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Does Credit Supply Affect Small-Firm Finance?

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ABSTRACT

States were granted authority to limit interstate branching following passage of Federal legislation in 1994, relaxing restrictions on geographical expansion by banks. We show that differences in state's branching restrictions affect credit supply. In states more open to branching, small firms borrow at interest rates 25 to 45 basis points lower than firms operating in less open states. Firms in open states also are more likely to borrow from banks. Despite this evidence that interstate branch openness expands credit supply, we find *no effect* of variation in state restrictions on branching on small-firm borrowing or other indicators of credit constraints.

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I. INTRODUCTION

Relaxation of geographical restrictions on bank expansion was 'completed' in 1997 when Federal legislation – the Interstate Banking and Branching Efficiency Act (IBBEA) – permitted banks and bank holding companies to expand across state lines. This legislation seemingly ended the era of geographical restrictions on bank expansion that date back to the 19th Century (Kroszner and Strahan, 2007). In 1994, while most states allowed out-of-state bank holding companies to own their banks (interstate banking), there were almost no interstate branches.[1] IBBEA, which was passed in 1994, allowed both unrestricted interstate banking (in effect in 1995) and interstate branching (in effect in 1997). The allowance of interstate branching was the watershed event of IBBEA.

The interstate branching provisions contained in IBBEA granted states the right to erect roadblocks to branch expansion, and some states took advantage by forbidding out-of-state banks from opening new branches or acquiring existing ones, by mandating age restrictions on bank branches that could be purchased, or by limiting the amount of total deposits any one bank could supply. State exercise of such powers restricted entry by large, national banks and distorted their means of entry. This recent history continued a long political struggle that had played out between large, expansion-minded banks (who have favored removing barriers to expansion) versus small, insulated banks (the typical beneficiaries of these regulatory constraints).

In this paper, we use differences in barriers to interstate bank expansion across states as an instrument for exogenous variation in bank credit supply. We first show that firms in states where restrictions on out-of-state entry are relatively tight pay higher rates for loans than similar

[1] By 1992, all states except Hawaii permitted some type of interstate banking operations either on a reciprocal or nonreciprocal basis. Regional pacts allowed out-of-state bank entry only from a specific geographic region, including the Northeast, the West, the South (often including the Mid-Atlantic States) and the Midwest.

firms operating where restrictions are looser. In our baseline model, the difference in rates translates into a savings of about 45 basis points for firms in states open to branching; this reduction in rates falls to about 25 basis points in our model with state fixed effects. The decline seems larger for small and young firms, although this conclusion is sensitive to our statistical modeling choice. These results suggest that credit supply conditions are more favorable where banks compete more vigorously for business (e.g. where barriers to out-of-state entry are low).

We then test whether the decline in prices translates into more borrowing and less binding credit constraints for firms in states with more openness toward branching. We find no significant effects on any measure of access to credit. Firms do use more *bank* debt in states open to interstate branching (consistent with greater competition across banks), but this does not translate into more total borrowing, it does not translate into higher rates of credit approval, nor does it translate into declines in the use of expensive trade credit. These 'non-results' are broadly consistent with research on earlier instances of relaxation of bank branching. For example, Jayaratne and Strahan (1996, 1998) find that after states relaxed limits on intrastate branching, economic growth accelerated as the banking system became more efficient. Their evidence points to better quality lending and lower loan prices (e.g. lower loan losses and lower rates of bank loans) after reform as the key to better growth performance, rather than an increase in the total amount of lending. Similarly, Bertrand, Schoar and Thesmar (2007) find that banks in France improve loan quality by reducing credit to poorly performing firms when government subsidies were reduced following reform in 1985.

Given the earlier research on branching reform, why explore the 1997 deregulation? First, variation in state adoption rates of interstate branching after 1997 did affect the competitiveness of banking and the quality of bank services, suggesting the state-level actions,

even in recent years, shifted credit supply (Dick, 2006). Moreover, with the more recent episode of reform we can exploit data from the *Survey of Small Business Finance* (SSBF), which allows us to explore the borrowing costs, the terms of loans, as well as firm capital structure choices. The SSBF data allow us to control for firm characteristics and test whether branching restrictiveness affected some firms more than others (e.g. large versus small). Detailed firm-level data were not available during the 1970s and 1980s, so studies of the earlier instances of deregulation had to rely on more aggregated data, such as overall state-level income growth or loan growth from bank call reports. One exception is Zarutskie (2006), who uses tax filings to study leverage of small firms following interstate branching reform; in contrast to us, she finds declines in the use of debt for very young firms and some evidence of greater borrowing for more seasoned firms. Her data allow tests of how small-firm capital structure varies with branching, but do not allow her to test how (or whether) loan terms and denial rates, the use of bank credit, or other measures of credit constraints shift following reform.

Our finding that bank loan supply expands but credit constraints do not relax extends the emerging literature on credit supply and capital structure. Faulkender and Petersen (2006) study leverage for firms with and without access to the public bond market and find that access increases leverage. They find that firms with a credit rating have leverage ratios that are 50% higher than firms without a credit rating. Massa, Yasuda and Zhang (2008) find that firms whose bonds are held by institutional investors with less stable funding operate with lower leverage. Kisgen (2006, 2007) finds that capital structure choices reflect firms' attempts both to prevent future ratings downgrades (and increase the likelihood of upgrades), and also to adjust leverage in response to past downgrades. Sufi (forthcoming) studies the introduction of bank-loan ratings by Moody's in 1995 and finds that firms receiving these newly introduced ratings increased their

borrowing as well as their subsequent investment. All of these studies suggest that credit supply affects firm leverage. Each study, however, faces the difficult challenge of separately identifying credit supply from credit demand. Because firms wanting to borrow have a greater incentive to seek out ratings than other firms, credit demand is likely to be correlated with the presence and level of credit ratings.

Lemmon and Roberts (2006) and Leary (2006) are somewhat more similar to our empirical design because they focus on quasi-natural experiments to trace out credit supply shocks. Lemmon and Roberts study the collapse of Drexel Burnham Lambert, Inc. (Drexel) in 1989, arguing that this bank had specialized knowledge of the junk bond market, so its failure temporarily reduced credit to junk-bond issuers. They find that debt issuance and investment fell for speculative grade firms relative to investment grade firms, suggesting that the adverse supply shock led to declines in access to capital. However, they find *no change* in leverage ratios – junk bond firm issuance of both debt and equity declined with the demise of Drexel, leaving leverage ratios unchanged. Leary exploits two shocks to the banking system during the 1960s – first the introduction of CDs in the early 1960s (a positive supply shock) and second the credit crunch engineered by the Federal Reserve in 1966 (a negative supply shock). He finds that firms substituted into (away from) bank debt following the positive (negative) supply shock, leading to increased leverage. Finally, Kliger and Sarig (2000) and Tang (2006) exploit the increase in information content from Moody's 1982 ratings refinement (adding '1', '2' or '3' to the letter-grade ratings bins). Kliger and Sarig find that yields fell for firms near the top of the ratings bins, while Tang (2006) shows that this change reduced the cost of capital and led to more borrowing, higher leverage and greater investment.

In contrast to most of these recent studies (with the exception of Lemmon and Roberts), we find no evidence that expanded credit supply leads to more debt finance. When states open up to interstate branching, there are declines in the cost of borrowing and a substitution into bank debt. However, we find *no change* in the amount firms borrow, no change in the probability of loan denial, and no change in the frequency with which firms resort to late payments on trade credit. Thus, prices fall but quantities do not rise. To unpack this result, we explore the non-price terms of loans and again find no impact of the competitive environment. So, in states where interstate branching is relatively open, bank margins on loans fall but other loan terms do not loosen.

Why the difference with much of the extant studies? Our sample is dominated by very small, private firms (the largest firm has 500 employees); most of the earlier studies focus on large public companies (e.g. *Compustat* firms). Simple tradeoff theories (e.g. tax benefits of debt versus financial distress costs) would naturally suggest that across-the-board declines in borrowing rates should lead firms to substitute debt for equity (unless the supply shock was accompanied by a similar increase in the supply of equity capital). Introducing adverse selection or moral hazard problems, however, may complicate the story. Models of credit rationing suggest lenders restrict quantity under asymmetric information because low-quality firms have greater demand for external finance than high-quality firms (e.g. Stiglitz and Weiss, 1981). Thus, an increase in bank competition may force prices down by reducing profit margins without expanding the amount banks will lend to firms. Firms might like to borrow more at lower prices, but lenders rationally understand that those with the greatest demand are likely to be highest in risk. Credit rationing is presumably less important for large firms where information is readily

available and mainly public, compared to small firms where information is relatively scarce and private.

Our sample also differs because both debt and equity come from external sources for public companies, whereas external finance at small firms is mostly debt while equity is owned by proprietors and other insiders. Hence, capital structure decisions for small firms reflect not only standard tradeoffs between debt and equity, but also the choice between internal and external finance. Moral hazard models suggest that proprietors' equity helps solve incentive problems for owners and thus constrains the amount of external finance available to entrepreneurs (e.g. Holmstrom and Tirole, 1997). Increased competition by bank lenders would not affect the severity of these kinds of incentive problems. Entry could even worsen adverse selection by raising the number of poorly informed lenders (Marquez, 2002). Thus, while prices fall, banks continue to limit credit to borrowers to solve these contracting problems.[2] Again, large public firms suffer less from these kinds of agency problems, so one might expect expansions in supply to increase quantity as well as lower borrowing rates. Moreover, at the margin, both debt and equity come from external sources at these large public firms.

