Competition and Adverse Selection in a Consumer Loan Market:

The Curious Case of Overdraft vs. Payday Credit

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Abstract

We document a case of price-increasing competition; banks and other depository institutions charge more for overdraft credit and are less likely to offer free checking when payday credit is available. We attribute this rise in prices to adverse selection created by the flat fee pricing of overdraft credit. That pricing favors depositors prone to large overdrafts, so when payday credit (priced per dollar borrowed) is available, depositors prone to small overdrafts switch. That selection works against banks; large overdrafts cost more to supply and, if depositors default, banks lose more, so prices rise. Consistent with this adverse selection hypothesis, we document that the average dollar amount per returned check at depository institutions increases when depositors have access to payday credit. Our findings illuminate competition and pricing frictions in the large, yet largely unstudied, small dollar loan market.

I. Introduction

A basic starting point for much economic analysis and policymaking is that competition leads to lower prices and higher consumer welfare. We evaluate that proposition in the small dollar loan market, and find price-increasing competition and ambiguous welfare effects.

The competitors we study are two very different looking financial intermediaries offering similar credit services. On the one side are mainstream banks and credit unions that supply overdraft credit whenever they cover check, ATM, or debit card transactions that would have overdrawn depositors' account otherwise. Depository institutions earned an estimated $36 billion in account fees in 2006 (GAO 2008). On the other side are payday lenders who advance cash against customers' personal checks for about two weeks, providing the check-writer with $50 to $1000 of credit in the interim. An estimated 19 million households tapped the $50 billion dollar payday loan market in 2007 (Stephens 2008).

Both types of credit are controversial, and as a result, increasingly regulated. Payday lenders have long been maligned for high prices, for promoting chronic borrowing (Stegman and Faris 2003), and for congregating in lower income minority neighborhoods and around military bases. Fifteen states now prohibit payday loans via usury limits or outright bans and the Federal government effectively closed the market for soldiers in 2007 by imposing a 36 % APR cap on loan to members of the military. Overdraft protection providers have come under fire more recently for certain opaque practices and for the high cost of overdraft credit, particularly on small transactions.[1] The Federal Reserve recently increased disclosure requirements on overdraft

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[1] Depositors are typically enrolled in protection programs by default, with limited ability to opt out, and are not notified in real time when an ATM or debit transaction will lead to overdraft charges. Gabaix and Laibson (2006) use overdraft protection as a leading example of a shrouded attribute associated with "free" checking.

credit and a Senate bill under consideration would limit the price and frequency of overdraft charges.[2]

Our motivation for studying competition in this market is threefold. First, we wanted to test whether some borrowers rationally switch from overdraft to payday credit when the latter is cheaper;[3] the two are often claimed to be substitutes (e,g, Stegman 2007), but the only evidence is Morgan and Strain (2008). Second, both types of credit have been called "predatory," and competition can reduce the welfare loss associated with predatory lending (Bond et al. forthcoming). Last but hardly least, an important economic question about policies that restrict payday lending is whether the prices of alternatives, like overdraft credit, will rise as a result.

Using data from a national survey on checking account terms, we investigate how access to payday credit affects overdraft credit fees and the availability of free checking accounts, the base good (or loss leader) with which overdraft protection is bundled. We identify the effect of payday credit access on overdraft terms using two different identification schemes. The first, following Morgan and Strain (2008), compares how terms change as states switch from allowing to prohibiting payday credit, or vice versa. The second, following Melzer (2009), focuses on states that prohibit payday credit, and compares terms at institutions located near the border of a state that allows payday credit with terms at institutions located further from such a border. The identifying assumption for the first scheme is that legal changes within states are independent of overdraft terms. The identifying assumption for the second scheme is that the payday laws and the location of intermediaries in one state are independent of laws in neighboring states.

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[2] The Federal Reserve recently prohibited financial institutions from charging overdrafts fees for ATM and debit transactions unless depositors explicitly consented (opted in) to pay such fees (http://www.federalreserve.gov/newsevents/press/bcreg/20091112a.htm). The FAIR Overdraft Coverage Act of 2009 (Senate Bill 1799 (2009)) would limit the number of overdraft charges to one per month and six per year, and establish a maximum charge to be set by the Federal Reserve Board of Governors.

[3] The rationality of payday borrowers is an important issue, raised in Skiba and Tobacman (2008b) and studied in the context of a field experiment by Bertrand and Morse (2009).

Importantly, the identifying assumptions of these two models are independent, which strengthens the overall research design.

To our initial surprise, we find higher overdraft fees and reduced supply of free checking accounts when payday credit is available. The changes are similar in both models, and are economically meaningful; the price of overdraft credit increases by $1, or 4 percent, and the likelihood of free checking falls by 5 percent.

In hindsight, our findings make sense given the flat-fee pricing of overdraft credit. The median price in 2006 was a flat $27 per event, regardless of the size of the overdraft (FDIC 2008), while the price for payday credit varies with the amount borrowed, typically $15 per $100 borrowed. At those prices, payday credit is cheaper for loans less than $180.[4] As a consequence, the introduction of payday lending exposes overdraft providers to adverse selection. Depositors prone to small overdrafts benefit by switching to payday credit (when available), while depositors prone to large overdrafts stick with overdraft protection. That selection is adverse to overdraft providers in two ways; funding large overdrafts costs more, and if the credit is not repaid, lenders lose more. Higher costs imply higher prices.[5]

The adverse selection hypothesis implies that overdraft attempts should fall in number, but rise in average dollar amount when payday credit is available. Using data from Federal Reserve check processing centers, we confirm these predictions for a subset of overdraft attempts: returned checks, which are overdraft attempts that depositories refuse to pay. We confirm and extend Morgan and Strain's (2008) finding that returned checks are less frequent

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[4] Indeed, Sheila Bair (2005), now head of the Federal Deposit Insurance Corp., observed that depository institutions earned "enormous" fees from overdraft protection and that their customers were turning to payday credit for their "cheaper product."

[5] In the end, our finding of price-increasing competition is no more or less surprising than finding higher prices at a buffet style ("all you can eat") restaurant after an ala-carte style restaurant opens nearby.

when payday loans are allowed. In addition, we find that average amount of a returned check increases by 14% when payday loans are available. In combination, we believe that these facts are compelling evidence in favor of the adverse selection hypothesis.

