the exemption? Using either triple- or double-difference identification, we reject the null of “no” for all three questions.

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.

##### *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. 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.

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

$$OD\ Fee_{icst} = \alpha + \beta_0 National_i \times Limit_s \times Post_t + \beta_1 National_i \times Limit_s + \beta_2 National_i \times Post_t + \beta_3 Limit_s \times Post_t + \beta_4 National_i + \beta_5 Limit_s + \beta_6 Post_t + \alpha_s + \alpha_t + \Gamma \cdot Controls + \varepsilon_{icst}.$$

The dependent variable is the OD fee charged by bank  $i$  located in county  $c$  and 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  $\beta_0$  on  $National_b \times Limit_s \times Post_t$  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,  $\alpha_s$  and  $\alpha_t$ , 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 county-level characteristics 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 (Hirshman-Herfindahl index) of deposit concentration across all branches in each county. At the bank or holding company level we control for size (log (assets)), profitability (return on assets), capital (total equity capital/total assets), and whether the bank is owned by a holding company or is savings bank. At the county level, we control for economic

conditions (unemployment rate and  $\log(\text{median income})$ ) and demographic characteristics:  $\log(\text{population})$ ; the homeownership rate, share of population that foreign born, and racial shares (percent white, black, or Hispanic).<sup>5</sup>

Table 1 reports the regression estimates on all the indicators and standard errors (clustered by state) in parenthesis. The estimated triple-difference coefficient is positive and significant at 1 percent across all models. The estimate with all controls in column (3) implies that national banks in limit states increased fees by \$2.55 on average after the exemption, about ten percent relative to the mean overall. That increase is starker by contrast to the \$1.31 decline in OD fees at other (non-national) banks in limits states.

Figure 1 plots dynamic estimates of the triple difference each year along with 95 % confidence bands. Consistent with the (maintained) assumption of parallel trends, the effect is small 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 sample.

#### *IV.2 Overdraft Supply*

We have shown that national banks raised overdraft fees after they were exempted from state fee limits. Next, we evaluate whether national banks were increasingly willing to allow overdrafts at that higher price.

When queried about their overdraft price, roughly 10% of institutions report that they charge customers for bounced checks but do not offer overdrafts. We define an

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<sup>5</sup> 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 (Y9-C). County unemployment and median income are from the Bureau of Labor Statistics. County demographic data are from the Census American Community Survey.

indicator accordingly: *OD offered* equals 1 for banks reporting an NSF fee and an OD fee or 0 otherwise. Our sample for this analysis increases to 3,198 observations because we include banks that did not report a fee for overdrafts. Over the full sample, 91 percent offered overdrafts by our metric.

We estimate the same triple-difference model with the same controls as above with *OD offered* as the dependent variable. Given the binary outcome, we estimate logit models and report log odds coefficients in Table 2. The estimates for the triple-difference are positive and highly significant (1 percent). The positive estimate implies that national banks in fee-limit states expand overdraft coverage after the exemption.

#### *IV.3 Returned Check Rates*

Increased overdraft coverage implies fewer returned checks. This section tests that prediction using data from Federal Reserve regional check processing centers (CPC). Clearing checks between 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.<sup>6</sup> We observe the volume of checks processed at each CPC each quarter and the percent of checks returned due to NSF. Since we do not observe the volume of checks by institution or institution type, this analysis utilizes a double-difference design, comparing the trends in check processed in fee-limit states to those processed in other states.

We estimate the model:

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<sup>6</sup> Illinois (Chicago and Peoria); Missouri (Kansas City and St. Louis); Tennessee (Memphis and Nashville). Alaska did not have a CPC.

$$C_{c,s,t} = \alpha + \beta \times Limit_{cs} \times Post_t + \alpha_c + \alpha_t + \Gamma \cdot Controls_{ct} + \varepsilon_{cst},$$

where  $C_{c,s,t}$  equals the log of checks processed (in number or \$) or the percent returned by CPC  $c$  in state  $s$  at date  $t$ .  $Limit_{cs}$  equals 1 for CPCs in limit states or 0 for others.  $Post_t$  is 1 in 2001q3 and thereafter, and zero before. We include fixed effects for the CPC and date (year x quarter) and control for log(population), log(median income) and the unemployment rate in the county where the CPC is located.