Our results contrast with the new capital structure literature that emphasizes the role of supply-side forces. While there may be theoretical reasons to expect differences between large and small firms, these results offer a counterweight to this emerging literature.

[2] Credit constraints in the smallest firms may be reflected in areas other than capital structure, such as in labor productivity (Garmaise, forthcoming) or leasing versus purchasing decisions (Eisfeldt and Rampini, forthcoming).

II. Relaxation of Restrictions on Bank Expansion

Toward interstate banking and branching

Restrictions on banks' ability to expand geographically date back to colonial times (see Kroszner and Strahan, 2007). Federal legislation formalizing state authority to regulate in-state branching became law with adoption of the 1927 McFadden Act. Economides, Hubbard and Palia (1996) examine the political-economy behind passage of the McFadden Act and find results consistent with a triumph of the numerous small and poorly capitalized banks over the large and well-capitalized banks. White (1998) explores the politics behind deposit insurance during the subsequent six decades and also finds that small banks generally lobbied strenuously for increases in deposit insurance limits.

Although there was some deregulation of branching restrictions in the 1930s, about two-thirds of the states continued to enforce restrictions on in-state branching well into the 1970s. Only 12 states allowed unrestricted statewide branching in 1970, and another 16 states prohibited branching entirely. Between 1970 and 1994, however, 38 states eased their restrictions on branching. Kroszner and Strahan (1999) show that the timing of this state-level deregulation reflected the political clout of interest groups within financial services, particularly large-bank and small-bank interests. States dominated by well-capitalized large banks tended to reform branching restrictions early.

The reform of restrictions on intrastate branching typically occurred in a two-step process. First, states permitted multi-bank holding companies (MBHCs) to convert subsidiary banks (existing or acquired) into branches. MBHCs could then expand geographically by acquiring banks and converting them into branches. Second, states began permitting *de novo* branching, whereby banks could open new branches anywhere within state borders.

In addition to branching limitations, states also prohibited cross-state ownership of banks and bank branches. Following passage of the McFadden Act, banks had begun to undermine state branching restrictions by building multi-bank holding companies with operations in many states. The Douglas Amendment to the 1956 Bank Holding Company (BHC) Act ended this practice by prohibiting a BHC from acquiring banks outside the state where it was headquartered unless the target bank's state permitted such acquisitions. Since all states chose to bar such transactions, the amendment effectively prevented interstate banking.

The first step toward interstate banking came in 1978, when Maine passed a law allowing entry by out-of-state BHCs if, in return, banks from Maine were allowed to enter those states. (Entry in this case means the ability to purchase existing whole banks; entry via branching was still not permitted.) No state reciprocated, however, so the interstate deregulation process remained stalled until 1982, when Alaska and New York passed laws similar to Maine's. Other states then followed suit, and state deregulation of interstate banking was nearly complete by 1992, by which time all states but Hawaii had passed similar laws. These state changes, however, did not permit banks to open branches across state lines.[3] The transition to full interstate banking was completed with passage of the Interstate Banking and Branching Efficiency Act of 1994 (IBBEA), which effectively permitted bank holding companies to enter other states without permission and to operate branches across state lines.

[3] With the exception of eight states (Alaska, Massachusetts, New York, Oregon, Rhode Island, Nevada, North Carolina and Utah) which allowed limited interstate branching. Despite allowance of interstate branching in these states, however, it was not exercised except in a few cases prior to the passage of IBBEA in 1994.

Interstate branching after IBBEA

Despite the passage of IBBEA, the struggle over bank expansion continued as some states exercised their authority under the new law to restrict or limit interstate branching. While IBBEA opened the door to nationwide branching, it allowed the states to have considerable influence in the manner in which it was implemented. States that opposed entry by out-of-state banks could use the provisions contained in IBBEA to erect barriers to some forms of out-of-state entry, to raise the cost of entry, and to distort the means of entry. From the time of enactment in 1994 until the branching "trigger date" of June 1, 1997, IBBEA allowed states to employ various means to erect these barriers. For example, states could set regulations on interstate branching with regard to four important provisions: (1) the minimum age of the target institution, (2) de novo interstate branching, (3) acquisition of individual branches, and (4) statewide deposit cap.

Although IBBEA expressly permits interstate branching through interstate bank mergers, IBBEA preserves state age laws with respect to such acquisitions. Under IBBEA, states are allowed to set their own minimum age requirements with respect to how long a bank must have been in existence prior to its acquisition in an interstate bank merger. The state law, however, cannot impose an age requirement of more than five years. This rule applies to all banks, whether they are chartered by a state regulator or chartered as a national bank and regulated by the Office of the Comptroller of the Currency (OCC). If a newly established subsidiary office is located in a state which mandates a minimum age requirement, then the BHC has to wait to convert the subsidiary to a branch until the subsidiary has met the necessary age requirement. Many states set their age requirement at five years, but several states implemented a lower age requirement (3 years or less) or required no minimum age limit at all.

While interstate branching done through an interstate bank merger (e.g. the purchase and conversion of an existing bank to a branch office) is now permitted in every state, de novo interstate branching is only permitted under IBBEA if a state expressly "opts-in." A bank thus may only open a new interstate branch if state law expressly permits it to do so. A de novo branching rule subjects existing banks to more new competition by out-of-state institutions by making it easier for an entering bank to locate its branches in markets with the greatest demand for financial services. Without de novo branching, entry into a particular out-of-state market becomes more difficult, because it is only possible via an interstate whole-bank merger, and it also potentially distorts or limits the entering bank's choice of where to locate within the state.

IBBEA specifies a statewide deposit concentration limitation of 30 percent with respect to interstate mergers that constitute an initial entry of a bank into a state. A state is free, however, to relax the concentration limitation to above 30 percent. More importantly, however, IBBEA preserves the right of a state to impose a deposit cap on an interstate bank merger transaction below 30 percent and with respect to initial entry. IBBEA protects the right of each state to cap, by statute, regulation or order, the percentage of deposits in insured depository institutions in the state that is held or controlled by any single bank or bank holding company. The obvious impact of such a statute would be to prevent a bank from entering into a larger interstate merger in such state. For example, if a state had set a deposit cap of 15 percent, a bank could not enter into an interstate merger transaction with any institution that held more than 15 percent of the deposits in that particular state.

IBBEA dictates that an interstate merger transaction may involve the acquisition of a branch (or number of branches) of a bank without the acquisition of the entire bank, only if the state in which the branch is located permits such a purchase. Like de novo branching, states

must explicitly "opt-in" to this provision. Permitting acquisition of individual branches lowers the cost of entry for interstate banks. Rather than being required to enter the market by buying an entire bank, a bank may instead pick and choose those interstate branches that it wants to acquire.

We use these four state powers to build a simple index of interstate branching restrictions. The index is set to zero for states that are most open to out-of-state entry. We add one to the index when a state adds any of the four barriers just described. Specifically, we add one to the index: if a state imposes a minimum age on target institutions of interstate acquirers of 3 or more years; if a state does not permit *de novo* interstate branching; if a state does not permit the acquisition of individual branches by an out-of-state bank; and if a state imposes a deposit cap less that 30%. So, the index ranges from zero to four. Table 1 describes in detail how each state chose to deal with the possibility of interstate branching following IBBEA. States such as Illinois (in 2004), Massachusetts, and Ohio have the most open stance toward interstate entry; states such as Arkansas, Colorado and Montana have the most restrictive stance toward interstate entry. Figure 1 illustrates graphically the geographical distribution of the state branching index. The states with no restrictions (e.g., the index equals zero) are colored a light gray, those with moderate restrictions (e.g., the index equals to 1 or 2) are gray with a light pattern and those with the highest restrictions (e.g., the index equals 3 or 4) are dark gray.

Latter-day branching restrictions continue to bind

Interstate branching has made dramatic inroads in many states. By 2004, almost half of all branches in the United States were owned by banks with branch operations in more than one

state (Figure 2). Moreover, several large banks, including JPMorganChase and HSBC, switched from a state charter to a national charter in 2004 to reduce the regulatory burden associated with operating branches in multiple states (Davis and Rice, 2006). Currently almost all large banks in the United States hold a national bank charter. One feature of the national charter is that it grants the Office of the Comptroller of the Currency the authority to preempt state laws for national banks such as consumer protection and predatory lending statutes. This preemptive power, recognized by the Supreme Court in 2007, has made the national bank charter particularly attractive to interstate banks.[4]

Despite the recent court rulings in favor of interstate banking, the actual degree of entry by interstate banks has been constrained by state authority to erect barriers to entry. We have already described the tools that IBBEA gives states to reduce or distort the means by which banks may enter. Johnson and Rice (2008) build a dataset of the share of interstate branches as a percentage of total branches in each state-year from 1994 to 2005. They show states with greater restrictions in fact have fewer interstate branches as a share of total branches.