Why do banks persist with flat fee pricing in the face of competition and adverse selection from payday lenders? While there may be subtle optimal contracting rationales, the obvious reason is to avoid usury limits. Overdraft protection is not regulated as credit, and is not subject to usury limits, precisely because the fee is invariant to the overdraft amount (White 2007).[6] Were overdraft fees contingent on the amount of protection, courts might see overdraft protection as credit and usury limits might apply. That "shadow" usury constraint may force depository institutions to price per overdraft event instead of per overdraft amount.[7]

As the first paper to study how the availability of payday credit affects the price of another type of credit, our paper extends the growing literature on the consequences of payday credit access.[8] Fusaro (2008) also studies the cost of overdraft credit, but does not investigate its determinants. Hannan (2006) and Deyoung and Phillips (2009) analyze competition within the overdraft and payday credit markets, respectively, but do not look at competition across the two industries.

Our work also relates to an emerging industrial organization literature on price-increasing competition. Chen and Riordan (2008) show that competition between two differentiated products can increase each product's price in "non-exceptional" theoretical circumstances. Empirical work in this area consists of evidence that prices increase following entry of private

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[6] Overdraft protection is regulated under the Truth in Savings Act rather than the Truth in Lending Act.
[7] Bair (2005) notes the aversion of some bank officials toward supplying payday loans: "most bank officials we interviewed perceived the product as too high risk to offer profitably except at extremely high interest rates, thus inviting criticism from media, public policy officials, and consumer advocates."
[8] See Morse (2009), Morgan and Strain (2008), Melzer (2009), Skiba and Tobacman (2008a), Carrell and Zinman (2008), Zinman (forthcoming), Stoianovici and Maloney (2008), Wilson et al. (2008), and Campbell et al. (2008).

label products at groceries (Ward et al. 2002) and generic drugs in the pharmaceutical market (Perloff, Suslow, and Seguin 2006). However, the possibility that entry is endogenous to price trends is a concern, one that we attempt to address by using multiple instruments to identify exogenous variation in competition.

Section II compares overdraft and payday credit and makes the case, based on prices and usage patterns, that they are partial substitutes. Section III describes the exit and entry of payday lenders that constitute the "experiments" we use to study overdraft and deposit outcomes. Section IV presents the main result—price-increasing competition—revealed by those experiments. Section V presents auxiliary findings suggesting that adverse selection created by crudely (flat) priced overdraft is partly responsible for the price-increasing competition we find. Section VI concludes by discussing implications for consumer welfare, policy, and future research.

II.   Overdraft and Payday Credit

This section describes the two main players in the small-dollar loan market and compares the pricing and usage of their services. The key points are: overdraft and payday credit are partial substitutes, the relative prices of payday and overdraft credit depend on the amount borrowed; and both credit providers earn substantial revenues from repeat borrowing.

II.1.   Overdraft Credit

When presented with a transaction that overdraws a customer's account a bank must decide whether to make the payment, thereby extending credit to the depositor, or reject the item, returning it unpaid. Traditionally, banks made those decisions on an *ad hoc* basis, but in the mid- to late-1990s financial advisory firms began marketing trade-marked, computer algorithms

designed to automate and optimize these decisions. The advent of automated overdraft programs greatly increased the quantity of overdraft credit.[9]

The FDIC's (Federal Deposit Insurance Corporation) recent landmark study of bank overdraft programs reveals how ubiquitous overdraft credit programs have now become (FDIC 2008).[10] Roughly 70 percent of banks with assets over $250 million have automated overdraft of one sort or another. The study shows that depository institutions offer a full "suite" of overdraft credit, ranging from lines of credit (LOC) to discretionary overdraft protection, more familiarly known as "bounce protection," the variety we study.[11]

A distinguishing feature of bounce protection (which we refer to as "overdraft credit") that figures centrally in our paper is the flat fee pricing structure. For the great majority of suppliers, fees are levied per overdraft and are invariant to the size and duration of the protection.[12] A $10 overdraft for 2 days might cost the same as a $100 overdraft for two weeks.

Depending on the amount of the overdraft, overdraft credit can be more expensive than payday credit. The median NSF (insufficient funds) fee charged by depository institutions *per* overdraft was $27 in 2007 (FDIC 2008, p.III, bullet 5). At that fee, the implicit annual percentage interest (APR) on a hypothetical, two week overdraft of $60 is about 1,173 percent, more than the typical APR for payday credit.[13] According to FDIC (2008), the median overdraft

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[9] Banks show substantial increases in overdraft fee income after establishing automated programs (FDIC 2008, Figure VIII-1), and banks operating automated programs have much greater incidence of overdraft transactions than those without automated programs (FDIC 2008, Tables IX-11 and IX-14).

[10] Starting with the population of banks scheduled for examination between May and December 2007, the FDIC surveyed a stratified, random sample of 462 institutions about their automated overdraft programs. Of those, a non-random sample of 39 banks were asked to provide transaction-level data.

[11] LOC are opt-in services charging interest comparable to credit card rates, and almost always conditional on credit approval (FDIC 2008, Table V-2). "Bounce protection," by contrast, is the opt-*out* (default) choice, typically applied without a credit check (FDIC 2008, Table V-2).

[12] According to the FDIC 2008 (Table IV.2 p. 14), 98.4 percent of depository institutions charge *per* overdraft.

[13] The implicit annual percentage rate is ($27/$60)*26*100. Using actual overdraft transactions on 1399 accounts at a small Midwestern depository institution, Fusaro (2008) reckons the median APR exceeded 4,000%, with "chronic" users (1.1% of all depositors) paying $3,440 annually in fees.

amount for debit, ATM and check transactions was $20, $60 and $66 in 2006, suggesting that a substantial number of transactions can be funded more cheaply through payday credit.

While some overdraft activity is undoubtedly accidental and therefore not affected by payday loan availability, we maintain that payday loans and overdraft credit are potential substitutes for a substantial number of overdraft creditors. In fact, usage patterns of overdraft and payday credit are quite similar, with repeated borrowing common for both types of credit (Table 1). This similarity suggests overlap in the customers using these two types of credit.

Supplying overdraft credit generates substantial revenue for depository institutions by any number of measures. For the median bank studied in FDIC (2008), NSF fee income accounted for 43 percent of noninterest income and 21 percent of net operating income.[14] Banks and credit unions, particularly the latter, are surprisingly reliant on revenue from overdraft credit (Table 2).

