

Bank expansion leads to lower interest rates
and faster economic growth

The Benefits of Branching Deregulation

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The Riegle-Neal interstate banking and branching Efficiency Act, implemented in June 1997, enables banks to establish branches and buy other banks across the country. The Riegle-Neal Act is the final stage of a quarter-century-long effort to relax geographic limits on banks. As recently as 1975, no state allowed out-of-state bank holding companies (bhcs) to buy in-state banks, and only 14 states permitted statewide branching. By 1990, all states but Hawaii allowed out-of-state bhcs to buy in-state banks, and all but 3 states allowed statewide branching. Riegle-Neal removes the remaining restrictions by permitting banks and bhcs to cross state lines freely. Although the act gives each state the right to prevent out-of-state banks from owning branches there, only Texas and Montana have chosen to do so.

The effects of the recent federal legislation will be known only over time, but we can study the effect of geographic restrictions on the banking industry by examining an earlier stage of the deregulatory process. The states were most active in removing geographic limits on banks in the 15 years from 1978 to 1992. By observing the changes in banking that followed the state initiatives, we can learn much about the effect of the limits. Previous

research by Charles Calomiris has suggested that geographic restrictions in place during the early part of the 20th century destabilized the banking system by creating small, poorly diversified banks that were vulnerable to bank runs and portfolio shocks. In this article, we focus instead on the effect of the restrictions on the efficiency of the banking system.

We find that bank efficiency improved greatly when branching restrictions were lifted. Loan losses and operating costs fell sharply, and the reduction in banks' costs was largely passed on to borrowers in the form of lower loan rates. The relaxation of state limits on interstate banking was followed also by improvements in bank performance, but the gains were smaller and the evidence of a causal relationship less robust.

Our analysis suggests that much of the efficiency improvement brought about by branching was attributable to a selection process whereby better performing banks expanded at the expense of poorer performers. It appears that the branching restrictions acted as a ceiling on the size of well-managed banks, preventing their

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expansion and retarding an evolution in which less efficient firms routinely lose ground to more efficient ones.

While the improvements to the banking system following deregulation helped bank customers directly, we also find important benefits to the rest of the economy. In particular, state economies grew significantly faster once branching was allowed—in part, we suggest, because deregulation permitted the expansion of those banks that were best able to route savings to the most productive uses. Although it is uncertain whether the observed acceleration in economic growth will last beyond 10 years, the stimulative effect of branching deregulation on the economy has been considerable.

A Brief History of Geographic Restrictions on Banking

states began imposing limits on branch office locations in the 19th century. In the words of Edward Kane (p. 142), such limits were intended in part to prevent unscrupulous bankers from “choosing inaccessible office sites to deter customers from redeeming ... circulating banknotes.” Geographic limits also were justified by the political argument that allowing banks to expand their operations freely could lead to an excessive concentration of financial power. Appearing before Congress in 1939, the Secretary of the Independent Bankers Association warned that branch banking would “destroy a banking system that is distinctively American and replace it with a foreign system ... a system that is monopolistic, undemocratic and with tinges of fascism.”

Inefficient banks probably supported the restrictions because they prevented competition from other banks. Economides, Hubbard, and Palia (1996) show that states with many weakly capitalized small banks favored the 1927 McFadden Act, which gave states the authority to regulate national banks’ branching powers. According to Sylla, Legler, and Wallis (1987) the states themselves often benefited from exercising control over the supply of bank charters and the expansion of branch banking. They find that Massachusetts and Delaware, for instance, received a majority of their state revenues from bank regulation in the early 19th century.

Geographic restrictions may not have seriously constrained the banking industry before the appearance of large corporations that required large-scale, multistate banking services. Rapid industrialization and the growth of transcontinental railroads after the Civil War, however, created firms whose need for comprehensive corporate financial services could not be met adequately by the existing system of fragmented unit banks. In response, banks formed “chain banks”—an alliance of several banks whose principal ownership rested with the same group of investors—after 1890. A few years later, “banking groups”—banks owned directly by a holding company—were created in an effort to get around branching restrictions.

Nevertheless, branching restrictions persisted, and as late as 1975 only 14 states allowed statewide branching.

Twelve states prohibited branching altogether, and the remainder imposed restrictions of varying severity. Pennsylvania was representative of a partially restrictive state. Until 1982, Pennsylvania banks were allowed to branch only in the county where their head offices were located and in contiguous counties.