III. EMPIRICAL DESIGN, DATA & RESULTS

We start by estimating reduced form models for the price of debt (the interest rate on the most recent loan) on our branching restrictions index. If the supply of debt expands with interstate entry, then we ought to observe lower interest rates on loans in states where constraints on entry are less onerous. We then ask whether exogenous variation in the credit supply

[4] The U.S. Supreme Court ruled 5-3 on April 17, 2007 in favor of the Office of the Comptroller of the Currency, thus upholding preemption of national banks and their operating subsidiaries. See *The Federal Reserve Bank of Chicago's 42nd Annual Conference on Bank Structure on Competition Proceedings (2006)* and Davis and Rice (2006).

stemming from regulatory differences across states affects the quantity of debt finance. We test first whether firms are more likely to use bank debt in relatively open states, and consider the overall borrowing (the log of total debt and other measures of credit access). We then use the loan-level data to test whether banks loosen non-price terms – collateral, proprietor guarantees and maturity – in states with greater openness. A series of recent papers have argued that variation in credit supply changes firm capital structure choices. This approach broadens the classic approach to capital structure that had focused on demand-side forces such as taxes versus financial distress (the so-called 'tradeoff theory') or asymmetric information ('pecking-order' models). The series of recent papers, however, focus on large, public firms with easily available panel data (e.g. *Compustat*), but where clean variation in credit supply is difficult to find.[5] Our method has the advantage of relying on a regulatory instrument, thus making identification easier. However, we do not have panel data for our sample of small firms.

Data

We combine data from the Survey of Small Business Finance (SSBF) with the state-level branching restrictions index defined above. The SSBF is a survey by the Federal Reserve of the financial condition of firms with fewer than 500 employees.[6] The survey was first conducted in 1987 and repeated in 1993, 1998 and 2003. It contains details on small businesses' income, expenses, assets, liabilities, characteristics of the firm and firm owners, in addition to characteristics of small businesses' financial relationships with financial service suppliers for a

[5] See Faulkender & Petersen (2006), Kisgen (2006, 2007), Kliger and Sarig (2000), Leary (2006), Sufi (forthcoming) and Tang (2006).

[6] For complete documentation of the SSBF, see http://federalreserve.gov/pubs/oss/oss3/SSBFtoc.htm.

broad set of products and services. The sample is randomly drawn but stratified to ensure geographical representation across all regions of the United States. The SSBF also oversamples relatively large firms (conditional on having fewer than 500 workers).

We can measure assets and liabilities, profits, firm age and the length of time firms have established relationships with banks and other lenders. We also know the location of firms, so we can control for local market conditions, and we can use the state of the firm to merge our branching restrictions variable to the dataset. The SSBF also asks about sources of debt. We use these survey responses to build an indicator equal to one for firms borrowing from banks.[7]

Each survey contains a different sample of firms, so we cannot follow firms over time. Moreover, there are small differences in variable definitions, so we are somewhat constrained in the way we construct variables to make sure we have comparability in the results across time. Berger and Udell (1995) and Petersen and Rajan (1994) were the first to use these data from the 1987 survey. These two papers both find that banking relationships expand credit availability for small firms. Others authors have also used these data to study whether bank size affects credit allocation decisions (Cole, 1998; Cole, Goldberg and White, 2004; Berger, et al, 2005).

Our paper is the first to use these data to test whether credit availability depends on openness to interstate branching. To test this notion, we focus on the data from the 1993, 1998 and 2003 surveys. The 1993 survey reflects credit conditions just before passage of IBBEA and thus represents a clean 'control' group for our empirical design. We do not expect to observe a significant relationship between interstate branching restrictions and credit conditions of firms in 1993 because the law had not yet been passed. The 1993 survey represents a better control

[7] The SSBF makes it difficult to construct the share of total assets financed by bank debt because the balance sheet date is not the same as the date at which firms report their borrowing by type of lender. Hence, we use a simple indicator variable to test whether the quantity borrowed from banks increases as barriers to entry fall.

sample than 1987 because unobservable economic and technological factors are more similar to the post-interstate banking sample during the latter period compared to the earlier one. The last two surveys (1998 and 2003) occur after passage of IBBEA; thus, if interstate branching matters for credit supply, we ought to observe the state-imposed constraints affecting firms operating in different states in those years. These last two years can be thought of as the 'treatment' group in our empirical design.

We focus on small business data because bank credit supply matters most for firms without access to national and international equity and debt markets. Moreover, the survey contains enough detail for us to explore the price and non-price terms of loans as well as various measures of firms' use of debt finance.

Interest-rate regression

Our interest-rate regressions have the following structure:

$$Y_{i,j,t} = \beta_t Branching\ Restrictions_{j,t} + Interest\ rate,\ lender,\ firm\ and\ market\ controls_{i,j,t} + \varepsilon_{i,j,t} \quad \text{for t=1993, 1998 \& 2003,} \qquad (1)$$

where *i* is an index across firms, *j* is an index across states, and *t* is an index across years. We estimate equation (1) separately for each of the three sample years and allow each coefficient to vary by year.

The dependent variable is the interest rate on the most recent loan. This variable is only available for about 40% of the firms in the sample. *Branching Restrictions* is our state branching

restriction index, which varies between zero and four.[8] Note that the branching restriction index does not vary across firms operating in the same state. Since there may be a common element to the regression error across all firms operating in the same state, we cluster by state in constructing our standard errors.

Because we can measure firm characteristics, we also test how state-level restrictions affect the price for young firms versus old firms and for large firms versus smaller firms. If variation in branching restrictions affects supply, we would expect this variation to matter more for small firms and young firms, again because such firms tend to depend more on local banks for credit than larger and older firms. Testing these ancillary hypotheses can easily be accomplished by interacting firm characteristics with the state-level constraints in equation (1).

Control variables

Following Petersen and Rajan (1994), we include a large number of control variables in our reported specifications, including interest-rate variables observed during the month in which the loan was approved, borrower and lender characteristics, relationship characteristics, and market characteristics. For interest-rate controls, we include the prime rate, a corporate-bond default spread equal to the difference between the corporate bonds rated BAA and the yield on the ten-year government bonds, and a term-structure spread equal to the difference between the yield on the same ten-year government bonds minus the three-month constant maturity Treasury

[8] Since the index puts equal weight all four provisions, which may not be the case in all states, we also used the first principal component of the four provisions and found similar results.

bill yield. We include an indicator if the lender is a bank and another indicator if the lender is a non-financial firm. For loan terms, we include an indicator for floating rate loans.[9]

As additional controls for market structure (beyond the branching restrictions), we include an indicator of urban markets, a measure of concentration in the local market, and the growth rate of local output during the five years prior to the survey year. The concentration measure equals the Herfindahl index (HHI) from deposits in the local market, which has been used for antitrust enforcement in bank mergers. Local output is measured by the five-year per capita personal income growth rate. Five years was chosen as the time horizon, as it is the length of time between surveys. Urban markets are defined as Metropolitan Statistical Areas (MSAs), rural markets are defined as counties, and for consistency across the three survey years, we use the 2003 market definitions from the U.S. Census Department.

We have also included a measure of the share of assets held by small banks in the local market in robustness tests. Both concentration and average bank size have been shown in earlier studies to affect credit conditions, although the results are mixed. In the 1987 survey, for example, Petersen and Rajan find that loan rates do not vary with market concentration but that the share of firms paying late on trade credit is lower where banking is more concentrated. Two studies of the 1993 sample focus on late payments on trade credit and the market presence of small banks, but the two reach opposite conclusions about the effects of bank size. Jayaratne and Wolken (1999) regress the fraction of trade credit paid late on the fraction of assets held by banks in the local market with under $300 million in assets (and firm-specific variables). They find *no effect* of this measure of small bank importance on credit constraints (or on the likelihood

[9] In an earlier draft, we controlled for non-price loan terms (e.g. collateral and maturity) in these regressions and found similar results.

that small firms have a line of credit). In contrast, Berger et al. (2005) link the size of a borrower's bank to the fraction of trade credit paid late. Their approach is conceptually similar to Jayaratne and Wolken's because the key identifying instrument is the median bank size in the borrower's local market. However, this paper finds a *positive effect* of bank size on late trade credit payment, suggesting that small borrowers that are forced to use a large bank (because of the market they happen to find themselves in) and are more credit constrained than borrowers able to use small banks. To further complicate matters, Berger, Rosen, and Udell (2007) find a *negative effect* of large-bank deposit share on loan rates using the same SSBF data. In our data, we find no effect of average bank size; nor do we find that including the size variable changes our key results. We chose not to report these results, however, because we lose some observations when we add the size structure variable to the models.

For borrower control variables, we include firm size (log of assets) and firm age (in years), the lender's risk assessment of the borrower, an indicator for corporations, indicators for the 2-digit SIC code of the borrower (this adds upwards of 50 variables to the model), return on assets (net income/assets), the length of the relationship between the borrower and lender (in years), the number of information and non-information based services that come from the lender, the number of unique relationships the borrower has with all of its lenders, and an indicator equal to one if the borrower has a deposit account with the lender.[10] Information services are defined as those services which the borrower may purchase from the lender that can be used by the lender to monitor the firm (such as cash management services or credit card processing). Non-information services are those services, also purchased by the borrower, that arguably do not

[10] The return on assets (ROA) variable has large negative and positive outliers. We winsorize ROA at the 10th and 90th percentiles to reduce the impact of these data points. Winsorizing changes the coefficient on ROA in some of the regressions, but does not alter the coefficient on branching restrictions, which is the main focus here.

give the lender additional information with which to monitor the borrower (Petersen and Rajan, 1994). Finally, we include the credit risk rating of the borrower, which varies from one to five, with one indicating the safest type of borrower and five the riskiest.[11] This credit risk rating is derived from the Dun and Bradstreet credit score of the company and is available in all survey years.