An expansion of overdraft credit implies that returned check rates ought to decline at CPCs in limit states after the exemptions. We have two potential measurement errors. First, CPCs process checks for all depositories (not only national banks) so we have error in the dependent variable. Second, CPCs may process checks drawn on banks in other states, so check activity in limit states could reflect activity in others. All but two states bordering the limit states had a CPC, however, which tends to minimize the second measurement errors. Any remain errors tend to bias our estimates of  $\beta$  estimates toward zero.

Table 3 reports the  $\beta$  estimates. The estimates for both check volume measures are positive as expected, but only significant for volume in number terms. By contrast, the estimates for returned check rates are both negative, highly significant, and large relative to the mean of each outcome: -15% and - 22%.

To summarize, we have found that national banks raised overdraft fees but also expanded overdraft coverage after they were exempted from state fee limits. The next section examines how national banks changed deposit pricing along other margins besides fees.

## V. Account Maintenance Fees After Preemption

We obtain our data on deposit account maintenance fees from RateWatch, which surveys bank branches about interest rates offered and fees charged on deposit accounts.<sup>7</sup> The data is quarterly, at the branch level, from 1999 to 2003. We focus on transaction, or checking, accounts since they typically allow overdrafts while savings accounts do not. RateWatch provides one series for checking accounts that pay interest (IntCk) and one for those that do not (NonIntCk).

We merge the RateWatch fee data to information about local deposit markets (counties), and branch and bank characteristics. Summary statistics are provided in Table 4. Not surprisingly, checking accounts that do not pay interest are cheaper than those that do. The average monthly fee on interest checking accounts is \$8.43, which can be avoided by carrying a minimum balance of \$1,345 on average. For noninterest checking accounts, the average monthly fee is \$3.04, which can be avoided by carrying a balance of \$497, on average. A significant number of banks provide noninterest checking accounts for free (regardless of account balance), as shown by the median fee of zero. In contrast, very few banks provide interest-earning checking accounts for free. 21% of observations come from branches in fee limit states while 43% come from branches of nationally chartered banks. The data is roughly evenly split between the time period before and after preemption.

Table 5 compares these characteristics for fee-limit states versus non-limit states. In fee-limit states, checking accounts tend to have higher monthly fees but lower minimum balances to avoid them. Deposit markets are less concentrated (*HHI*) and more competitive in fee-limit states on average. Counties located in fee-limit states are more populous and

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<sup>7</sup> Overdraft fee data is not available in RateWatch until several years after our sample.

have higher median income, higher unemployment, and a higher rate of homeownership. Banks with a branch presence in fee limit states tend to be smaller and have lower capital.

To examine how maintenance fees and minimum balance requirements on checking accounts change around preemption, we employ a triple difference-in-differences (DDD) specification. The regression specification takes the form:

$$\begin{aligned} PricingFeature_{i,t} = & \gamma_s + \eta_t + \beta_0 FeeLimit_{g,t} + \beta_1 FeeLimit_{g,t} * Post_{2001Q3} + \\ & \beta_2 National_i * Post_{2001Q3} + \beta_3 National_i * FeeLimit_{g,t} + \beta_4 FeeLimit_{g,t} * \\ & Post_{2001Q3} * National_i + \Lambda X_{i,t} + \varepsilon_{i,t}, \end{aligned}$$

where  $i$  indexes the branch,  $c$  the county,  $s$  the state, and  $t$  the quarter.  $PricingFeature_{i,t}$  is the monthly maintenance fee or minimum balance required to avoid the fee.  $X_{i,t}$  is a vector of controls for local market (county) characteristics, and branch and bank financial condition. Controls are lagged relative to pricing data by one year (for county or branch characteristics) or one quarter (for bank characteristics). Standard errors are clustered by state. The coefficient of interest is  $\beta_4$ , the coefficient on the triple interaction term.

The identifying assumption is that, in the absence of OCC preemption, differences in account pricing between national banks and non-national banks would evolve similarly in fee-limit states and non-limit states.

Table 6 presents the results. Panel A examines interest checking accounts. Columns (1)-(3) use the monthly fee ( $\log(I+Fee)$ ) as the dependent variable and columns (4)-(6) use the minimum balance required to avoid the fee ( $\log(MinToAvoid)$ ). We begin with a parsimonious model without fixed effects or controls in columns (1) and (4). Columns (2) and (5) add state fixed effects, year fixed effects, and controls for county characteristics.

Columns (3) and (6) include state and year fixed effects, and the full set of county, branch, and bank characteristics.