In addition to facing restrictions on in-state branching, banks traditionally have been limited in their ability to cross state lines. The Douglas Amendment to the 1956 Bank Holding Company Act prohibited a bhc from acquiring banks outside the state where it was headquartered unless the target bank’s state permitted such acquisitions. Inasmuch as no state allowed such transactions in 1956, the amendment effectively barred interstate banking organizations. Although states had the option to allow out-of-state bhcs to enter, none exercised that right until 1978, when Maine permitted such transactions. Even then, however, little changed: the Maine statute allowed an out-of-state bhc to buy a Maine bank only if the home state of the acquiring bhc permitted Maine-based bhcs the reciprocal right to buy banks there; because no other state allowed such entry, interstate bank organizations could not be formed. Banks could not in fact cross state borders until 1982, when Alaska, Massachusetts, and New York permitted out-of-state bhcs to enter.

Moves toward Deregulation Although some states removed barriers to branching before 1978 (see Table 1), Maine’s 1978 move to permit entry by out-of-state bhcs marked the beginning of a 15-year period in which the states relaxed barriers to bank expansion. By the end of 1992, deregulation at the state level was essentially completed: all states but Arkansas, Iowa, and Minnesota allowed statewide branching, and all states but Hawaii permitted out-of-state bhcs to enter.

Table 1 chronicles the steps taken by individual states to eliminate geographic restrictions. The first column presents the year in which each state authorized branching by means of merger and acquisition. Many states also permitted de novo branching after permitting banks to branch through mergers and acquisitions. We do not emphasize de novo branching powers because bank expansion into new markets generally occurs through the purchase of whole banks or branches of banks located in those new markets, not through the opening of new branches. The second column reports the year in which each state first permitted interstate banking. In some cases, choosing a date for the authorization of branching was difficult, because the states often deregulated only gradually. In most cases, the date selected reflects the time at which the state finished the branching deregulation process. In four cases, however (Pennsylvania, Ohio, Virginia, and Washington), we chose dates earlier than the nominal end of the process of deregulation because the remaining restrictions did not appear to impose a meaningful constraint on branching.

Forces of Change Several developments contributed to the removal of the geographic barriers to bank expansion. In the mid-1980s, the Office of the Comptroller of the Currency took advantage of a clause in the 1864 National Bank Act to allow nationally chartered banks to branch freely in those states where thrifts did not face branching restrictions. The Comptroller's action was instrumental in introducing statewide branching in several southern states. According to Edward Kane another impetus behind deregulation may have been the rash of bank and thrift failures in the 1980s, which increased public awareness of the advantages of large, well-diversified banks.

Kroszner and Strahan (forthcoming) suggest that the emergence of new technologies in both deposit-taking and lending encouraged the elimination of geographic barriers by changing the nature of banking markets. For instance, the introduction of the automated teller machine in the late 1970s and the development of money-market mutual funds increased competitiveness in deposit markets. As a result, branching and interstate banking restrictions could no longer offer the same degree of protection from competition, a fact that made it less likely that banks would lobby for the preservation of those rules. At the same time, new information technologies diminished the value of the specialized knowledge that long-established local bankers

might have had about the risks of borrowers in the community. The change improved the ability of banks to lend in more distant markets. Thus protected banks' incentive to defend restrictions on branching and interstate banking diminished over time, while expansion-minded banks' desire to see the restrictions fall increased.

The initiative to relax restrictions on interstate banking came primarily from larger banking organizations that were well equipped to pursue lower funding costs and better lending opportunities in neighboring states. Their efforts may have succeeded in the 1980s because it became apparent that banks and nonbanks were already practicing interstate banking. As Savage argues,

the proliferation of loan production offices, nonbank subsidiaries of bank companies, nonbank banks, and interstate thrift institutions, the widespread use of credit cards, and the provision of financial services by nonfinancial firms not subject to geographic limitations all made the traditional restrictions on the geographic expansion of banks more difficult to explain and justify. If so many financial services could be provided across state lines by these various means, why shouldn't deposit-taking institutions be allowed to expand as well?