Summary Statistics

Table 2 reports the summary statistics on the interest rate on the most recent loan, the branching restrictions index, and all of the control variables. The average interest rate on loans ranged from 8.5% in 1993, to 9.0% in 1998, to 5.8% in 2003. In each year, these rates exceed the prime interest rate because the sample contains small and risky firms. The variation over time reflects mainly the change in the overall level of interest rates, although the average spread over the prime rate does fall in 1998 relative to the other two survey years. Many of the variables are quite stable over time (e.g. borrower risk rating, market characteristics), although we see a spike in the frequency of fixed rate borrowing and loan maturity during the 1998 sample, probably because of the relatively flat term structure during that year. We do see the incidence of collateral decline across all three samples, from 72% of loans in 1993 to just 55% by 2003.

Firm size and firm age both decline sharply between 1993 and 1998, and then both increase again in 2003. We also see a drop in the importance of banks as lenders in 1998, which

[11] In the 2003 survey, the risk rating varies from 1 to 6, with 6 being least risky, while the ratings for the 1993 and 1998 surveys vary from 1 to 5, with 5 being the most risky. For comparability over time, we recalibrate the 2003 rating to lie between 1 and 5, with 5 being the most risky.

again rebounds in 2003. These patterns likely reflect the large number of start-up firms entering the economy during the boom of the second half of the 1990s, along with the growth of non-traditional financiers such as venture capitalists during those years. This change in the structure of the economy also shows up in the average relationship length between firms and lenders, which falls from 8.1 to 5.5 years between 1993 and 1998, and then increases to more than 10 years by 2003. While the sample size in 1998 is smaller than the other two years, the mean firm characteristics are similar other than firm size and age.

Result 1: Relaxing branching lowers prices

Table 3 reports our benchmark regression result linking the interest rate paid on the most recent loan to branching restrictiveness and the other variables. We report these regressions for 1993, 1998 and 2003. As noted earlier, 1993 represents the 'control' group. We use the 2003 branching index in the 1993 equation to be sure that any effects observed in the later years reflect something that changed following passage of IBBEA, rather than some time-invariant state characteristics that happen to be correlated with branching restrictions. (Before 1994, all states prohibited interstate branching.) As shown in the table, the coefficient on branching restrictions is small and not statistically significant in 1993. Thus, there is no 'placebo' effect of branching restrictions. This is important because if there were systematic differences in unobservable dimensions that are correlated with a state's stance toward banking, these would bias our results. One such candidate, for example, could be the political influence of large banks, which Kroszner

and Strahan (1999) show were important in influencing state-level moves to deregulate instate restrictions on branching. (Below we also remove such state-level factors with fixed effects.)[12]

In contrast to 1993, the coefficient on branching restrictions enters with a positive and statistically significant coefficient in both 1998 and 2003. The coefficients are similar in magnitude (0.10 and 0.12), with a smaller standard error in 2003 due to the larger sample. The coefficient of 0.12 in 2003 suggests that in states completely open to branching, firms could borrow at rates about 48 basis points lower than they could in states with the most restrictions on interstate branching (4 * 0.12 = 0.48 percentage points in the borrowing rate).[13]

For the control variables, we find that size is consistently negatively related to loan interest rates, and borrower risk rating is consistently positively related to the rates, as one would expect. Based on these coefficients, borrowers in the highest risk group would pay about 60 basis points more than borrowers in the lowest risk group, controlling for other characteristics. Many of the other control variables are either insignificant or not stable across the three samples. This instability is notable for the relationship variables in particular, where we find that the relationship length enters negatively in 1998 but not in the other two survey years.[14]

In Table 4, we add size and age interaction terms to the models for 1998 and 2003. We find that the effect of branching restrictions is (weakly) greater for smaller and younger firms, consistent with studies of earlier instate branching reform (e.g. Black and Strahan, 2002;

[12] We have also matched the 1998 branching restrictions index to 1993 and also find a small and statistically insignificant coefficient on the index.

[13] We include an indicator for renewals of lines of credit in 2003, which is not statistically significant. During the 1998 survey, these renewals were not explicitly included in the sample (hence the smaller sample size); in 1993, the renewals were included but are not identifiable in the dataset. Since the coefficient on this variable is not significant, we do not think this inconsistency in the survey design affects our conclusions.

Zarutskie, 2006; Cetorelli and Strahan, 2006; Kerr and Nanda, 2007). The interaction effect is significant for size (log assets) in the 1998 survey, but not age, although they both enter negatively.

Next, we pool our three sample years to test whether the effects of branching restrictions *changed* significantly in reaction to passage of IBBEA. In the pooled model, we include both year and state fixed effects, so the coefficient on the branching restriction index is generated solely by within-state variation over time. In this case, we code the branching restriction index in 1993 equal to 4, its most restrictive value, for all states. Hence the variable does not change over time for states like Colorado, which imposed the tightest level of restrictions, while it falls from 4 to zero for states like Illinois, which were relatively open to interstate expansion. The pooled model allows us to control for trends by adding year effects, and also for persistent differences in states by incorporating state fixed effects, as follows:

$$Y_{i,j,t} = \alpha_t + \gamma_j + \beta Branching\ Restrictions_{j,t} + Interest\ rate,\ lender,\ firm\ and\ market\ controls_{i,j,t} + \varepsilon_{i,j,t}, \quad (2)$$

where α_t are the year-specific fixed effects and γ_j are the state fixed effects. By including these fixed effects, we have stripped out all of the cross-state variation and thus eliminated the possibility that the coefficient on branching restrictions is biased because it is correlated with some unmeasured state characteristic. In this model, we constrain the coefficients to be constant over time. Also, because we only have variation in the branching variable across states and over

[14] We have tested whether the average length of bank relationships differs as states open up to interstate branching but find no evidence that such relationships change. This may occur because most banks typically buy existing branches when they enter new markets, thus leaving relationships and relationship length unaffected.

time, but not across observations within the same state-year, we cluster the error at the state-year level in building standard errors.

Table 5 reports both the basic model and the models with interactions for the pooled, fixed effects model. Columns 1 & 2 contain the basic model coefficients and T-statistics, and columns 3-6 add the size and age interaction terms. Consistent with the year-by-year regressions, we find that the coefficient on branching restrictions is positive and statistically significant, although we do not find any significant interaction with either firm size or firm age. The coefficient in column 1 equals 0.059, which is roughly equal to the difference between the effects observed in 1998 and 2003 (0.11) and the small coefficient observed in 1993 (0.04). According to this estimate, states that relaxed interstate branching restrictions the most enjoyed a decline in borrowing rates for small firms of about 25 basis points (0.059 * 4 = 23.6 basis points).[15]

Result 2: Firms substitute toward bank finance when branching is unrestricted

Declining prices on loans with the degree of openness to branching suggests greater competition and credit supply. The rate regressions, however, include only those firms that actually borrow during the survey year. The other standard implication of greater supply is an increase in quantity. We test this by asking whether firms have more bank debt in states with greater openness toward branching using *all* of the firms in the SSBF. The structure is the same

[15] We have also estimated a weighted-least squares analog to equations (1) & (2), in which observations are weighted by their relative proportion in the population of small firms using the survey weights provided in the SSBF data (recall that the SSBF oversamples larger firms within the set of firms with fewer than 500 employees). The estimated effects of interstate branching restrictions in these WLS models are considerably larger and have larger t-statistics than those reported in Tables 3 & 4. This makes sense because the WLS procedure gives greater weight to smaller firms, and the effects of branching restrictions matter more for small firms. T-statistics roughly double in the WLS model relative to ordinary least squares (OLS). As with OLS, we find no significant effects of branching restrictions in 1993, the 'placebo' year.

as before, except we drop all of the loan and interest rate variables and include just firm and market characteristics as explanatory variables. Thus, we include the branching restrictions index along with the measure of market concentration and the urban dummy variable, and borrower characteristics (log of assets, age in years, return on assets, the risk rating, an indicator for corporations, and the 2-digit SIC indicators). We also incorporate a measure of bank relationships equal to the length of the firm's *longest* relationship with a lender. Since the dependent variable is qualitative - equal to one if a firm borrows from a bank and 0 otherwise - we estimate a Probit model. We report the marginal effects rather than the Probit coefficients, which are difficult to interpret.

Columns 1 & 2 of Table 6 report the results, which suggest that firms are more likely to borrow from banks when barriers to interstate branching are low. The coefficient on the branching restrictions index of -0.012 is significant at the one percent level. In the year-by-year models, we find a very small coefficient in 1993, while the coefficients in both 1998 and 2003 are close to the pooled coefficient (-0.009 and -0.010 in 1993 and 2003, respectively). The pooled model is more powerful because we can include all of the data to identify the coefficient. Also, the fact that the coefficients in the cross sections are similar to the pooled model with state fixed effects provides strong evidence that we have not omitted an important state-specific variable in our regressions. The magnitude suggests that a firm's probability of borrowing from a bank is about 5 percentage points greater in the most open states relative to the least open states.[16]

[16] We have also tested whether the substitution into bank debt is more pronounced for small and young firms. The sign of these interactions suggests that the effects are larger for the small and young, but neither effect enters the regression significantly.