The coefficient on the triple interaction term is never statistically significant in the fee regressions in columns (1)-(3). However, in columns (4)-(6), we find that after preemption, national banks in fee limit states lower minimum balances by 28%-40%. With an average minimum balance of \$1,345 this amounts to \$376-\$538 less that customers need to keep in interest checking accounts in order to avoid a monthly fee. The effect is statistically significant across the three specifications and the coefficient is relatively stable.

Panel B examines noninterest checking accounts. Here we find no statistically significant changes around preemption.

In combination with our earlier results on overdraft fees, we find that when a fee ceiling is lifted on overdraft fees for some banks, these banks increase overdraft fees, leave monthly maintenance fees roughly unchanged, and lower minimum balances required to avoid a monthly fee on some accounts. Thus, checking accounts become more expensive on some dimensions, and less expensive on other dimensions.

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

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.<sup>8</sup> 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, 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

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<sup>8</sup> National banks had nearly 50% market share of deposits in 2001.

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 a four-month income of \$17,300, or \$51,900 on an annualized basis, 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:

$$Checking\ Account_{ist} = \alpha + \beta FeeLimit_s \times Post_t + \delta_t + \gamma_s + \zeta DeregIndex_{st} + \theta' X_{it} + \varepsilon.$$

The dependent variable,  $Checking\ Account_{ist}$ , is an indicator for whether anyone in household  $i$ , located in state  $s$ , has a checking account at time  $t$ . The indicator variable  $FeeLimit$  is one for households in states that impose a maximum overdraft fee and is zero

otherwise. The variable *Post* takes the value of zero for dates before the July 2001 preemption regulation and one otherwise. The coefficient of interest is  $\beta$ , which measures the relative change in the share of banked households following preemption in states with fee limits compared to states without fee limits. The year fixed effects,  $\delta_t$ , account for any nationwide variation in checking account ownership that occurs through time, for example as economic conditions change. The state fixed effects,  $\gamma_s$ , 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  $\mathbf{X}$  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, which we report 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*, *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* and *Post* indicators. The *Fee Limit* 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* 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 2, 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 increased overdraft credit increases financial inclusion, suggesting that policies promoting competition and transparency might be a better path.<sup>9</sup> Competition in overdraft is largely unstudied. Banks are known to increase overdraft supply when competition against payday lenders (Melzer and Morgan 2004), but intra-bank competition has not been shown. Advertising of overdraft policies (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.

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<sup>9</sup> While competition may not completely unshroud overdraft costs (Gabaix and Laibson (2006), more of it could still benefit depositors.