The breakdown of the geographic constraints on banks over the last 20 years has had a significant impact on the industry. Branching deregulation has prompted banks to enter new markets, persuaded bhcs to consolidate their subsidiaries into branches, and forced smaller institutions to exit banking. Interstate banking activity has increased dramatically, thus boosting the percentage of deposits held by out-of-state bhcs in the typical state from 2 percent in 1979 to 28 percent in 1994 (Berger, et al., 1995). Interstate banking has also intensified the demands placed on bank management: the compensation of managers is now tied more closely to bank performance, and the turnover rate among banks' chief executive officers has increased.

Table 1

The States Remove Restrictions on Geographic Expansion

State	Intrastate branching deregulated	Interstate banking deregulated	State	Intrastate branching deregulated	Interstate banking deregulated
Alabama	1981	1987	Montana	1990	1993
Alaska	Before 1970	1982	Nebraska	1985	1990
Arizona	Before 1970	1986	Nevada	Before 1970	1985
Arkansas	1994	1989	New Hampshire	1987	1987
California	Before 1970	1987	New Jersey	1977	1986
Colorado	1991	1988	New Mexico	1991	1989
Connecticut	1980	1983	New York	1976	1982
Delaware	Before 1970	1988	North Carolina	Before 1970	1985
District of Columbia	Before 1970	1985	North Dakota	1987	1991
Florida	1988	1985	Ohio	1979	1985
Georgia	1983	1985	Oklahoma	1988	1987
Hawaii	1986	—	Oregon	1985	1986
Idaho	Before 1970	1985	Pennsylvania	1982	1986
Illinois	1988	1986	Rhode Island	Before 1970	1984
Indiana	1989	1986	South Carolina	Before 1970	1986
Iowa	—	1991	South Dakota	Before 1970	1983
Kansas	1987	1992	Tennessee	1985	1985
Kentucky	1990	1984	Texas	1988	1987
Louisiana	1988	1987	Utah	1981	1984
Maine	1975	1978	Vermont	1970	1988
Maryland	Before 1970	1985	Virginia	1978	1985
Massachusetts	1984	1983	Washington	1985	1987
Michigan	1987	1986	West Virginia	1987	1988
Minnesota	1993	1986	Wisconsin	1990	1987
Mississippi	1986	1988	Wyoming	1988	1987
Missouri	1990	1986			

Source: Chronology is based on information in Amel (1993).

Note: Before the passage of the Riegle-Neal Act, Iowa had not deregulated intrastate branching and Hawaii had not deregulated interstate banking.

In addition to prompting changes in the organization of the industry and the behavior of individual banks, deregulation has had profound effects on the overall performance of the banking system. The next section looks at the impact of deregulation on two components of bank performance: the costs of providing services and the prices charged customers for those services.

Deregulation, Cost Efficiency, and Prices

did banks perform better when they were permitted to operate statewide branch networks and to build multistate bank holding companies? We investigate this question by examining whether bank costs—as measured by loan losses (net loan chargeoffs divided by total loans) and noninterest costs (noninterest expenses divided by total assets)—declined after deregulation to create a more efficient system. We also examine changes in loan prices (interest income on loans and leases divided by total loans and leases) to determine whether bank customers are better off following deregulation. We look at state-level data for 1978-92 to summarize the effect of deregulation on the overall performance of the banking system.

To understand how we arrive at our measures of the cost efficiency of the banking system, consider New York in 1978. We construct the chargeoffs ratio by dividing the sum of loans charged off by all banks operating in New York in 1978 by the sum of all loans held by New York banks in 1978. We construct similar aggregates for the noninterest expense and loan price variables in each state and year in the sample. The data for the performance measures are derived from the year-end Reports of Condition and Income filed by all banks with the federal banking agencies.