Result 3: Relaxing branching does not relax credit constraints

We have shown that credit supply conditions improve with relaxation of branching restrictions. Prices fall and firms borrow more from banks when barriers to entry are low. Does this increase in credit supply relax credit constraints for small firms? To address this issue, we look at three measures of credit access: total debt (measured as log of 1+total debt); a denial indicator equal to one if a firm was denied credit or was discouraged from applying for credit; and the percent of trade credit paid late. The total debt variable is an all encompassing measure of how much the firm borrows, and allows us to include all firms.[17] The denial indicator is also available for the full sample. For late trade credit, Petersen and Rajan (1994) show that the imputed interest for firms paying late on trade credit annualizes to 44.6%, thus suggesting that only credit-constrained firms would use this source of finance. For this variable, however, we include only firms that have some trade credit. We regress these three measures on the same set of firm and market conditions. And, again, while we have estimated these models for 1993, 1998 and 2003 separately, we report just the pooled model with state and year fixed effects.

As shown in Table 6 (columns 3-8), we find *no link* between branching restrictions - the instrument for credit supply - and access to credit. The branching variable is never close to statistically significant in any model. If we estimate the model on the same sample as in the interest rate models, we find no significant effect of branching restrictions on leverage. If we estimate these models year by year, we find no statistical significance on the branching index in any year or for any of the three measures. We find no significant interaction between branching

[17] We have also modeled to leverage ratio and found no effects of branching. Leverage is problematic in our sample of small firms due to a large number of outliers, so we focus here on total debt.

and firm size or between branching and firm age in any of these models. And, if we weight the regression by the survey weights, we continue to find no link from branching to credit access.

If price prices fall, why don't firms borrow more? As we have argued, small firms have chronic problems raising external finance for both adverse selection and moral hazard reasons. These contracting problems have nothing to do with the actual or potential entry of new lenders facilitated by branching reform. If credit constraints are a partial solution to contracting problems, as suggested by classic models such as Stiglitz and Weiss (1982), then there is no reason to expect these constraints to loosen with more competition. As further support for this notion, in our last set of tests we ask whether non-price loan terms are looser in states more open to branch competition. For this analysis, we return to the sample of firms with detailed loan information (40% of the surveyed firms), and report three contracting terms: an indicator for loans with collateral, an indicator for loans personally guaranteed by the firm's owner (meaning that the lender has some claim against non-business assets in default), and loan maturity (in years). Our regressors are the same as those included in the pricing regressions (Table 3).

As shown in Table 7, there is no evidence that non-price terms loosen with interstate branch openness. In fact, we find that collateral is, if anything, more common in states with open branching relative to other states. The effect of branching is not significant for either loan guarantees or maturity, however. The results suggest that bank supply of credit improves pricing and thus encourages firms to substitute bank debt for other sources of debt. Firms do benefit from the lower prices, but mechanisms that banks and other lenders use to deal with adverse selection and control problems – total borrowing, loan approval rates, collateral, guarantees, and maturity – do not vary. Presumably, lenders must continue to solve the adverse selection and

moral hazard problems just as much after deregulation as before. Branch openness limits banks' ability to charge high prices but does not help lenders solve contracting problems for small firms.

IV. CONCLUSIONS

Barriers to bank expansion, both within and across state lines, have slowly fallen over the past 30 years. Removing these barriers has led to an increase in competitive pressure on banks and greater credit supply. Despite these gains, however, some states continue to exploit their ability to erect barriers to competition from out of state. We use these differences in state openness to interstate branching as an instrument for variation in credit supply. In our first two main results, we find that the cost of credit is lower in states open to interstate branching and that firms shift toward bank debt in these states. Banks recognize the state anticompetitive burden permitted by IBBEA, and some have pressed the regulatory agencies and Congress to streamline banking law. A section contained in the *Financial Services Regulatory Relief Act* as passed by the House in 2006 would have eliminated remaining interstate branching barriers.[18]

According to Federal Reserve Governor Donald Kohn, the interstate branching provisions originally contained in the Act would remove the "last obstacle to full interstate branching for banks and level the playing field between banks and thrifts."[19] Although the final bill did not contain these provisions, the issue is sure to be revisited in future bills and legislation.

[18] H.R. 3505 and S.2856. The House bill , passed in March 2006, contains a section (401) titled "Easing the restrictions on interstate branching and mergers," which removes remaining restrictions on de novo interstate branching and prohibits branching by commercially owned ILCs chartered after October 1, 2003. The Senate bill, passed in May 2006, contains no such section.

[19] Testimony before the Committee of Banking, Housing and Urban Affairs, United States Senate in March 2006. The testimony is available online at www.federalreserve.gov/boarddocs/testimony/2006/20060301.

Despite the gains in credit supply, we find no variation in access to credit across states as the degree of branching restrictions loosens. This 'non-result' contrasts with several recent studies of larger firms, where leverage increases when debt finance becomes more available. Small firms face greater constraints in their access to external finance than large, public firms, and most external finance that small banks can raise comes in the form of debt. Thus, the borrowing choices of small firms combine standard tradeoffs – e.g. taxes versus financial distress – with an additional set of constraints on access imposed by lenders (or external financiers more generally). Our results suggest that even when competition improves and the cost of borrowing falls, constraints on small firms' ability to raise external finance, and thus debt finance, continue to bind.

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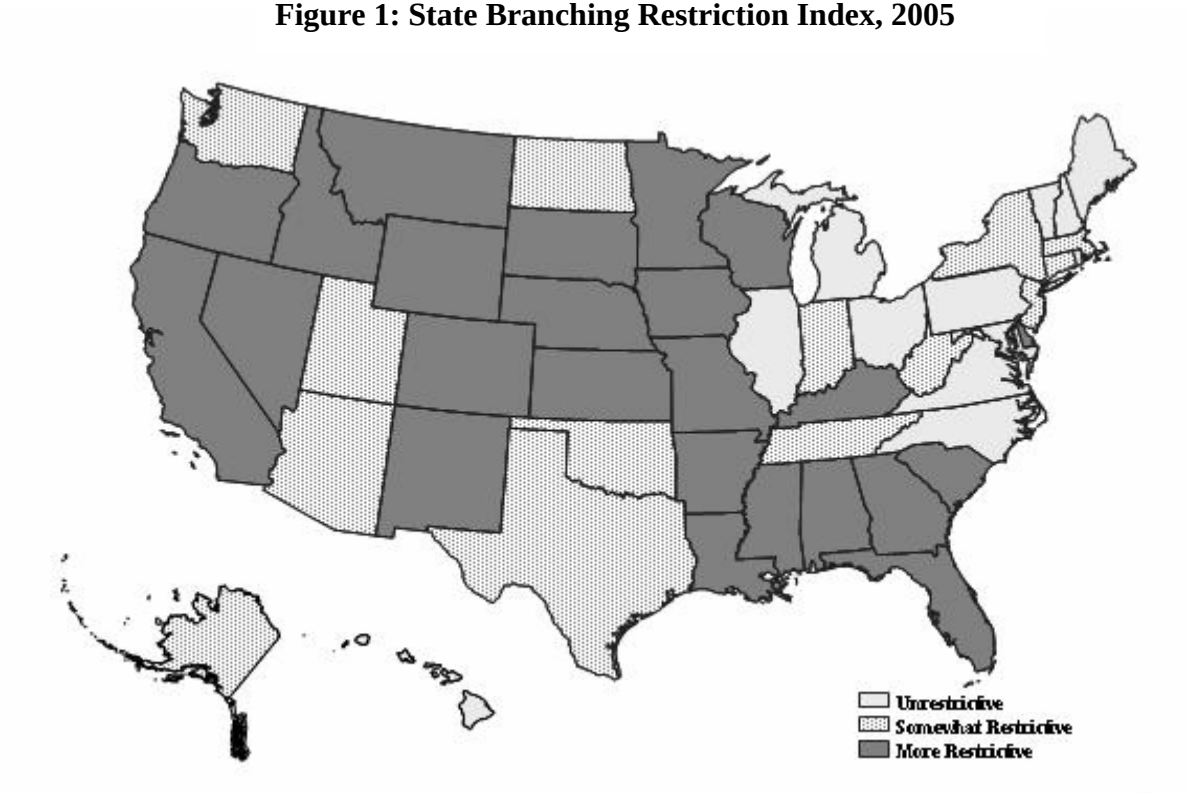
Figure 1: State Branching Restriction Index, 2005



The states with no restrictions (e.g., the index equals zero) are colored a light gray, those with moderate restrictions (e.g., the index equals to 1 or 2) are gray with a light pattern and those with the highest restrictions (e.g., the index equals 3 or 4) are dark gray.