Supplying overdraft credit is not without risks or costs, however. Depository institutions involuntarily closed 30 million accounts between 2001and 2005 for "recidivist" check bouncing, and the trend is upward (Campbell, Jerez-Martinez, and Tufano 2008, p.1). The average loss *per* bad account in 2007 was $310 (FDIC 2008, Table VIII-5).[15]

II.2. Payday Credit

Payday lending emerged in the mid- to late-1990s as a variation on a check cashing transaction. Customers receive a short-term cash advance by exchanging a post-dated personal check for cash, paying a $50 fee for $350 of credit in the average transaction. At maturity, two to

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[14] FDIC (2008) Table VIII-2, p. 58. Cost information on overdrafts is not readily available, so the 21 percent figure overstates the importance of overdraft income relative to net income.

[15] Charged-off deposit losses are counted in "residual charge-offs not elsewhere classified" (FDIC 2008 p. 62) Losses on charged-off deposits accounted for 12.6 percent of total gross loan and lease charge-offs in the FDIC study.

four weeks later, the loan is repaid either when the lender cashes the check, or as is more typically the case, the borrower gives the lender cash in person.[16]

Payday credit underwriting is minimal; applicants must prove that they have a checking account and a job. The checking account pre-requisite makes checking accounts and payday credit partial complements, implying positive correlation in the individual demand for each. Given a deposit account, however, payday credit and overdraft credit are substitutes, implying negative correlation in their individual demand. As we discuss later, that asymmetric technological relationship might help account for some of our findings.

The controversy over payday lending has led to a large literature investigating how payday credit access affects a variety of outcomes: crime and foreclosure (Morse 2008), bounced check rates and complaints against lenders and debt collectors (Morgan and Strain 2008), difficulty paying bills (Melzer 2009), bankruptcy (Skiba and Tobacman 2008a; Stoianovici and Maloney 2008), air-force reenlistment (Carrel and Zinman 2008), expected well- being (Zinman forthcoming), virtual well-being (Wilson et al. 2008), and involuntary account closings (Campbell et al. 2008). The findings from that literature are mixed, with some studies concluding that payday credit ameliorates financial hardship and others concluding the opposite. None of the literature studies how payday credit access affects the price of substitute forms of credit, as we do.

III. Entry and Exit by Payday Lenders as "Experiments"

The controversy over payday credit has also led to considerable flux in the state laws governing it. Following Melzer (2009) and Morgan and Strain (2008), we use those fluctuations

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[16] Advance America, one of the largest payday lenders, reports having deposited only 6% of customer checks or ACH authorizations (Advance America Cash Advance Centers, Inc. 2009).

as well as cross-sectional differences to identify plausibly exogenous variation in payday credit supply.

With a few exceptions, northeastern states have barred entry of payday lenders by strict enforcement of usury limits. Seven additional states have closed markets outright or indirectly, *via* prohibitive usury limits, while one has sanctioned and safe harbored the practice. The appendix documents the regulatory differences in detail. Using those differences, we define two distinct indicators of DD credit availability: *Allowed* and *Access*.

Allowed$_{sy}$ equals one for institutions located in a state *s* where payday credit is allowed in year *y,* and zero otherwise. Because our regressions include state fixed effects, the variation that identifies the effect of *Allowed* comes from states that switch from prohibiting to allowing payday credit, and vice-versa. One state, New Hamphshire, switched from prohibiting to allowing in 2000. The District of Columbia and six states switched from allowing to prohibiting payday credit between 2002 and 2008.[17]

Our identifying assumption is that political-economy decisions driving changes in *Allowed* are exogenous with respect to outcomes. While that assumption may be arguable, we find it plausible given the absence of any evidence to the contrary.

The 2nd availability measure is actually a sequence of distance-based indicators. *Access_X_Y$_{cy}$,* is a county-year level indicator equal to one if an institution is located in a county whose center is within X and Y miles of a state that allows payday lending (zero if not).[18] For example, *Access_0_10* equals one if an institution is in a county located 10 miles or less from a state that allows payday loans, and zero otherwise. *Access_10_20* and *Access_20_30* are defined analogously. The omitted category is *Access_30_plus*.

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[17] These six states are MD, GA, NC, WV, PA, and OR.
[18] We use the county center because we do not know the exact location of institution within the county.

Note that *Access* varies within state, but only in states that prohibit payday lending.[19] Its effect is identified by comparing outcomes at institutions relatively near states that allow payday credit to outcomes at more remote institutions. The identifying assumption is that the distance between institution i and a state where payday credit is allowed is exogenous with respect to overdraft terms at institution i, a different assumption than needed for *Allowed*. That assumption requires, firstly, that payday credit regulations in bordering states are uncorrelated with characteristics of the overdraft market across the border, and secondly, that payday credit availability does not alter the composition of depositories near the border. To weaken the latter assumption, we control for the institution type, institution size (log assets), and the concentration of the local deposit market. [20]

The institutional and county characteristics defined by *Allowed* and *Access* differ in a few ways (Table 3). States with changes in *Allowed* have higher proportions of Hispanics and blacks, and relatively more savings banks (versus commercial banks). Savings banks are also over-represented (relative to commercial banks) in counties without access to payday credit (*Access_0_10 =1)*. Unemployment rates are significantly lower in those counties as well. Importantly, our regression analysis controls for those differences by including institution and county-level controls.

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[19] The 13 states that prohibit payday lending for some time during the sample period are: CT, DC, GA, MA, MD, NC, NH, NJ, NY, OR, PA, VT, WV.

[20] It is also worth noting that Moebs almost always surveys a branch close to the institution's main office, a location that was typically determined long before payday lenders arrived on the scene.

IV.   Data and Results

IV.1.   Data

The data on overdraft prices and free checking were provided to us by Moebs $ervices of Lake Bluff, Illinois which collected the data through a telephone survey.[21] Moebs draws a random sample of institutions – stratified by region, asset size and institution type – and calls a branch close to each institution's main office to assess fees charged to customers at that specific location.[22]

The full space of data spans roughly 20,000 branch-year observations, half on commercial banks, 40 percent on credit unions, and 10 percent on savings banks. The two variables of interest are *Fee,* the fee charged per overdraft event, and *Free Checking*, a binary variable indicating whether an institution offers free checking accounts. *Fee*, measured in constant (2008) dollars, is observed at banks from 1995 to 2008, and at credit unions from 1999 to 2008.[23] Average and median *Fee* are $25 and $26, but some institutions charge above $50. *Free Checking* is observed from 2003 to 2008. Free checking is common; about 75 percent of depository institutions offer it.[24]

We match the Moebs survey data with balance sheet data filed by each institution with the FDIC and NCUA (National Credit Union Administration).[25] We also use the FDIC's

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[21] Moebs $ervices is an economic research firm focused on the financial services market. Their survey of fees and services at depository institutions was initiated in 1985, and then expanded in 1989 to provide data for the Federal Reserve's Annual Report to the Congress on Retail Fees and Services of Depository Institutions (1989 to 2002). The survey has continued annually thereafter.