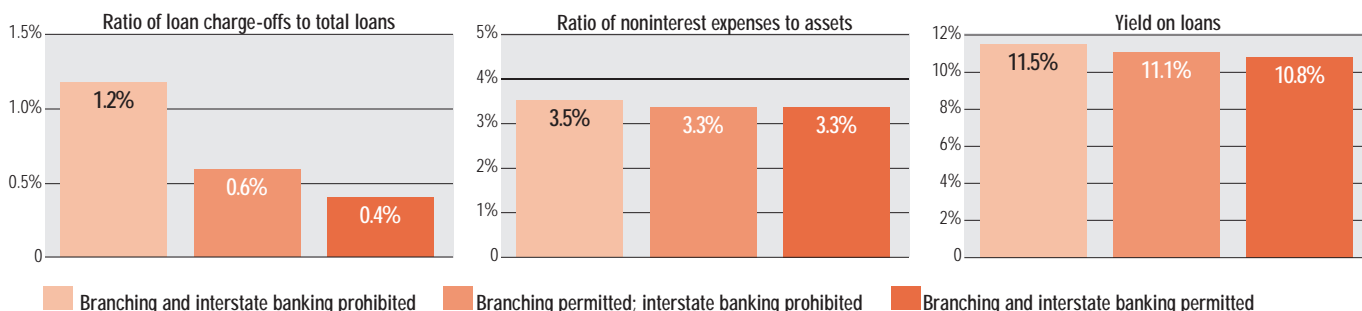
We use regression techniques to estimate the effect of deregulation on bank costs and loan prices. The regression methods allow us to control for other factors that might influence our measures of bank cost and loan prices—most notably, the health of the state’s economy. Bank costs, particularly those related to loan defaults, generally move with the business cycle: borrowers tend to pay off

loans during boom times but are less able to do so during recessions. If states deregulated branching and interstate banking during hard times, average measures of costs could improve after deregulation as states’ economies recovered from recession. A simple before-and-after comparison of bank performance would show an improvement in bank loan portfolios and profitability after deregulation, but the advances would largely reflect the timing of deregulation. We address the possibility by controlling for the national business cycle in our regressions.

Our analysis suggests that loan losses, noninterest expenses, and loan rates decreased significantly after statewide branching was allowed—even when we adjust for the influence of the business cycle on bank performance and for persistent cross-state differences in bank performance. Figure 1 reports the average levels of the cost and price measures that would have been observed during the 1978-92 sample period under three alternative regulatory regimes: (1) restrictions in place on both branching and interstate banking, (2) branching permitted but interstate banking prohibited, and (3) both branching and interstate banking permitted. The left panel suggests that if no state had allowed either statewide branching or interstate banking between 1978 and 1992, the ratio of chargeoffs to total loans in the typical state in a typical year would have been 1.2 percent. Had all states allowed statewide branching but prohibited interstate banking in our sample period, average chargeoffs in the typical state would have fallen by half, to 0.6 percent. The ratio of noninterest expenses to assets would have fallen from 3.5 percent to 3.3 percent if branching had been permitted throughout the period (middle panel). It appears that most of the reduced costs were passed on to bank borrowers in the form of lower loan rates, which in our estimates declined from 11.5 percent to 11.1 percent on average (right panel). We find no change in deposit interest rates following deregulation, however. All the cost declines seem to be passed on to bank borrowers rather than depositors. Each of the improvements is statistically significant at the 5 percent

Figure 1

Costs and Interest Rates Are Lower in Deregulated Environments



Source: Authors’ calculations, based on data from Federal Financial Institutions Examination Council, Reports of Condition and Income.

Notes: Chart shows the average level of price and performance measures that would have been observed in the 1978-92 period had all states been subject to the regulatory regimes identified in the legend.

level. Note, however, that the magnitudes of the improvements are uncertain. For instance, in some of our alternative approaches, estimates of the decline in loan losses were a good deal smaller, although they remain statistically and economically significant.

Foes of bank deregulation and consolidation have argued that the increasing concentration in the banking industry could increase market power. While measures of concentration at both the state and national levels have increased in recent years following deregulation, Stephen Rhoades (1996) has found that concentration at local levels has remained remarkably constant. If increased market power were a problem, we would see both greater concentration and higher prices at the local level following

may be lacking because most states entered interstate banking agreements at about the same time, making it difficult to distinguish the effects of deregulation from the effects of other changes. Because of this statistical problem, we cannot determine whether interstate banking had a significant impact on bank performance. Consequently, we focus on branching deregulation in the remainder of the article.

Robustness of the Performance Improvements A possible explanation for the observed reduction in loan losses and loan rates is that banks made fewer risky loans following branching deregulation. If the output mix of banks changed from riskier to safer loans following deregulation, then we might expect to observe declines in both loan losses and loan rates. Changes in banks' output could also explain declines in noninterest expenses if, for instance, banks provided fewer checking accounts (which are relatively costly for banks to maintain) following deregulation. To investigate this possibility, we estimate the effects of deregulation on noninterest expenses, loan losses, and loan prices while controlling for banks' output mix. In each case, we find that the improvements in

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deregulation, neither of which has occurred. It is true that our estimates indicate that bank costs have fallen more than revenues, suggesting an increase in industry profitability. Similarly, estimates of the effect of deregulation on banks' return on equity and return on assets in another study by us showed small increases in profitability that were sometimes statistically significant (at the 10 percent level) and sometimes not. Nevertheless, it appears that most, or perhaps all, of the cost reductions from deregulation are passed along to customers. There is little evidence that deregulation has increased market power.