Figure 2: Interstate Branch Growth

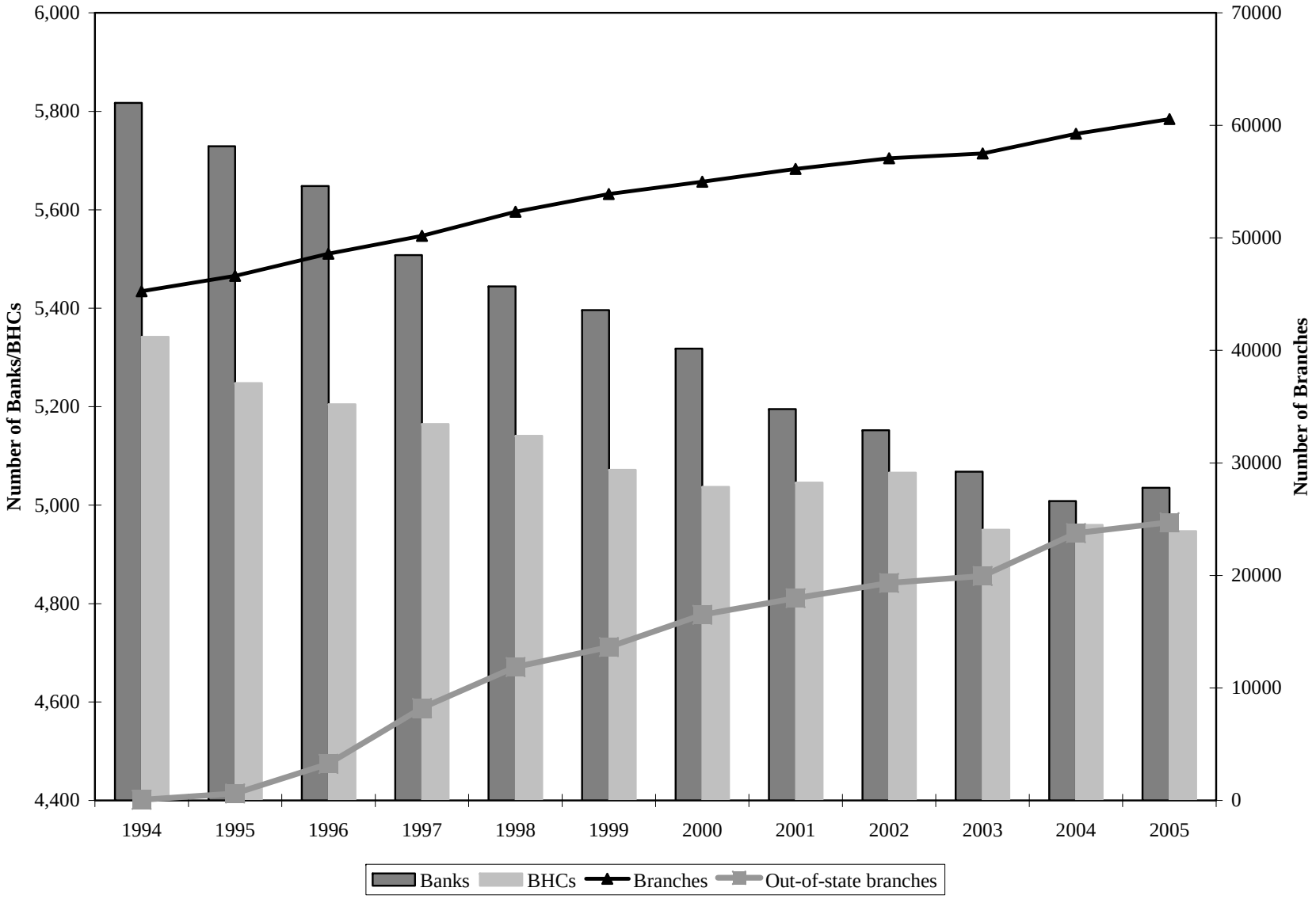


Table 1

State Interstate Branching Laws: 1994 - 2005

State	Changes to State Interstate Branching Laws	Branching Restriction Index	Effective Date	Minimum Age of Institution for Acquisition (=1 if 3 or 5 years)	Allows de novo Interstate Branching (=1 if no)	Interstate Branching by Acquisition of Single Branch or Portions of an Institution (=1 if no)	Statewide Deposit Cap on Branch Acquisitions (=1 if >30%)
Alabama		3	5/31/1997	5 years	No	No	30%
Alaska		2	1/1/1994	3 years	No	Yes	50%
Arizona	No effective changes in statute. Though it was enacted 9/1/1996, not until 8/31/01 could an out of state bank acquire a single branch (with a minimum 5 year age requirement). Added reciprocity condition for minimum age requirement and branch acquisition.	2	8/31/2001	5 years	No	Yes	30%
Arizona		3	9/1/1996	5 years	No	No	30%
Arkansas		4	6/1/1997	5 years	No	No	25%
California		3	9/28/1995	5 years	No	No	30%
Colorado		4	6/1/1997	5 years	No	No	25%
Connecticut		1	6/27/1995	5 years	Yes	Yes	30%
Delaware		3	9/29/1995	5 years	No	No	30%
DC		0	6/13/1996	No	Yes	Yes	30%
Florida		3	6/1/1997	3 years	No	No	30%
Georgia	Reduced minimum age requirement from 5 to 3 years.	3	5/10/2002	3 years	No	No	30%
Georgia		3	6/1/1997	5 years	No	No	30%

State	Changes to State Interstate Branching Laws	Branching Restriction Index	Effective Date	Minimum Age of Institution	De novo Interstate Branching	Acquisition of one or more Branches	Statewide Deposit Cap
Hawaii	Allowed de novo branching, branch acquisition and eliminated minimum age requirement.	0	1/1/2001	No	Yes	Yes	30%
Hawaii		3	6/1/1997	5 years	No	No	30%
Idaho		3	9/29/1995*	5 years	No	No	Statute explicitly states no deposit cap**
Illinois	Allowed de novo branching, branch acquisition and eliminated minimum age requirement. Added reciprocity condition for minimum age requirement, de novo branching and branch acquisition.	0	8/20/2004	No	Yes	Yes	30%
Illinois		3	6/1/1997	5 years	No	No	30%
Indiana	Added minimum age requirement.	1	7/1/1998	5 years	Yes	Yes	30%
Indiana		0	6/1/1997	No	Yes	Yes	30%
Iowa		4	4/4/1996	5 years	No	No	15%
Kansas		4	9/29/1995	5 years	No	No	15%
Kentucky	Added reciprocity condition for minimum age requirement.	3	3/22/2004	No	No	No	15%
Kentucky	Eliminated minimum age requirement.	3	3/17/2000	No	No	No	15%
Kentucky		4	6/1/1997	5 years	No	No	15%
Louisiana		3	6/1/1997	5 years	No	No	30%
Maine		0	1/1/1997	No	Yes	Yes	30%
Maryland		0	9/29/1995	No	Yes	Yes	30%

State	Changes to State Interstate Branching Laws	Branching Restriction Index	Effective Date	Minimum Age of Institution	De novo Interstate Branching	Acquisition of one or more Branches	Statewide Deposit Cap
Massachusetts		1	8/2/1996	3 years	Yes	Yes	30%
Michigan		0	11/29/1995	No	Yes	Yes	Statue explicitly states no deposit cap**
Minnesota		3	6/1/1997	5 years	No	No	30%
Mississippi		4	6/1/1997	5 years	No	No	25%
Missouri		4	9/29/1995*	5 years	No	No	13%
Montana	Opted in. Allowed branch acquisition with 5 year minimum age requirement, increased state deposit cap by 1% annually to a maximum of 22%.	4	10/1/2001 (enacted 1997)	5 years	No	No	22%
Montana	***Opted out***	4	9/29/1995	N/A	N/A	N/A	Increases 1% per year from 18% to 22%
Nebraska		4	5/31/1997	5 years	No	No	14%
Nevada		3	9/29/1995*	5 years	No; Exception for counties of 100,000 or less	No; Exception for counties of 100,000 or less	30%
New Hampshire	Eliminated minimum age requirement.	0	1/1/2002	No	Yes	Yes	30%
New Hampshire	Allowed de novo branching, branch acquisition, and changed state deposit cap from 20% to 30%.	1	8/1/2000	5 years	Yes	Yes	30%
New Hampshire		4	6/1/1997	5 years	No	No	20%
New Jersey		1	4/17/1996	No	No	Yes	30%
New Mexico		3	6/1/1996	5 years	No	No	40%
New York		2	6/1/1997	5 years	No	Yes	30%

State	Changes to State Interstate Branching Laws	Branching Restriction Index	Effective Date	Minimum Age of Institution	De novo Interstate Branching	Acquisition of one or more Branches	Statewide Deposit Cap
North Carolina	Three statutes enacted between 1995 and 1999, but the last two contained no effective change. The original act (1995) permitted de novo branching and branch acquisition with reciprocity until 1997. In 1997, NC extended the reciprocity condition until 1999 and then in 1999 made it permanent.	0	7/1/1995	No	Yes	Yes	30%
North Dakota	Allowed de novo branching and branch acquisition. Added reciprocity condition for de novo branching and branch acquisition.	1	8/1/2003	No	Yes	Yes	25%
North Dakota		3	5/31/1997	No	No	No	25%
Ohio		0	5/21/1997	No	Yes	Yes	30%
Oklahoma	Allowed de novo branching, branch acquisition, eliminated minimum age requirement, and increased state deposit cap from 15% to 20% in 2000.	1	5/17/2000	No	Yes	Yes	20%
Oklahoma		4	5/31/1997	5 years	No	No	15%
Oregon		3	7/1/1997	3 years	No	No	30%
Pennsylvania		0	7/6/1995	No	Yes	Yes	30%
Rhode Island		0	6/20/1995	No	Yes	Yes	30%