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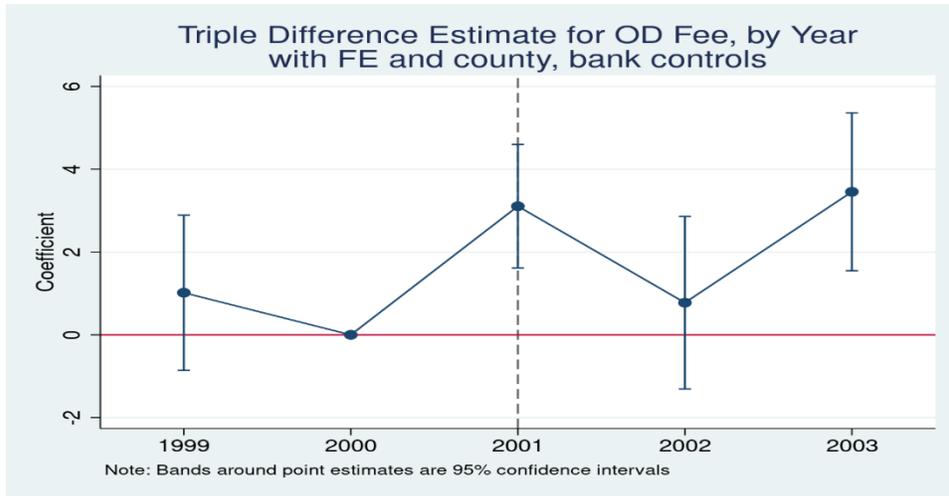
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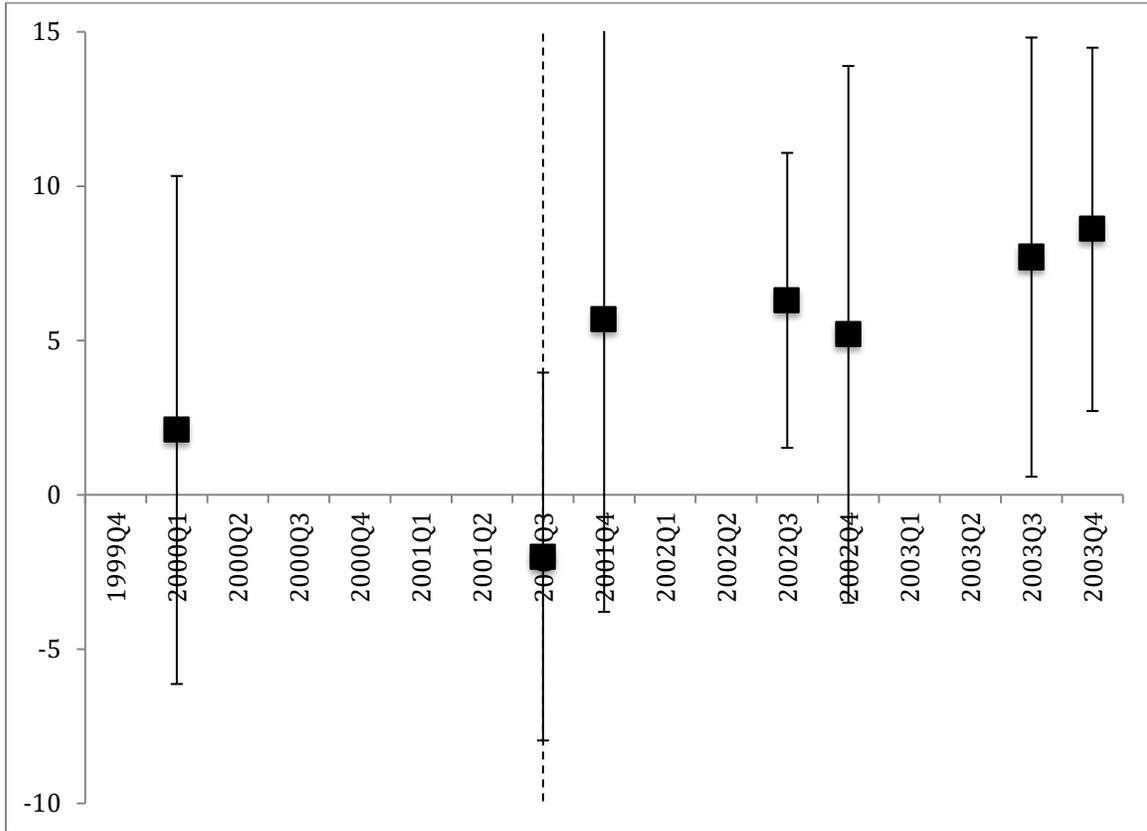
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## Figures and Tables

Figure 1.



**Figure 2. Dynamic Plot of Differences-in-Differences Coefficient for Low-income Households' Checking Account Ownership.**



**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. How do Overdraft Fees Change Following OCC Preemption?**

	(1)	(2)	(3)
	OD Fee	OD Fee	OD Fee
National X Fee Limit State X Post	2.58***	2.33***	2.25***
	(0.73)	(0.56)	(0.56)
National X Fee Limit State	-1.13	-0.47	-0.36
	(0.77)	(0.69)	(0.65)
National X Post	-1.12**	0.10	-0.03
	(0.53)	(0.43)	(0.43)
Fee Limit State X Post	-2.26***	-1.25**	-1.31**
	(0.46)	(0.48)	(0.51)
National Bank	2.62***	0.57	0.54
	(0.61)	(0.37)	(0.37)
Fee Limit State	-0.15		
	(1.14)		
Post	2.21***		
	(0.44)		
Observations	2936	2934	2394
R-Squared	0.033	0.467	0.473
Mean of outcome:	26.043	26.041	26.041
Year FE	No	Yes	Yes
State FE	No	Yes	Yes
County Controls	No	Yes	Yes
Bank Controls	No	No	Yes

Note: First row reports difference in mean real OD fees at branches of national banks in states with fee limits after OCC exemption limit in 2001. Models estimated using annual data over 1999-2003. Standard errors clustered by state. County controls: log(median income), unemployment rate, homeownership rate, log(population), % of population urban, % of population Black, % White, % Hispanic. Bank controls: log(assets), return on assets, net worth, bank deposit HHI, savings bank dummy, and BHC dummy.