Our regression analysis also shows that some modest improvements in bank performance have followed the introduction of interstate banking. Although operating costs do not decline at all (Figure 1, middle panel), chargeoffs fall from 0.6 to 0.4 percent of total loans when interstate banking is allowed in addition to statewide branching (left panel), and the average interest rate falls from 11.1 percent to 10.8 percent (right panel).

The evidence of gains following interstate banking deregulation, however, is much less robust than the evidence of improvements following branching deregulation. When we control for state business cycles (by including measures of state-level personal income growth in the regressions) as well as national business cycles, we see no improvements following interstate banking. This finding suggests that the observed gains might stem from favorable banking conditions at the time of deregulation rather than from deregulation itself. Alternatively, robust evidence of performance improvements following interstate banking

costs and the reductions in loan losses and loan prices after branching deregulation remain statistically significant even after controlling for the output mix. We also find no decrease in two risky loan categories—credit cards and commercial loans—following branch deregulation, suggesting that banks did not shift to safer loans after deregulation.

It is possible, however, that even though the volume of credit card loans and commercial loans has remained fairly constant, the loans after deregulation may themselves be less risky. That is unlikely for two reasons. First, evidence gathered by Keeley (1990) suggests that, if anything, banks *increased* their risk-taking after geographic deregulation because eliminating entry barriers reduced banks' franchise value. Second, as we indicate below, banks with higher profits and fewer loan losses grew faster than banks with lower profits and more loan losses once branching was permitted. Declines in loan losses seem to reflect not a change in the inherent riskiness of the pool of borrowers but better screening and monitoring of borrowers by the banking system.

We have established that bank performance in the average state improved following statewide branching. But did banks in only a few states experience improvements, or was the phenomenon widespread? To find the answer, we look at the changes in bank cost efficiency in individual states. We find that reductions in loan losses following branching deregulation are widespread; in all states but New Hampshire and Utah, chargeoffs decline after deregulation relative to the change in chargeoffs

experienced by states that did not deregulate branching during the period. Similar pictures emerge for both loan prices and noninterest expenses. For loan prices, we find declines following branching deregulation in 25 cases of 33. Again, New Hampshire is a significant outlier. A likely explanation is that New Hampshire eliminated its branching restrictions in 1987, just before the beginning of the New England banking crisis. We find that noninterest expenses fall in 19 of the 24 deregulating states available for this analysis, again relative to the control group of states.

Why Deregulation Improves Bank Efficiency Limits on bank expansion could have had adverse effects on efficiency in banking for at least three reasons. First, prohibitions on branching and interstate banking may have limited the opportunity for the best run banks to grow. In unregulated markets, efficient firms have a natural tendency to gain market share over their inefficient competitors, an outcome that will increase average efficiency as the industry evolves. By preventing better run banks from establishing branches, and by preventing bhcs from expanding across state lines, the regulations may have retarded the evolution. After the geographical constraints were lifted, the more efficient banks may have expanded, thereby improving the performance of the average banking asset. We call this the *selection hypothesis*.

Second, limited restrictions on geographic expansion may have weakened the discipline that markets usually place on managers of corporations. When interstate banking is prohibited, managers worry less about takeovers. Because their jobs are more secure, they may also be less motivated to increase shareholder value, maximize efficiency, and minimize costs. According to this *disciplining hypothesis*, efficiency in banking improves after deregulation because managers are forced to increase shareholder value to preserve their jobs.

A third possible reason efficiency might improve following deregulation is that barriers to geographic expansion prevent banks from operating at the most efficient size. There is some evidence, for instance, that small banks can reduce average costs by expanding up to about \$500 million in total assets. According to the *economies of scale hypothesis*, the efficiency of the banking system will improve after deregulation as small banks grow and reduce their average costs. Of course, according to that view, all the benefits come from changes occurring at the lower end of the bank size distribution. Because small banks hold a relatively small share of total banking assets, the benefits would likely be small.