State	Changes to State Interstate Branching Laws	Branching Restriction Index	Effective Date	Minimum Age of Institution	De novo Interstate Branching	Acquisition of one or more Branches	Statewide Deposit Cap
South Carolina		3	7/1/1996	5 years	No	No	30%
South Dakota		3	3/9/1996	5 years	No	No	30%
Tennessee	Reduced minimum age requirement from 5 to 3 years in 2003.	1	3/17/2003	3 years	Yes	Yes	30%
Tennessee	Allowed de novo branching. Added reciprocity condition for de novo branching.	1	7/1/2001	5 years	Yes	Yes	30%
Tennessee	Allowed branch acquisition. Added reciprocity condition for branch acquisition.	2	5/1/1998	5 years	No	Yes	30%
Tennessee		3	6/1/1997	5 years	No	No	30%
Texas	Allowed de novo branching and branch acquisition. Added reciprocity condition for de novo branching and branch acquisition. No minimum age requirement for states with reciprocity, 5 year minimum age requirement for states with no reciprocity.	2	9/1/1999	No	Yes	Yes	20%
Texas	***Opted out***	4	8/28/1995	N/A	N/A	N/A	20%
Utah	Allowed de novo branching. Added reciprocity condition.	1	4/30/2001	5 years	Yes	Yes	30%
Utah		2	6/1/1995	5 years	No	Yes	30%
Vermont	Eliminated minimum age requirement, allowed de novo branching. Added reciprocity condition for de novo branching.	0	1/1/2001	No	Yes	Yes	30%

State	Changes to State Interstate Branching Laws	Branching Restriction Index	Effective Date	Minimum Age of Institution	De novo Interstate Branching	Acquisition of one or more Branches	Statewide Deposit Cap
Vermont		2	5/30/1996	5 years	No	Yes	30%
Virginia		0	9/29/1995*	No	Yes	Yes	30%
Washington	Allowed de novo branching and branch acquisition. Added reciprocity condition for de novo branching and branch acquisition.	1	5/9/2005	5 years	Yes	Yes	30%
Washington		3	6/6/1996	5 years	No	No	30%
West Virginia		1	5/31/1997	No	Yes	Yes	25%
Wisconsin		3	5/1/1996	5 years	No	No	30%
Wyoming		3	5/31/1997	3 years	No	No	30%

* No precise date is listed in statute, only the year. We assume for each of these states that the effective date is 09/29/1995.

** Statute states no deposit cap -- which implicitly implies 100%

*** Idaho requires reciprocity, but it does not allow de novo branching or acquisition of a branch and has a five year minimum age requirement to buy a bank, making it one of the most restrictive states. Thus, the reciprocity requirement has little value.

**** Reciprocity required with regard to the minimum age requirement.

N/A indicates not applicable.

Source: Johnson and Rice (2008)

Table 2: Summary Statistics

	1993		1998		2003	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Loan Terms						
Interest Rate on Most Recent Loan	8.47	2.21	9.04	2.37	5.79	2.68
Share with Collateral	0.72	0.45	0.63	0.48	0.55	0.50
Share Guaranteed	0.56	0.50	0.56	0.50	0.60	0.49
Loan Maturity (years)	3.28	4.38	4.57	5.49	3.76	4.95
Index of branching restrictions						
4 is most, 0 least, restricted	1.99	1.35	2.43	1.41	2.05	1.34
Interest Rates						
Prime interest rate	6.00	0.00	8.35	0.27	4.13	0.12
Term structure (10 year government bond - 3 month t-bill)	2.84	0.36	0.35	0.14	2.94	0.39
Default premium (BAA - 10 year government bond)	4.91	0.42	2.31	0.35	2.75	0.29
Borrower characteristics						
Log of borrower assets	13.25	2.11	12.75	2.25	13.51	2.13
Borrower is a corporation?	0.46	0.50	0.33	0.47	0.33	0.47
Borrower ROA	0.33	0.65	0.66	1.10	0.46	0.82
Borrower risk rating	2.94	1.16	3.00	1.14	2.74	1.18
Loan characteristics						
Floating-rate loan?	0.58	0.49	0.34	0.47	0.55	0.50
Lender characteristics						
Lender is a bank?	0.88	0.33	0.77	0.42	0.87	0.34
Lender is a non-financial company?	0.03	0.16	0.05	0.21	0.02	0.14
Line of Credit Renewal?		N/A			0.46	0.50

Table 2: Summary Statistics (Continued)

	1993		1998		2003	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Relationship variables						
Length of lender-borrower relationship (years)	8.07	8.34	5.48	7.09	10.37	10.56
Borrower age (years)	16.27	14.24	13.90	10.95	18.32	13.08
Number of information services from lender	0.26	0.44	0.17	0.37	0.39	0.49
Number of non-information services from lender	0.26	0.44	0.32	0.47	0.48	0.50
Borrower has deposit with lender?	0.72	0.45	0.53	0.50	0.75	0.43
Number of relationships	1.94	1.44	2.10	1.71	2.19	1.57
Market characteristics						
Market concentration (Local HHI)	0.16	0.09	0.17	0.09	0.17	0.10
MSA indicator	0.77	0.42	0.74	0.44	0.93	0.26
5-year local economic growth rate	0.22	0.06	0.25	0.06	0.19	0.06

This table reports summary statistics for information on small-firm finance from the 1993, 1998 and 2001 *Surveys of Small Business Finance*.

Table 3: Regression of Interest Rate on Most Recent Loan on State, Bank and Borrower Characteristics

	1993 (Control Group)		1998		2003	
	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat
Index of branching restrictions (4 is most, 0 least, restricted) ***Using 2003 for 1993***	0.04	0.92	0.10	1.69	0.12	2.88
Interest Rates						
Prime interest rate	N/A		-1.33	-2.33	-0.15	-0.08
Term structure (10 year government bond - 3 month t-bill)	-1.10	-1.60	-0.66	-1.03	0.14	0.38
Default premium (BAA - 10 year government bond)	0.65	1.14	-0.71	-1.70	0.23	0.58
Borrower characteristics						
Log of borrower assets	-0.25	-7.73	-0.31	-4.93	-0.30	-9.65
Borrower is a corporation?	-0.11	-1.16	0.09	0.53	-0.09	-0.75
Borrower ROA	-0.17	-2.24	-0.04	-0.32	-0.03	-0.26
Borrower risk rating	0.13	4.34	0.12	1.83	0.12	2.15
Loan characteristics						
Floating-rate loan?	-0.36	-2.82	0.07	0.51	-1.06	-8.48
Lender characteristics						
Lender is a bank?	-0.54	-1.49	-0.74	-1.90	-0.45	-1.37
Lender is a non-financial company?	-0.11	-0.17	-0.74	-1.14	0.88	1.03
Line of Credit Renewal?		N/A			0.35	2.78
Relationship variables						
Length of lender-borrower relationship (years)	0.00	-0.55	-0.02	-2.18	0.00	0.37
Borrower age (years)	0.00	0.51	-0.02	-1.97	-0.02	-3.45
Number of information services from lender	-0.33	-3.02	-0.26	-1.21	0.01	0.09
Number of non-information services from lender	0.18	1.53	0.09	0.41	-0.02	-0.18
Borrower has deposit with lender?	-0.09	-0.70	0.09	0.44	0.16	1.04
Number of relationships	0.06	1.83	0.09	1.78	0.04	1.12
Market characteristics						
Market concentration (Local HHI)	0.01	0.01	-0.41	-0.41	0.92	1.28
MSA indicator	0.00	-0.04	-0.26	-1.35	0.10	0.61
5-year local economic growth rate	-0.26	-0.25	1.59	1.04	-0.36	-0.35
N	1,636		788		1,737	
R^2	15.86%		19.19%		21.01%	

All regressions include a set of 2-digit SIC indicator variables to control for industry effects. Standard errors are clustered by state. Sample includes all firms that received a loan.

Table 4: Regression of Interest Rate on Most Recent Loan on State, Bank and Borrower Characteristics, Including Size and Age Interaction Terms

	1998		2003		1998		2003	
	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat
Index of branching restrictions (4 is most, 0 least, restricted)	0.768	1.99	0.568	1.81	0.135	1.44	0.206	2.74
Index of branching restrictions * Log borrower assets	-0.053	-1.83	-0.033	-1.52	-	-	-	-
Index of branching restrictions * Borrowers age (years)	-	-	-	-	-0.002	-0.44	-0.005	-1.59
Interest Rates								
Prime interest rate	-1.348	-2.38	-0.280	-0.15	-1.326	-2.33	-0.203	-0.11
Term structure (10 year government bond - 3 month t-bill)	-0.695	-1.07	0.104	0.27	-0.664	-1.03	0.123	0.32
Default premium (BAA - 10 year government bond)	-0.774	-1.90	0.245	0.60	-0.711	-1.70	0.243	0.60
Borrower characteristics								
Log of borrower assets	-0.191	-2.13	-0.230	-4.14	-0.314	-4.92	-0.304	-9.90
Borrower is a corporation?	0.078	0.44	-0.087	-0.75	0.091	0.51	-0.086	-0.73
Borrower ROA	-0.040	-0.36	-0.027	-0.28	-0.036	-0.32	-0.027	-0.29
Borrower risk rating	0.122	1.83	0.122	2.17	0.120	1.81	0.119	2.10
Loan characteristics								
Floating-rate loan?	0.078	0.54	-1.050	-8.38	0.075	0.53	-1.059	-8.50
Lender characteristics								
Lender is a bank?	-0.741	-1.89	-0.452	-1.38	-0.734	-1.86	-0.449	-1.37
Lender is a non-financial company?	-0.736	-1.13	0.857	1.00	-0.741	-1.12	0.829	0.98
Line of Credit Renewal?	N/A		0.355	2.80	N/A		0.354	2.79
Relationship variables								
Length of lender-borrower relationship (years)	-0.017	-2.16	0.002	0.38	-0.018	-2.20	0.001	0.30
Borrower age (years)	-0.018	-1.97	-0.016	-3.59	-0.013	-1.03	-0.005	-0.79
Number of information services from lender	-0.282	-1.33	0.000	0.00	-0.261	-1.23	0.006	0.05
Number of non-information services from lender	0.089	0.42	-0.028	-0.25	0.090	0.42	-0.022	-0.19
Borrower has deposit with lender?	0.086	0.45	0.166	1.08	0.087	0.45	0.161	1.05
Number of relationships	0.093	1.93	0.044	1.15	0.086	1.81	0.044	1.15

Table 4: Regression of Interest Rate on Most Recent Loan on State, Bank and Borrower Characteristics, Including Size and Age Interaction Terms (Continued)

	1998		2003		1998		2003	
	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat
Market characteristics								
Market concentration (Local HHI)	-0.625	-0.66	0.895	1.25	-0.414	-0.41	0.900	1.24
MSA indicator	-0.257	-1.37	0.100	0.64	-0.259	-1.35	0.096	0.62
5-year local economic growth rate	1.515	0.97	-0.394	-0.39	1.593	1.03	-0.377	-0.37
N	788		1,737		788		1,737	
R^2	19.67%		21.13%		19.21%		21.10%	

All regressions include a set of 2-digit SIC indicator variables to control for industry effects. Sample includes all firms that received a loan. Standards are clustered by state.