[22] Many banks with regional or national branch networks are chartered separately in each state. Moebs samples from the population of chartered institutions, so a single bank holding company might be sampled multiple times in a given year, across separately chartered subsidiaries.

[23] Nominal prices are converted to real prices, in 2008 dollars, using the level of the June CPI from 1995 to 2008.

[24] Free checking, as distinct from free *checks,* means fees are not levied until the account balance is negative, in which case NSF or overdraft charges apply.

[25] These databases are populated through regulatory filings – bank and credit union Call Reports, and Thrift Financial Reports.

Summary of Deposits database to calculate the HHI (Hirshman-Herfindahl index) of bank

deposit market concentration for each county and year.[26] County characteristics including

median income, racial composition, home ownership, population and percent urban population,

are from the 2000 Census. Unemployment rates, by county and year, are from the Bureau of

Labor Statistics' Local Area Unemployment Statistics.

IV.2. Findings with *Allowed*

We estimate the impact of payday credit availability on *Fee* and *Free Checking* using

difference-in-difference regressions of the form:

$$(1)\ Y_{icsy} = \alpha + a_s + a_y + \beta Allowed_{sy} + \theta HHI_{cy} + \vec{\gamma} \boldsymbol{Cnty}_{cy} + \vec{\pi} \boldsymbol{Inst}_{iy} + \varepsilon_{icsy}.$$

Y_{icsy} represents *Fee* or *Free checking* at institution i in county c, state s, at year y. The

fixed effects (a_s and a_y) control for differences in the mean of Y across states and years. Some

versions of (1) include a Census division-year effect to control for region-specific trends. *HHI*

(Herfindahl-Hirschman Index) measures bank deposit market concentration in each county-year.

In some specifications we include an interaction, *Allowed*HHI,* to see if the payday credit

effects depend on deposit market concentration. *Cnty* is a vector of eight county-level control

variables, including the unemployment rate, which varies across years.[27] *Inst* controls for the

natural log of assets and institution type (with dummy variables): savings bank, credit union, or

commercial bank (the omitted category). The regressions are estimated by ordinary least squares,

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[26] NCUA does not collect the equivalent data for credit unions so credit union market shares cannot be calculated.
[27] The county-level Census controls are cubics in median income, population and percent urban population; percent black, white, Hispanic and Asian; percent home hownership and percent foreign born.

but we report probit estimates of *Free Checking* in robustness tests. Observations are clustered by state in calculating Huber-White robust standard errors.[28]

The key coefficient, β, measures how F*ee* or *Free Checking* varies with *Allowed*. Textbook theory implies β < 0, but given our adverse selection hypothesis, we reserve the possibility of β > 0.

Table 4 reports estimates of the regression model. Before considering β, note some of the other results. Credit unions and savings banks charge lower fees for overdraft than commercial banks and are more likely to offer free checking. *LogAssets* has a significant, positive coefficient in every model, implying larger institutions charge higher overdraft fees and are more likely to offer free checking. By contrast, *HHI* is insignificant in every model, implying *Fee* and *Free Checking* are uncorrelated with local deposit market concentration.

Now consider *β.* The results suggest access to payday credit is associated with higher overdraft fees in all but the most concentrated deposit markets. The coefficient on *Allowed* is positive in all four *Fee* regressions and is significantly different from zero in three of four specifications. The baseline difference-in-difference model, without county and institution controls, implies overdraft fees increase by $1.09 when payday credit is available. Adding county and institution controls raises the estimated effect of *Allowed* to $1.31, a 5 percent increase relative to the average overdraft fee of $25.[29] In the third specification, where we include census division-year fixed effects, the coefficient on *Allowed* falls to $0.39, but this effect is quite imprecisely estimated. Even in that case we find no evidence of price-decreasing competition.

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[28] Clustering by state addresses the Bertrand et al. (2004) concern that serially correlated outcomes bias standard error estimates in differences-in-differences regressions.

[29] The estimated coefficient on *Allowed* is also stable when county dummy variables are used in place of the *Cnty* vector (results not reported).

The final specification includes an interaction term, *Allowed*HHI*, for which we estimate a coefficient of -3.27 (p-value 0.07). This point estimates implies payday availability actually decreases overdraft fees in substantially concentrated markets, those with HHI above 0.6. Perhaps payday loan competition *is* effective in lowering prices in markets where overdraft fees include large mark-ups.

The *Free Checking* regressions indicate depository institutions are less likely to offer free checking accounts when depositors have access to payday credit. *Allowed* is negative and significant in three of the four specifications, including the model with census division-year fixed effects. The baseline difference-in-difference model implies depositories in states that allow payday lending are five percentage points less likely to supply free checking. The coefficient on *Allowed* does not change with the addition of county and institution controls, and increases in magnitude to -6.9 percentage points with the addition of division-year fixed effects. In final specification the estimated coefficient on *Allowed*HHI* has a very wide confidence interval, and therefore offers little insight into whether the *Free Checking* effect depends on deposit market concentration.

Before discussing the results, we confirm that they hold using an entirely different measure of payday credit availability.

IV.3. Findings with Access

A potential concern with *Allowed* is that states endogenously liberalize their payday lending laws as overdraft fees increase, leading to a biased estimate. Using *Access* reduces those concerns; the identifying variation in *Access* does not depend on law changes in the institution's home state. The regression model is:

$$(2)\ Y_{icsy} = \alpha + a_{sy} + \vec{\beta} \boldsymbol{Access}_{cy} + \vec{\gamma} \boldsymbol{Cnty}_{cy} + \delta BORDER_c + \theta HHI_{cy} + \vec{\pi} \boldsymbol{Inst}_{icsy} + \varepsilon_{icsy}.$$

Apart from replacing *Allowed* with *Access,* model (2) differs from (1) in two ways. First, this model includes a state-year effect (instead of state and year effects) to isolate variation in *Access* that is unrelated to the state-level changes payday availability captured by (1). Second, some specifications of (2) include *Border*, a dummy indicating whether an institution is located in a county within 25 miles of a state border. *Border* controls for general differences between institutions located near a state border and more interior counties. To improve precision of the estimates we include all observations in the regression sample, but the identifying variation in *Access* comes from institutions in the thirteen states that prohibit payday lending at some time during the sample.

Table 5 reports regression estimates. We observe the same significant differences across types of institutions and size of institution as with regression model (1). The effect of market concentration (HHI) is insignificant, as before.