**Table 2. How Does Supply of Overdraft Change Following OCC Preemption?**

	(1)	(2)	(3)
Dependent variable: <i>OD_offered</i>			
National X Fee Limit State X Post	2.05*** (0.44)	1.91*** (0.44)	2.03*** (0.41)
National X Fee Limit State	-1.66*** (0.31)	-1.80*** (0.32)	-1.81*** (0.30)
National X Post	-0.51 (0.37)	-0.36 (0.36)	-0.37 (0.37)
Fee Limit State X Post	-0.84** (0.33)	-0.84** (0.35)	-0.86** (0.36)
National Bank	0.28 (0.26)	0.25 (0.26)	0.16 (0.25)
Fee Limit State	0.71** (0.29)		
Post	0.10 (0.26)		
Observations	3197	3078	3078
Mean of outcome:	0.913	0.91	0.91
Year FE	No	Yes	Yes
State FE	No	Yes	Yes
County Controls	No	Yes	Yes
Bank Controls	No	No	Yes

Note: First row reports difference in log odds of offering overdrafts at branches of national banks in states with fee limits after OCC exemption limit in 2001. Models estimated using annual data over 1999-2003. Standard errors clustered by state. County controls: log(median income), unemployment rate, homeownership rate, log(population), % of population urban, % of population Black, % White, % Hispanic. Bank controls: log(assets), return on assets, net worth, bank deposit HHI, savings bank dummy, and BHC dummy.

**Table 3. How Do Check Processing Volumes Change Following OCC Preemption?**

Dependent variable:	(1) Log(# Processed)	(2) Log(\$ Processed)	(3) % Returned (#)	(4) % Returned \$)
Post X Fee Limit State	0.05** (0.02)	0.07 (0.05)	-0.15*** (0.04)	-0.22*** (0.07)
Income	0.78** (0.32)	0.72* (0.39)	0.88 (1.32)	1.05 (1.22)
Unemployment	0.01 (0.01)	0.01 (0.02)	-0.01 (0.02)	-0.01 (0.03)
Log(Population)	0.58* (0.31)	0.17 (0.64)	0.26 (1.49)	-0.07 (1.35)
Outcome mean	11.42	11.17	1.18	1.14
R <sup>2</sup>	0.98	0.98	0.71	0.73
Observations	900	900	900	900
Year X Quarter FE	Yes	Yes	Yes	Yes
CPC FE	Yes	Yes	Yes	Yes
County controls	Yes	Yes	Yes	Yes

Note: Models estimated over 1999q1-2003q4 with Federal Reserve Check Processing Center (CPC) data.

Post equals 1 in 2001q3 and after; 0 before. Clustering by state. \* p < .10, \*\* p < .05, \*\*\* p < .01

County controls: median income, unemployment rate, log(population)

**Table 4. Summary Stats for Account Maintenance Fee Analysis (RateWatch)**

	Full Sample			
	N	Mean	Std. Dev.	Median
Fee (IntCk, \$)	3277	8.43	3.57	8.00
MinToAvoid (IntCk, \$)	3063	1345.29	1487.59	1000.00
Fee (NonIntCk, \$)	3268	3.04	3.53	0.00
MinToAvoid (NonIntCk, \$)	1388	497.11	309.22	500.00
Fee Limit State	3308	0.21	0.41	0.00
Post	3308	0.45	0.50	0.00
National Bank	3308	0.43	0.49	0.00
HHI	3308	2336.00	1394.93	1944.97
log(Pop)	3308	4.63	1.53	4.49
log(Median Income)	3308	3.70	0.24	3.68
Unemp. rate	3308	4.28	1.41	4.07
% White	3308	86.28	12.73	90.60
% Black	3308	7.01	10.54	2.70
% Hispanic	3308	6.43	10.36	2.70
% Urban	3308	64.21	28.78	69.64
% Homeowner	3308	74.31	7.69	75.41
log(Branch deposits)	3308	10.45	1.58	10.58
log(Assets)	3308	14.32	2.57	13.76
ROA	3308	0.01	0.01	0.01
Equity capital ratio	3308	0.09	0.02	0.08