Evaluation of Three Hypotheses Which of the three explanations best accounts for the efficiency gains observed

following deregulation? Most research on data from the 1980s suggests that economies of scale vanish beyond about \$500 million in total assets. The large improvements we have found in the state-level aggregates cannot plausibly be attributed to the fact that small banks are moving closer to the optimal scale. In 1980, for instance, banks with under \$500 million in assets (in 1994 dollars) held less than 30 percent of total assets in the banking system. Moreover, we have estimated the change in our performance measures following branching deregulation for small banks (those with assets under \$100 million) and large banks separately. We find that the improvements are greater for large banks than for small, a finding inconsistent with the economies of scale explanation.

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More difficult to evaluate is the hypothesis that management discipline accounts for the beneficial effects of branching deregulation. Because we lack good measures of the degree of managerial effort at banks, we cannot test the hypothesis directly. Nevertheless, we cannot reject the possibility that disciplining played some role in the improved efficiency of banks. Hubbard and Palia (1995) find evidence of greater managerial discipline following interstate banking: the turnover rate for banks' chief executive officers rises and the pay-performance relation tightens once states allow interstate banking. Hubbard and Palia contend that these changes result from a more active market for corporate control after deregulation. Such changes may well have disciplined management to improve bank performance, although neither this article nor the Hubbard and Palia study establishes the point.

The remaining explanation for bank efficiency gains, the selection hypothesis, can be tested readily. To do so, we examine whether better run banking companies grow faster than their less efficient rivals following branching deregulation. First, we classify banks on the basis of their profitability just before deregulation. We then observe the change in the market share after deregulation for the high-profit banking companies. If the selection hypothesis is correct, we should find that profitable banks increase their market share at the expense of unprofitable banks following deregulation.

Specifically, for each state, we first rank banking companies from highest to lowest according to their return on equity at the end of the year before the year of deregulation. Next, we go down that ranking until we reach a

bank that, together with all previous banks, accounts for 50 percent of the state's bank assets. The banking companies in this group constitute our high-profit firms. We then calculate the group's share of state bank assets five years after branching deregulation. As implied by the selection hypothesis, we find that the high-profit banking companies grow faster after branching deregulation (Table 2, row 1); their share of banking assets increases, on average, by 8.5 percentage points (from 51.3 percent to 59.8 percent)—a statistically significant increase.

Of course, we might expect banks enjoying high profits and good loan portfolios to grow relatively faster at all times, even when branching restrictions are in place. In other words, the fact that banks with good balance sheets grow faster than less profitable banks need not indicate that deregulation caused the weaker banks to lose ground. To isolate the effects of deregulation on selection, we compare the differential growth rates of high- and low-profit banks in a deregulated environment with the same differential growth rates in a regulated environment.

A striking contrast is evident in the growth rates achieved in regulated and deregulated environments (Table 2). High-profit banks increase their market share by only 1.8 percentage points (from 49.9 to 51.7 percent) in the average state over the pre-deregulation period (Table 2, row 2). The change is so small that we cannot reject the possibility that high-profit banks do not increase their market share at all over the six-year period before deregulation (that is, 1.8 percent is not a statistically significant change). In the post-deregulation period, by contrast, the market share of the high-profit banks rises sharply. In sum, the evidence in Table 2 strongly supports the hypothesis that branching deregulation forced a process of selection whereby weaker banks lost ground to better run banks.

Deregulation and Economic Growth

thus far we have argued that relaxation of geographic restrictions improved the performance of the banking system by improving the efficiency of the average bank asset and improving bank lending. How did those changes affect the rest of the economy? Earlier research by King and Levine has shown that countries with better developed banking systems grow faster because savings are channeled into the highest-return investments. Banks can help to route savings to the most productive uses in two ways. First, they provide information about the profit potential of different businesses, channeling savings toward good projects and away from bad. Second, banks monitor those firms with which they have lending relationships to ensure that bank funds are put to proper use. For example, banks write loan covenants that restrict firms' ability to engage in certain activities during periods of financial distress.

Branching deregulation should improve the ability of banks to direct savings to the best projects and to oversee

the successful execution of those projects. As we have seen, banks function better after branching deregulation, and their loan losses decrease sharply. The selection hypothesis suggests that the improvements occur because banks that are better able to screen and monitor loans are able to expand their operations at the expense of less effectively managed banks after deregulation. As a result, the economy can grow faster because savings flow more consistently into profitable investment opportunities.