The main results with *Access* are very similar to those with *Allowed.* Given county characteristics and type of institution, depository institutions are about 9 percentage points less likely to offer free checking if payday credit is accessible within 10 miles, with no discernible effect at greater distances. Overdraft fees are significantly higher when payday credit is accessible. These estimates are very close to the earlier estimates; given the type and size of institutions and other controls, overdraft fees are $1.48 higher when payday credit is available within 10 miles. Access beyond ten miles does not significantly affect overdraft prices.[30] As with *Allowed*, *Access* seems to have a larger effect on overdraft fees in low-HHI deposit markets, but the estimated coefficient on the HHI interaction term is not statistically significant. The

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[30] F-tests reject equality between the coefficients on *Access_0_10* and *Access_10_20* (p-value 0.08), and between the coefficients on *Access_0_10* and *Access_20_30* (p-value 0.02).

coefficients on *Access_0_10* also do not appear to be driven by differences in institutions or economic conditions in border areas; adding *Border* and other covariates actually increases the estimated effect of *Access_0_10* for both *Fee* and *Free Checking*.

IV.4. Robustness

Table 6 shows that the main findings are robust to alternative functional forms, a continuous analog of *Access* and sample restrictions that exclude geographically dispersed banks.

A log-linear model, with *Log(Fee)* as the dependent variable, yields an estimated effect of *Allowed* and *Access* of between four percent and six percent, as shown in Columns 1 and 2 of Panel A. This analysis confirms that the nominal to real price adjustment does not change the results. Estimating a probit model for *Free Checking* (Panel B, Columns 1 and 2) yields marginal effects very similar to the linear probability estimates in the main results.

Column 3 in each panel confirms the results of model (2) using a continuous measure, *LogDistance*, instead of *Access*. A one log point increase in the distance to a state that allows payday credit increases the probability that *Free Checking* is available by four percentage points and decreases overdraft fees about 50 cents.

Finally, Columns 4 and 5 of each panel show that the main findings are stable when the sample is restricted to institutions that have a large proportion of deposits, at least 50 percent, in the state or county of the surveyed branch. These results confirm that the effects of *Allowed* and *Access* are not driven by large banks that operate across multiple states or counties. For such institutions, it is less plausible that payday loan availability in the area of the surveyed branch influences overdraft and checking account terms, which are often set uniformly across the entire branch network.

V.   Adverse Selection and Other Possible Explanations

How do we explain our finding of price-increasing competition? One might wonder if we are confusing cause and effect; perhaps rising overdraft prices within a state (endogenously) motivate legislators to permit payday credit? However, our second identification is less subject to that objection. It seems implausible that the regulatory decisions in one state are driven by the overdraft conditions in counties in neighboring states, and, at that, only by those counties within 10 miles of the border, as we find. In two falsification exercises (unreported), we also find no statistically significant relationship between county unemployment rates and either measure of payday loan availability.

Could access to payday credit drive up prices by increasing *demand* for overdraft credit? That prediction follows from the proposition that prohibitively expensive payday loans aggravate their users' already strained financial condition and drive them to demand still more credit, including, perhaps, overdraft credit.[31] However, Morgan and Strain (2008) document that returned checks rates fall when payday credit is available. That finding, which we confirm and extend below, suggests access to payday credit *reduces* demand for overdraft credit, at least by some account holders.

Our findings could reflect the theoretical counter-effects of competition predicted by Chen and Riordan (2008). Analyzing a monopoly-duopoly model where consumers make discrete choices between differentiated products, they show that the customary downward pressure on prices from entry (as firms "defend" lost market share) may be offset by upward

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[31] Melzer (2009) finds that households with geographic access to payday loan stores are more likely to report difficulty paying bills, and Skiba and Tobacman (2008a) find higher rates of Chapter 13 bankruptcy filings among payday borrowers.

pressure arising because the duopolist's remaining customers are less price-elastic. While those effects could be operating here, we do not have any direct evidence for them.[32]

Where we can provide direct evidence is for the adverse selection hypothesis. That hypothesis, again, is that the flat-fee pricing of overdraft credit discriminates against depositors prone to small overdrafts so they switch to payday credit when available while depositors prone to large overdrafts stick with banks and credit unions. That adverse selection hypothesis implies that the average amount *per* overdraft should increase when payday credit is available.[33] We test this prediction using data on returned checks, a subset of overdraft attempts, from Federal Reserve Regional Check Processing Centers (CPC).[34]

Some limitations of the data require discussion. Fed CPCs operate regionally; a CPC might process checks drawn on depository institutions from other states (which introduces some error in variables) and some states do not have a Fed CPC (which limits the events we can study). New Hampshire and the District of Columbia have never had a CPC within their borders so we omit their law changes from our set of "experiments." That leaves six events, all bans, with which we identify the effect of payday credit access on rates and amounts of returned checks.

With electronic payments supplanting checks, the Federal Reserve in 2004 began consolidating its check processing operations by closing some CPCs and transferring their operations to others. To maintain continuous series for those CPCs, we create *pro forma* series

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[32] The flat-fee pricing of overdraft protection makes it less than ideal for testing Chen and Riordan's (2008) hypothesis.

[33] To clarify our terminology: overdraft attempts can be divided into two mutually exclusive and exhaustive categories, returned (bounced) checks and paid (protected) overdrafts.

[34] The Federal Reserve clears checks for banks, credit unions, and other depository institutions. The 45 Fed CPC operating in 2003 cleared about 38 percent of the estimated 36.6 billion checks written on all types of U.S. depository institutions that year, including credit unions and savings banks (Federal Reserve 2005 Check Restructuring Factsheet: http://www.federalreserve.gov/boarddocs/press/other/2004/20040802/attachment2.pdf).

by combining the data for those CPCs at the beginning of the observation period. For example, the Columbia, SC CPC was closed and its operations were transferred to the Charlotte, NC in August, 2004. Combining their data at the beginning of the observation period creates a pro *forma* "Charlotte-Columbia" CPC that reflects joint activity at the CPC. Having to use *pro forma* series tends to attenuate the impact of payday lending bans on the outcomes.