**Table 5. Summary Stats for Account Maintenance Fee Analysis, by Fee Limit Status**

	Fee Limit State				Non Fee Limit State				Diff.	t-stat
	N	Mean	Std. Dev.	Median	N	Mean	Std. Dev.	Median		
Fee (IntCk)	680	8.79	3.26	9.00	2597	8.33	3.64	8.00	0.46***	(2.99)
MinToAvoid (IntCk)	647	1114.37	1493.69	1000.00	2416	1407.13	1480.16	1000.00	-292.75***	(-4.46)
Fee (NonIntCk)	676	3.08	3.37	2.00	2592	3.03	3.57	0.00	0.06	(0.38)
MinToAvoid (NonIntCk)	291	417.60	209.67	500.00	1097	518.21	327.48	500.00	-100.60***	(-4.98)
Post	685	0.44	0.50	0.00	2623	0.45	0.50	0.00	-0.01	(-0.41)
National Bank	685	0.44	0.50	0.00	2623	0.42	0.49	0.00	0.01	(0.62)
HHI	685	1965.52	1117.75	1795.05	2623	2432.75	1443.27	1988.03	-467.23***	(-7.88)
log(Pop)	685	4.82	1.74	4.43	2623	4.58	1.47	4.50	0.24***	(3.62)
log(Median Income)	685	3.73	0.27	3.69	2623	3.69	0.23	3.68	0.03***	(3.27)
Unemp. rate	685	4.58	1.19	4.50	2623	4.20	1.45	4.00	0.38***	(6.33)
% White	685	86.45	12.52	90.20	2623	86.23	12.78	90.70	0.21	(0.39)
% Black	685	7.71	9.22	3.80	2623	6.83	10.85	2.30	0.88*	(1.95)
% Hispanic	685	5.01	6.02	2.20	2623	6.80	11.20	2.80	-1.79***	(-4.03)
% Urban	685	66.09	29.61	70.68	2623	63.73	28.55	69.50	2.36*	(1.91)
% Homeowner	685	75.04	7.66	77.17	2623	74.12	7.68	74.84	0.92***	(2.78)
log(Branch deposits)	685	10.48	1.66	10.64	2623	10.44	1.56	10.56	0.04	(0.60)
log(Assets)	685	14.05	2.47	13.35	2623	14.38	2.60	14.04	-0.34***	(-3.05)
ROA	685	0.01	0.01	0.01	2623	0.01	0.01	0.01	-0.00	(-1.10)
Equity capital ratio	685	0.09	0.02	0.08	2623	0.09	0.02	0.08	-0.00***	(-3.24)

**Table 6. How Do Account Maintenance Fees Change Following OCC Preemption?**

Panel A: Interest Checking						
	Dependent Variable					
	log(1+Fee)	log(1+Fee)	log(1+Fee)	log(MinToAvoid)	log(MinToAvoid)	log(MinToAvoid)
Fee Limit State x Post x National Bank	0.08 (0.10)	0.05 (0.08)	0.02 (0.08)	-0.28** (0.11)	-0.37*** (0.11)	-0.42*** (0.11)
Post x National Bank	0.01 (0.09)	0.01 (0.08)	0.01 (0.08)	0.16 (0.10)	0.21** (0.10)	0.20** (0.09)
Fee Limit State x Post	-0.01 (0.10)	-0.03 (0.08)	0.00 (0.07)	0.17** (0.08)	0.05 (0.06)	0.12* (0.07)
Fee Limit State x National Bank	-0.21*** (0.07)	-0.19*** (0.06)	-0.19*** (0.06)	-0.12 (0.08)	-0.07 (0.08)	-0.08 (0.08)
Fee Limit State	0.17*** (0.05)	--	--	-0.16* (0.09)	--	--
National Bank	0.20*** (0.06)	0.20*** (0.06)	0.11* (0.06)	0.28*** (0.08)	0.26*** (0.07)	0.07 (0.08)
Post	-0.10 (0.08)	--	--	-0.14** (0.07)	--	--
N	3277	3276	3276	3063	3062	3062
R <sup>2</sup>	0.03	0.09	0.12	0.06	0.13	0.21
Quarter fixed effects?	N	Y	Y	N	Y	Y
State fixed effects?	N	Y	Y	N	Y	Y
County Controls	N	Y	Y	N	Y	Y
Branch Controls	N	N	Y	N	N	Y
Bank Controls	N	N	Y	N	N	Y
Panel B: Non-Interest Checking						
	Dependent Variable					
	log(1+Fee)	log(1+Fee)	log(1+Fee)	log(MinToAvoid)	log(MinToAvoid)	log(MinToAvoid)
Fee Limit State x Post x National Bank	-0.05 (0.18)	-0.04 (0.14)	-0.07 (0.14)	0.20 (0.16)	0.16 (0.11)	0.04 (0.13)
Post x National Bank	-0.19 (0.12)	-0.19* (0.11)	-0.18* (0.10)	-0.02 (0.10)	-0.05 (0.09)	-0.00 (0.09)
Fee Limit State x Post	0.01 (0.17)	-0.06 (0.14)	-0.03 (0.13)	0.20 (0.12)	-0.18* (0.09)	-0.08 (0.11)
Fee Limit State x National Bank	0.06 (0.10)	0.01 (0.09)	0.02 (0.09)	-0.03 (0.10)	0.01 (0.07)	0.06 (0.08)
Fee Limit State	0.02 (0.12)	--	--	-0.29** (0.13)	--	--
National Bank	0.10 (0.10)	0.14 (0.09)	0.07 (0.08)	0.09 (0.08)	0.09 (0.07)	-0.07 (0.06)
Post	-0.21* (0.11)	--	--	-0.21** (0.10)	--	--
N	3268	3267	3267	1379	1375	1375
R <sup>2</sup>	0.02	0.11	0.12	0.04	0.18	0.24
Quarter fixed effects?	N	Y	Y	N	Y	Y
State fixed effects?	N	Y	Y	N	Y	Y
County Controls	N	Y	Y	N	Y	Y
Branch Controls	N	N	Y	N	N	Y
Bank Controls	N	N	Y	N	N	Y