The Effect on State Economies To investigate whether state-level rates of economic growth increased following branching deregulation, we estimate the change in the average growth rate of two measures of economic activity: real per capita personal income and real per capita gross state product. (In our regressions interstate banking was not associated with changes in state-level economic growth.) The two measures differ somewhat in concept: Personal income reflects the income of a state's residents, providing a measure of their welfare. Gross state product, by contrast, measures the total incomes of factors of production located within the state, regardless of the residence of the owner of the factor, allowing us to assess the economic activity that actually occurs there. As in our estimates of the effects of branching deregulation on bank performance, we control for both business-cycle effects and the effects of differences in the long-run growth rate across states. Our tests of the effects of branching deregulation on the state economies show a significant acceleration in growth: Annual personal income grows about 0.51 percentage point faster after branching deregulation, and gross state product about 0.69 percentage point faster (Table 3, row 1). The acceleration is not only statistically significant at the 5 percent level but is also economically "large" relative to the 1.6 percent annual average growth rate of real per capita personal income over the sample period.

Table 2

Better Banks Increase Their Market Share after Branching Deregulation

	Initial market share of high-profit banks (percent)	Market share of high-profit banks six years later (percent)	Increase in share (percentage point change)
Post-deregulation period	51.3	59.8	8.5 (3.91)*
Pre-deregulation period	49.9	51.7	1.8 (0.99)

Source: Authors' calculations, based on data from Federal Financial Institutions Examination Council, Reports of Condition and Income.

Notes: The table reports the change in the share of total bank assets held by that half of the banking companies with the highest return on equity at the beginning of the specified six-year period. The post-deregulation period begins the year before the year of deregulation; the pre-deregulation period begins seven years before the year of deregulation. The t-statistics reported below the market share change for each period test the hypothesis that the change equals zero.

*Statistically significant at the 5 percent level

Of course, there is uncertainty associated with the estimate—with a 5 percent probability of error, we can only be confident that personal income growth increased somewhere between 0.06 and 0.97 percentage point. Moreover, the figures are estimated under the assumption that the increase in growth persists indefinitely. One possibility is that the economy benefits for a few years as the banking system becomes more efficient, then growth returns to the level that prevailed before the policy change.

We disentangle the short- and long-run effects of deregulation on growth by assessing the average growth rate following deregulation during three distinct time periods (Table 3, rows 2-4). We measure the change in the growth rate during the first 5 years after branching deregulation, the change in growth relative to the years before deregulation during years 5 to 10, and the change from years 11 and beyond. We find that the beneficial effects of the policy change are greatest during the first 10 years. Personal income growth accelerates by 0.35 percentage point in the first 5 years and by 0.37 percentage point in the next 5 years. But after 10 years, our estimate of the growth effect falls to 0.17 percentage point and is no longer statistically significant. In the gross state product series, however, the increases in growth appear to last beyond 10 years.

Overall, we lack conclusive evidence on whether the growth effects persist beyond 10 years. The limitation is not surprising, however, as we observe only about 10 years of growth experience after deregulation for most states. Nevertheless, even if the observed increases in growth do not continue indefinitely, the short-run effects appear to be large.

Robustness of the Growth Acceleration Did many states experience a growth pickup in the wake of branching deregulation or was the change concentrated among a few? To evaluate whether the effects were widespread, we offer a state-by-state assessment of the growth in personal income. We find that the growth acceleration following deregulation is a general phenomenon. Twenty-nine of the 35 states that deregulated performed better than the nonderegulators. (The exceptions are New Hampshire, Florida, Michigan, Kansas, Colorado, and New Mexico.) Even when the deregulating states experienced growth declines following branching, the nonderegulators generally fared even worse. The pattern suggests that when a downturn was occurring in the national business cycle at the time of branching deregulation, the downturn was at least partly offset by the positive effects of statewide branching.