To see how returned check patterns vary with access to payday credit we estimate difference-in-difference regressions of the form:

$$(3)\ \ Y_{csdt} = \alpha + a_c + a_t + \beta Allowed_{st} + \gamma Unemployment_{dt} + \delta Unemployment_{st} + \varepsilon_{csdt}.$$

The dependent variable, Y_{csdt}, denotes either 1) the *rate* of returned checks or 2) the average dollar amount *per* returned check at CPC c in state s in Federal Reserve District d at time (year-quarter) t. The rate of returned checks is measured in two ways: 1) number of returned checks *per* number of checks processed; and 2) dollar value of returned checks *per* dollar value of checks processed. The former seems more pertinent here because payday credit users, having lower than average income, are likely to write (and bounce) checks of smaller than average value, and the effect of these on the latter (dollar) measure will be muted. The regressions include a fixed effect for each CPC (a_c) and each date (a_t). *Allowed* is defined as before, except the NH and DC events are excluded. The two *Unemployment* variables denote the quarterly unemployment rate in the Federal Reserve District and state where CPC c is located.

Summary statistics are reported in Table 7. The average rate of returned checks *per* number processed is 1.29 percent. The mean dollar amount *per* returned item is $869 and the median amount is $773. Those amounts are larger by an order of magnitude than the means and medians in FDIC (2008), presumably because the FDIC counted all overdrafts, protected or not,

while our data only cover unprotected overdrafts; risk-averse banks may hesitate to cover $800 overdrafts.

The returned check regression results are reported in Table 8. The results in the first column indicate that the returned check rate *per* checks processed, the measure more closely associated with small dollar check writers, declines when payday lending is allowed. Returned checks *per* dollar processed tends downward (Column 2), but the decline is not statistically significant. Those results confirm Morgan and Strain (2008). The final specification indicates that the amount *per* returned check rises when payday lending is permitted (significant at the ten percent level). The average amount *per* return increases by $124 dollars when payday lending is permitted, an increase of 14 percent relative to average.

The returned check regressions are consistent with the adverse selection hypothesis. Of course, the size and frequency of returned checks will also depend on banks' policy for covering overdrafts, and not just the distribution of overdraft attempts as we emphasize. Supposing that banks did not experience the adverse selection we hypothesize, why (and in which direction) are they likely to change their overdraft coverage policy? With payday credit available, banks may find that at least some of their overdraft customers are riskier because they owe payday lenders as well. In that case, banks seem most likely to tighten overdraft coverage policies (by limiting the maximum covered overdraft) when payday credit available. A tighter overdraft coverage policy implies more, but smaller returned checks, just the opposite of what we find.

VI.   Conclusion

The high cost of consumer credit is a perennial policy concern and "more competition" is a common prescriptive, at least from economists. Things are more complicated in the case we study. We find that banks and other depository institutions charge *higher* overdraft fees and are

less likely to offer free checking accounts when they compete with payday lenders. These facts are quite robust. They emerge, without discrepancy, from two models that use separate and independent variation in payday loan availability.

We conjecture that a change in customer composition plays an important role in explaining our finding. Perhaps to avoid regulation as credit (and associated usury limits), depositories charge a flat fee per overdraft event, regardless of the amount. That flat fee pricing exposes overdraft providers to adverse selection when payday loans are available, since payday credit is cheaper for depositors who anticipate small overdrafts. Consistent with this hypothesis, we show that the average bounced check is 14% smaller following payday loan prohibitions.

The consumer welfare implications of our study are mixed. Though payday loan availability leads to higher overdraft prices, overdraft credit users are not necessarily worse off. Depositors prone to small overdrafts gain from access to payday credit, while depositors prone to large overdrafts, for whom overdraft protection is not such a bad deal, are worse off from the higher price of overdraft protection. Calibrating the net effect would take a model, along with depositor-level information. That would be an interesting question for future research.

In general, a takeaway from this research is that in the context of fractured financial regulation, policy analysis requires nuance. Financial services firms often compete under separate regulatory structures and therefore face different constraints on the terms and prices of the contracts that they offer. In this setting, one cannot focus solely on the change in market prices when assessing changes in competition.

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Table 1: The Distribution of Deposit Overdrafts and Payday Loans in 2006

Overdrafts

# of overdrafts per year	% of depositors	% of overdrawers	Annual fees incurred ($)
0	75.0	-	0
1 – 4	12.0	48.0	64
5 – 9	5.0	20.0	215
10 – 19	4.0	16.0	451
20 or more	4.9	19.6	1610

Source: FDIC (2008, p. IV, Executive Summary points 2,3,4). "Annual fees incurred" is the average amount of fees incurred by the customers in each borrowing range.

Payday Loans

# of payday loans per year	% of borrowers	Annual fees incurred ($)
1 – 4	39.8	109
5 – 9	24.0	306
10 – 19	26.8	634
20 or more	9.3	1049

Source: Veritec Solutions, Inc. Based on data for payday borrowers in Florida and Oklahoma from September 2005 through August 2006. "Annual fees incurred" is calculated by multiplying average fee per loan ($43.70) by the midpoint of each borrowing range (or 24 loans in the final category).

Table 2: Importance of Overdraft Revenues to Depository Institutions

	Overdraft (OD) Revenue ($ billions)	Net Operating Income (NOI) ($ billions)	OD Revenue/NOI (percent)
Banks	26.1	$145.8	17.9
Savings Banks	3.5	21.9	16.0
Credit Unions	3.5	5.8	60.4
Total	33.1	173.7	19.1

Source: Moebs $ervices (http://www.moebs.com/Default.aspx?tabid=125) using FDIC and NCUA 2003 Call Reports and 5300 Reports

Table 3: Average Institution and County Characteristics, by Change in *Allowed* and *Access_0_10*.

Reported are means and number of observations (N). *Allowed* = 1 for institutions in states allowing payday lending, 0 otherwise. *Access_0_10* indicates whether payday loans are available within ten miles of center of county where the institution is located. For stratification by *Access_0_10*, means are given only for observations in states that prohibit payday loans.

	No Change in *Allowed*	Change in *Allowed*	Diff. significant at 5%	*Access_0_10 = 0*	*Access_0_10 = 1*	Diff. significant at 5%
Institution	(N = 17,837)	(N = 2375)		(N = 2,830)	(N = 391)	
Credit Union	0.41	0.41		0.44	0.49	
Commercial Bank	0.47	0.45	*	0.30	0.36	*
Savings Bank	0.12	0.14	*	0.26	0.15	*
Total Assets†	2,409,000	2,739,000		3,874,000	1,824,000	
County	(N = 1,750)	(N = 264)		(N = 199)	(N = 38)	
Median Income	36,900	37,400		42,800	42,700	
Population	126,500	132,600		283,400	198,700	
Percent urban	0.49	0.51		0.64	0.60	
Home ownership	0.73	0.72		0.69	0.71	
Percent white	0.82	0.81		0.83	0.84	
Percent black	0.07	0.13	*	0.08	0.09	
Percent hispanic	0.07	0.03	*	0.05	0.03	
Percent foreign born	0.04	0.03		0.06	0.05	
County-Year	(N = 7,675)	(N = 1,114)		(N = 931)	(N = 155)	
Unemployment Rate‡	0.052	0.052		0.050	0.046	*
HHI	0.21	0.21		0.17	0.18	

† N = 17,762 for No Change in *Allowed,* N= 2,373 for Change in Allowed, N = 2802 for *PaydayAccess_0_10 = 0*.