**Table 7. Summary Stats for Analysis of Household Checking Account Ownership  
(Survey of Income and Program Participation)**

	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 (annualized, \$ thou)	51,886.2	51,599.1	8,924.1	7,928.7
Net worth (\$)	171,816.2	1,169,222.0	82,569.1	1,081,444.0
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: Sample includes 106,408 observations. Low-income subsample includes 20,740 observations.

**Table 8. Are Low-income Households More or Less Likely to Have Checking Accounts Following OCC Preemption?**

	Dependent Variable: <i>Checking Account</i>			
Fee limit x Post	5.2** (2.1)	5.5** (2.5)	5.0*** (1.5)	4.8*** (1.7)
Fee limit	-0.6 (3.7)			
Post	-2.5** (1.0)			
Income (\$ thousands)			0.3** (0.1)	0.3** (0.1)
Net worth (\$ millions)			0.8 (0.5)	0.8 (0.5)
Age			0.4*** (0.0)	0.4*** (0.0)
Black			-22.9*** (1.2)	-22.9*** (1.2)
Hispanic			-18.3*** (1.2)	-18.3*** (1.2)
Asian			-4.4** (2.0)	-4.4** (2.0)
Other			-18.7*** (4.0)	-18.7*** (4.0)
No HS diploma			-34.1*** (3.1)	-34.1*** (3.1)
HS diploma			-23.1*** (2.7)	-23.1*** (2.7)
Some college			-15.1*** (2.7)	-15.1*** (2.7)
College degree			-4.9** (2.3)	-4.9** (2.3)
Banking deregulation index				1.3 (1.9)
N	20,746	20,746	20,740	20,740
R <sup>2</sup>	0.00	0.03	0.16	0.16
State fixed effects?	N	Y	Y	Y
Year-month fixed effects?	N	Y	Y	Y

**Table 9. Comparing Treatment Effects Across Income Groups**

	<i>Dependent Variable: Checking Account</i>					
	Income Sample: Quintile 1	Income Quintile 2	Income Quintile 3	Income Quintile 4	Income Quintile 5	Full Sample
Fee limit x Post	4.8*** (1.7)	-1.5 (2.4)	2.4 (4.3)	1.9 (2.5)	-0.8 (1.4)	0.8 (2.4)
Fee limit x Post x Income Bottom Quintile						4.0*** (1.4)
N	20,740	20,560	20,451	21,381	23,251	106,383
R <sup>2</sup>	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

**Table 10. Does Account Churning Increase Following OCC Preemption?**

	<i>Dependent Variable</i>	
	<u>Gained Checking Account</u>	<u>Lost Checking Account</u>
Fee limit x Post	2.1*** (0.7)	-1.5* (0.8)
N	12,427	12,427
R <sup>2</sup>	0.01	0.01
State fixed effects?	Y	Y
Year-month fixed effects?	Y	Y
Household and state controls?	Y	Y