Table 5: Regression of Interest Rate on Most Recent Loan on State, Bank and Borrower Characteristics, Pooled Model with State and Year Fixed Effects

	Pooled Data: 1993, 1998 and 2003 Surveys					
	Coefficient	**T-stat**	**Coefficient**	**T-stat**	**Coefficient**	**T-stat**
Index of branching restrictions (4 is most, 0 least, restricted)	0.059	1.94	-0.011	-0.06	0.016	0.35
Index of branching restrictions * Log borrower assets	-	-	0.005	0.39	-	-
Index of branching restrictions * Borrowers age (years)	-	-	-	-	0.002	1.31
Interest Rates						
Prime interest rate	-0.638	-2.76	-0.641	-2.77	-0.640	-2.77
Term structure (10 year government bond - 3 month t-bill)	-0.214	-1.89	-0.213	-1.89	-0.211	-1.87
Default premium (BAA - 10 year government bond)	-0.041	-0.42	-0.041	-0.41	-0.044	-0.44
Borrower characteristics						
Log of borrower assets	-0.297	-13.52	-0.313	-6.68	-0.297	-13.43
Borrower is a corporation?	-0.050	-0.80	-0.051	-0.80	-0.048	-0.76
Borrower ROA	-0.095	-1.63	-0.096	-1.64	-0.095	-1.63
Borrower risk rating	0.141	4.67	0.141	4.67	0.141	4.68
Loan characteristics						
Floating-rate loan?	-0.563	-7.08	-0.565	-7.06	-0.568	-7.15
Lender characteristics						
Lender is a bank?	-0.477	-2.37	-0.477	-2.37	-0.476	-2.37
Lender is a non-financial company?	-0.015	-0.04	-0.014	-0.04	-0.008	-0.02
Line of Credit Renewal?	0.223	1.86	0.226	1.87	0.228	1.91
Relationship variables						
Length of lender-borrower relationship (years)	0.000	0.01	0.000	0.01	0.000	0.04
Borrower age (years)	-0.007	-2.28	-0.007	-2.26	-0.014	-2.22
Number of information services from lender	-0.127	-1.55	-0.126	-1.54	-0.125	-1.53
Number of non-information services from lender	0.043	0.54	0.045	0.56	0.044	0.54
Borrower has deposit with lender?	-0.003	-0.04	-0.004	-0.04	-0.003	-0.03
Number of relationships	0.050	1.96	0.050	1.96	0.049	1.95

Table 5: Regression of Interest Rate on Most Recent Loan on State, Bank and Borrower Characteristics, Pooled Model with State and Year Fixed Effects (Continued)

	Pooled Data: 1993, 1998 and 2003 Surveys					
	Coefficient	**T-stat**	**Coefficient**	**T-stat**	**Coefficient**	**T-stat**
Market characteristics						
Market concentration (Local HHI)	0.379	0.73	0.385	0.75	0.382	0.74
MSA indicator	0.054	0.70	0.052	0.68	0.056	0.72
5-year local economic growth rate	0.410	0.79	0.412	0.79	0.408	0.78
N			4,161			
R^2	38.33%		38.33%		38.38%	

All regressions include a set of 2-digit SIC indicator variables to control for industry effects. Sample includes all firms that received a loan. The pooled regressions also include year and state fixed effects. Standard errors are clustered by state-year.

Table 6: Regression of Log Total Debt, Probability of Denial and Late Trade Credit on State, Bank and Borrower Characteristics

	Pooled Model							
	1 if Bank Debt		Log Total Debt		Denied / Discouraged		Pct Late on TC	
	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat
Index of branching restrictions (4 is most, 0, least restricted)	-0.012	-2.13	0.052	1.06	0.004	0.99	-0.373	-1.26
Borrower characteristics								
Log of borrower assets	0.041	10.97	0.841	18.80	-0.032	-14.81	-0.217	-1.55
Borrower is a corporation?	-0.017	-1.33	0.312	2.59	0.015	1.64	0.450	1.00
Borrower ROA	-0.003	-0.50	0.202	4.27	-0.028	-6.45	-0.579	-2.14
Borrower risk rating	0.006	1.12	-0.041	-0.87	0.074	18.27	3.375	9.71
Relationship variables and Age								
Length of longest bank relationship	-0.002	-2.25	-0.012	-2.11	-0.002	-4.49	0.008	0.29
Borrower age (years)	0.000	0.43	-0.012	-2.69	-0.002	-4.45	-0.005	-0.24
Number of relationships	0.278	19.48	0.978	20.86	0.045	15.52	1.051	5.92
Market characteristics								
Market concentration (Local HHI)	0.086	1.17	-0.294	-0.53	-0.047	-0.94	1.658	0.68
MSA indicator	-0.072	-4.21	-0.357	-2.37	0.038	3.27	1.344	2.34
5-year local economic growth rate	0.030	0.35	1.399	1.73	-0.031	-0.57	-2.645	-0.75
N	11,945		11,957		11,939		8,236	
R^2	31.37%		29.69%		13.69%		13.64%	

All regressions include a set of 2-digit SIC indicator variables to control for industry effects. The pooled regressions also include year and state fixed effects. Standard errors are clustered by state-year.

Table 7: Regression of Non-Price Loan Terms from Most Recent Loan on State, Bank and Borrower Characteristics, Pooled Model with State and Year Fixed Effects

	Pooled Data: 1993, 1998 and 2003 Surveys					
	Collateral?		***Loan Guarantee?***		***Maturity (years)***	
	Coefficient	**T-stat**	**Coefficient**	**T-stat**	**Coefficient**	**T-stat**
Index of branching restrictions (4 is most, 0 least, restricted)	-0.017	-2.07	-0.002	-0.21	-0.015	-0.18
Interest Rates						
Prime interest rate	-0.046	-0.69	0.090	1.50	-0.781	-1.43
Term structure (10 year government bond - 3 month t-bill)	-0.026	-1.17	0.021	0.84	-0.106	-0.51
Default premium (BAA - 10 year government bond)	-0.018	-0.83	-0.031	-1.51	-0.417	-2.40
Borrower characteristics						
Log of borrower assets	0.040	7.20	0.000	0.00	0.082	1.52
Borrower is a corporation?	0.005	0.31	0.048	2.84	-0.644	-4.05
Borrower ROA	-0.016	-1.29	-0.035	-3.12	-0.193	-1.88
Borrower risk rating	0.024	4.20	0.027	4.07	0.040	0.58
Loan characteristics						
Floating-rate loan?	-0.017	-0.97	0.109	6.04	-0.300	-1.64
Lender characteristics						
Lender is a bank?	-0.001	-0.04	0.088	3.02	0.316	0.97
Lender is a non-financial company?	-0.114	-2.05	0.036	0.60	0.333	0.56
Relationship variables						
Length of lender-borrower relationship (years)	-0.002	-2.29	-0.002	-1.50	-0.006	-0.59
Borrower age (years)	-0.001	-1.19	-0.003	-4.47	0.003	0.49
Number of information services from lender	0.016	0.77	-0.032	-1.59	-0.486	-3.35
Number of non-information services from lender	0.031	1.48	-0.011	-0.56	-0.538	-3.43
Borrower has deposit with lender?	-0.073	-3.40	0.091	3.72	-1.305	-4.73
Number of relationships	0.019	3.29	0.036	6.46	-0.134	-2.40

Table 7: Regression of Non-Price Loan Terms from Most Recent Loan on State, Bank and Borrower Characteristics, Pooled Model with State and Year Fixed Effects (Continued)

	Pooled Data: 1993, 1998 and 2003 Surveys					
	Collateral?		***Loan Guarantee?***		***Maturity (years)***	
	Coefficient	**T-stat**	**Coefficient**	**T-stat**	**Coefficient**	**T-stat**
Market characteristics						
Market concentration (Local HHI)	0.095	1.01	0.175	1.83	-0.452	-0.47
MSA indicator	0.012	0.49	0.038	1.74	-0.297	-1.42
5-year local economic growth rate	0.021	0.16	0.084	0.64	0.786	0.62
N	4,153		4,156		4,065	
R^2	9.52%		7.30%		12.68%	

All regressions include a set of 2-digit SIC indicator variables to control for industry effects. The pooled regressions also include year and state fixed effects. Standard errors are clustered by state.