‡ N = 7, 764 for No Change in *Allowed* .

Table 4: How Payday Credit Access Affect Overdraft Fees and Availablity of Free Checking Accounts

Reported are OLS regression estimates (robust standard errors clustered by state). *Allowed* = 1 for institutions located in states allowing payday credit, zero otherwise.

	Dependent Variable (mean):							
	Overdraft Fee (24.98)				*Free Checking (0.73)*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Allowed	1.09*	1.31**	0.39	1.91***	-0.051**	-0.049**	-0.069***	-0.055
	(0.62)	(0.52)	(0.78)	(0.60)	(0.024)	(0.022)	(0.025)	(0.037)
*Allowed*HHI*				-3.27*				0.03
				(1.77)				(0.15)
HHI		-0.29	0.17	2.64		0.04	0.05	0.01
		(0.99)	(0.95)	(1.60)		(0.05)	(0.06)	(0.14)
CreditUnion		-2.38***	-2.42***	-2.38***		0.24***	0.24***	0.24***
		(0.38)	(0.38)	(0.38)		(0.03)	(0.03)	(0.03)
SavingsBank		-1.22***	-1.17***	-1.21***		0.08**	0.09**	0.08**
		(0.24)	(0.24)	(0.25)		(0.03)	(0.03)	(0.03)
LogAssets		0.96***	0.95***	0.95***		0.04***	0.04***	0.04***
		(0.09)	(0.09)	(0.09)		(0.01)	(0.01)	(0.01)
State and Year FEs?	Y	Y	Y	Y	Y	Y	Y	Y
County Controls?	N	Y	Y	Y	N	Y	Y	Y
Division-Year FEs?	N	N	Y	N	N	N	Y	N
Observations	15,072	15,040	15,040	15,040	10,524	10,504	10,504	10,504
R^2	0.19	0.32	0.34	0.32	0.04	0.10	0.11	0.10

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Effects of County-Level Payday Credit Access on Overdraft Fees and Free Checking Availability

Reported are OLS estimates (robust standard errors clustered by county). *Access_X_Y* equals 1 if the institution is located in a county whose center is within X and Y miles of a state that allows payday lending.

Dependent Variable (Mean):	Overdraft Fee (24.98)			Free Checking (0.73)		
	(1)	(2)	(3)	(4)	(5)	(6)
Access_0_10	1.20**	1.48***	1.68***	-0.051	-0.088**	-0.09**
	(0.56)	(0.55)	(0.61)	(0.04)	(0.04)	(0.04)
Access_10_20	0.14	0.23		-0.05	-0.05	
	(0.60)	(0.66)		(0.04)	(0.04)	
Access_20_30	-0.18	-0.09		0.01	0.02	
	(0.70)	(0.58)		(0.03)	(0.03)	
*Access_0_10*HHI*			-1.54			0.07
			(2.11)			(0.14)
HHI		-0.02	1.38		0.06	0.001
		(0.67)	(2.04)		(0.06)	(0.13)
CreditUnion		-2.39***	-2.39***		0.24***	0.24***
		(0.21)	(0.21)		(0.02)	(0.02)
SavingsBank		-1.10***	-1.10***		0.09***	0.09***
		(0.21)	(0.21)		(0.02)	(0.02)
LogAssets		0.95***	0.95***		0.04***	0.04***
		(0.05)	(0.05)		(0.00)	(0.00)
Border		-0.32*	-0.30*		0.04***	0.03**
		(0.18)	(0.18)		(0.01)	(0.01)
State-Year FEs?	Y	Y	Y	Y	Y	Y
County Controls?	N	Y	Y	N	Y	Y
Observations	15,072	14,995	14,995	10,524	10,489	10,489
R^2	0.24	0.37	0.37	0.07	0.12	0.12

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6: Robustness

Results are provided for several variations on the basic empirical models in Tables 4 and 5. Regressions in the first two columns of each panel assess robustness relative to functional form: Panel A uses the log of *Fee* as the dependent variable, while Panel B assumes a probit functional form for *Free Checking*. Column 3 of each panel uses an alternative payday access measure: *LogDistance*, the natual logarithm of the distance to the nearest allowing state, replaces the *Access_X_Y* dummies. Finally, Columns 4 and 5 report results of the baseline model estimated on a restricted sample that excludes large, geographically dispersed banks (those with less than 50% of deposits in the state or county of the surveyed branch). Robust standard errors grouped by state (Column 1 & 4 of each panel) and by county (Columns 2, 3 & 5 of each panel) are reported in parentheses.

	Panel A					Panel B				
Sample:	Full Sample	Full Sample	Full Sample	> 50% deposits in state	> 50% deposits in county	Full Sample	Full Sample	Full Sample	> 50% deposits in state	> 50% deposits in county
Model Type:	OLS	OLS	OLS	OLS	OLS	Probit	Probit	OLS	OLS	OLS
Dependent Variable (Mean):	-----Log Fee (3.19)-----		--------Overdraft Fee (24.98)--------			----------------------Free Checking (0.73)----------------------				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Allowed	0.061**			1.29**		-0.063**			-0.039*	
	(0.026)			(0.55)		(0.030)			(0.023)	
Access_0_10		0.044**			1.23**		-0.088**			-0.094**
		(0.021)			(0.56)		(0.034)			(0.042)
LogDistance			-0.48*					0.036*		
			(0.26)					(0.02)		
State-Year FEs?	N	Y	Y	N	Y	N	Y	Y	N	Y
State and Year FEs?	Y	-	-	Y	-	Y	-	-	Y	-
County Controls?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Institution Controls?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
HHI?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Border?	N	Y	Y	N	Y	N	Y	Y	N	Y
Observations	14,827	14,783	14,902	13,509	11,137	10,483	10,268	10,389	10,014	8,959
R^2/Pseudo-R^2	0.25	0.30	0.37	0.31	0.32	0.09	0.10	0.12	0.10	0.13

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 7: Returned Check Descriptive Statistics

Monthly unemployment rates (quarterly averages) by state and by Federal Reserve district comes from BLS and the St.Louis Fed's FRED database, respectively. Quarterly Personal income per capita is from BEA. Check data come from Federal Reserve Check Processing Centers (CPC). Complaints data are monthly and come from FTC. Bankruptcy data is by state and extends from 1998:Q1 to 2008:Q4. Bounced checks data is by Federal Reserve CPC and extends from 1998:Q1 to 2008:Q3.