We have shown that rates of economic growth increased following branching deregulation. The increase is both statistically large, which suggests that we can be confident that it is not the result of chance, and economically large, which suggests that over time economic welfare would be raised dramatically as a consequence of the accelerated growth. The growth acceleration is also wide-

spread, benefiting 29 of the 35 deregulating states. The remaining question, however, is whether deregulation actually caused the growth pickup. Establishing causal relationships is always difficult in empirical economics because researchers cannot run controlled experiments. We must therefore consider other factors that could explain our finding. One possibility is that state governments instituted a variety of new policies at the same time that they deregulated their banking systems. If so, these policy changes could be responsible for the improved growth performance.

We find no evidence of such coincident policy changes. The political control of state governments did not change significantly around the time of branching deregulation. In only 2 cases of 35 did control of both houses of the state legislature and the governorship pass from one political party to another during the four-year election cycle leading up to branching deregulation. The political affiliation of both houses of the state legislature changed only 6 times of 35 during the four-year window before branching deregulation.

Moreover, even after controlling for two measures of state fiscal policy—the ratio of public investment by the state government to total income and the ratio of tax receipts by the state government to total income—we continue to find a significant growth acceleration after branching deregulation. Our tests suggest that there were no changes in states' tax and other fiscal policies that coincided with branching deregulation and which could explain the observed increase in state economic growth following statewide branching.

Another possible explanation for our finding is that state legislatures relaxed branching restrictions in anticipation of faster growth and the need to finance attractive projects. Why might that be the case? Perhaps when a state has strong growth prospects, potential bank borrowers pressure state governments to deregulate their

Table 3

States' Economic Growth Accelerates after Branching Deregulation

	Change in personal income growth (percentage point)	Change in gross state product growth (percentage point)
(1) Overall increase in growth	0.51 (2.22)**	0.69 (2.09)**
(2) Increase in growth, years 1-5	0.35 (1.75)*	0.60 (2.07)**
(3) Increase in growth, years 5-10	0.37 (1.85)*	0.65 (2.41)**
(4) Increase in growth, years 10+	0.17 (0.89)	0.67 (2.48)**

Source: Jayaratne and Strahan (1996).

Notes: The t-statistics are given in parentheses.

*Statistically significant at the 10 percent level **Statistically significant at the 5 percent level

banking systems. But if states deregulated branching rules because they anticipated the need to finance a future economic boom, then we should see a sharp rise in bank lending following deregulation. In our 1996 article, however, we demonstrate that there was no increase in lending. Moreover, the growth effects of branching deregulation remain largely unchanged even after we control for loan growth.

Finally, we consider the possibility that some unobserved set of technological changes led to branching deregulation, improved bank performance, and increased economic growth. For example, increased competition from nonbank financial institutions clearly helped to spur the removal of barriers to branching. Perhaps such financial innovations also forced banks to improve their performance and boosted states' economic growth. Two considerations, however, lead us to discount the possibility. First, if the explanation were true, we would see an improvement in bank performance and increased economic growth immediately before, as well as after, deregulation. Our data show no such pattern. Second, any technological changes that occurred about the time of deregulation should have affected all states. In that case, we should not see any improvement in bank performance nor any increase in economic growth in deregulating states relative to nonderegulating states. Our data, of course, provided clear evidence of such differences in the experiences of the states.

To summarize, the large increase in bank loan quality in conjunction with little or no change in loan growth suggests that the increase in states' economic growth at least partly resulted from statewide branching. The improvements in banking stemming from selection (and possibly disciplining) appear to have had important beneficial effects on the economy.

Conclusion

restrictions on bank branching have proved to be very costly. By preventing the more efficient banks from expanding at the expense of their less efficient rivals, the restrictions retarded the "natural" evolution of the industry. As our analysis has shown, once state branching restrictions were lifted, the efficiency of the banking system improved as the better banks expanded into new markets. Bank borrowers benefited from lower loan rates, while the overall economy grew faster as banks did a better job separating the good projects from the bad and monitoring firms after lending relationships had been established. State restrictions on interstate banking may have created similar constraints, although our statistical procedure has a harder time identifying such effects.

The Riegle-Neal Act removes the remaining geographic barriers to bank expansion and permits the creation of multistate banking franchises. This federal legislation may produce benefits similar to those achieved through state deregulation—reduced bank costs, lower loan rates, and accelerated economic growth. Neverthe-

less, it is possible that the latitude given banks to create branches and buy out-of-state banks over the last two decades may already have weeded out weaker institutions and exhausted the benefits of geographic deregulation. Whether there is additional room for improved efficiency through the process of selection remains to be seen.

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