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
# returned/# processed (%)	1325	1.29	1.17	0.65	0.34	6.01
$ returned/$ processed (%)	1325	1.21	1.10	0.62	0.11	6.16
$ returned/# returned ($ thousands)	1325	0.869	0.774	0.344	0.347	2.830
State Unemployment Rate (%)	1763	4.85	4.80	1.04	2.10	8.70
District Unemployment Rate (%)	1763	4.91	4.92	0.93	2.35	7.07
Payday Allowed?	1763	0.95	1.00	0.21	0.00	1.00

Table 8: Fewer, but Larger, Returned Checks When Payday Credit is Permitted

Reported are OLS estimates using check processing data from Federal Reserve Regional Check Processing Centers (CPC) over 1998Q1-2008Q3. *Allowed* equals one if state permitted payday lending, zero if not. *Allowed* is identified by bans in six states: GA, NC, MD, WV, OR and PA. Regressions include CPC and date fixed effects. Standard errors, given in parentheses, are clustered by CPC.

Dependent variable:	#Returned/#Processed	$Returned/$Processed	$Returned/#Returned
(mean)	(1.29%)	(1.21%)	(0.869 thousand)
	(1)	(2)	(3)
Allowed	-0.31*	-0.16	0.124*
	(0.16)	(0.12)	(0.07)
State Unemployment	0.017	-0.012	0.015
	(0.06)	(0.05)	(0.02)
District Unemployment	-0.060	-0.020	-0.070**
	(0.10)	(0.10)	(0.03)
Constant	1.67***	1.78***	1.42***
	(0.35)	(0.35)	(0.15)
Observations	1325	1325	1325
R^2	0.68	0.68	0.82

* significant at 10%; ** significant at 5%; *** significant at 1%

APPENDIX A: PAYDAY LOAN REGULATIONS

Summary of Coding for *Allowed*:

The Moebs survey of checking account fees and services was conducted in December of 2006, and in June for every other year. Five states prohibited loans throughout the sample period (*Allowed = 0*): CT, MA, NJ, NY and VT. Seven states changed from allowing to prohibiting payday lending between 1995 and 2008 (*Allowed* = 0 beginning in the year given in parentheses): MD (2002), GA(2004), NC (2006), WV (2006), DC (2008), OR (2008) and PA (2008). One state changed from prohibiting to allowing payday lending between 1995 and 2008 (*Allowed* = 1 beginning in the year given in parentheses): NH (2000). The remaining states allowed loans throughout the sample period (*Allowed* = 1).

States that prohibited payday lending throughout 1995-2008

New Jersey and New York forbid payday loans *via* check cashing laws that prohibit advancing money on post-dated checks (N.J. Stat. 17:15A-47 and NY CLS Bank 373) and usury limits (N.J. Stat. 2C:21-19 and NY CLS Penal 190.42). Massachusetts banned payday loans through a usury limit on small loans made or brokered in the state (ALM G.L.c.140 §96 and CMR 209 26.01). Connecticut prohibited lending *via* a cap on check cashing fees (Conn. Agencies Reg. § 36a-585-1) and small loan interest rates (Conn. Gen. Stat. 36a-563). Vermont prohibited payday lending through a usury limit (8 V.S.A. § 2230 and 9 V.S.A. § 41a).

We confirmed by reading 10-K filings and company websites that the largest multistate payday store operators – Ace Cash Express, Advanced America, Cash America, Check into Cash, Check 'N Go, Money Mart and Valued Services – did not operate payday loan stores in these five states.

States that experienced a change in payday loan availability between 1995 and 2008[35]

Maryland banned payday lending through restrictions on fees charged by check cashers (MD Financial Institutions Code § 12-120) and small loan interest rates (MD Commercial Law Code § 12-306), and finally passed anti-loan brokering legislation (MD Commercial Law Code § 14-1902), effective June, 2002 to eliminate the agency payday lending model, whereby payday lenders operated as agents, arranging loans for out-of-state banks.

Georgia banned payday lending with a law that took effect in May, 2004 (O.C.G.A. § 16-17-1).

Payday lenders operated under the agent model in North Carolina and West Virginia until 2006. All remaining lenders agreed to exit North Carolina in March, 2006, after facing a series of suits filed by the state Attorney General (see NC Department of Justice press release). First American Cash Advance, the last payday lender in West Virginia, operated under the agent model until July, 2006 (see press release from WV Attorney General). North Carolina prohibits payday lending through a 36% interest rate cap on small loans (N.C. Gen. Stat. § 53-173). West Virginia prohibits payday lending by limiting fees on check cashing, prohibiting payday check cashing (W. Va. Code § 32A-3-1) and imposing a usury limit on small loans (W. Va. Code § 47-6-5b).

The District of Columbia prohibited payday lending in November, 2007, by limiting fees on check cashing and prohibiting post-dated check cashing (D.C. Code § 26-317 and 26-319).

Oregon placed a *de facto* ban on payday lending in July, 2007, by imposing a 36% interest rate cap as well as restrictions on loan renewals (ORS § 725.622).

Payday lending was ostensibly banned throughout the sample period in Pennsylvania via a cap on small loan interest rates (P.A. 7 P.S. § 6201-6219), but the agent model was permitted through a law that sanctioned loan brokering (P.A. 73 P.S. § 2181-2192). Some lenders ceased operations in the state in mid-2006, after the FDIC placed restrictions on their bank lenders (Sabatini, 2006). However, Advance America, the largest national payday lender, did not stop lending and close its Pennsylvania stores until December, 2007 (See Advance America 9/07 press release).

New Hampshire's small loan interest rate ceiling acted as a *de facto* ban on payday loans until it was removed in January, 2000 (1999 NH ALS 248), and payday lenders entered thereafter.

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[35] We have not captured every law change with *Allowed*. We include those that were binding, as confirmed through press releases, news stories and the public filings of the largest payday loan operators. In the case of one law sanctioning DD credit in Rhode Island (R.I. P.L. 2001, Ch. 371, § 4), we could not confirm the date DD lenders entered; according to a supervisor in the Division of Banking, check cashers began offering payday on transactions prior to the July 2001 law change. We do not count Rhode Island as a state with a change in *Allowed*.