
Are Mergers Responsible for the Surge in New Bank Charters?

By William R. Keeton

After stagnating for many years, the rate of new bank formation has increased sharply in the second half of the 1990s. The financial press attributes this development to the high volume of bank mergers, which are said to have encouraged new entry by reducing service to some bank customers. It is commonly asserted, for example, that many new banks serve small businesses whose banks were taken over by larger banks uninterested in making small business loans. Most banking experts agree that such an increase in new banks in response to mergers would be healthy, helping maintain competition in local banking markets and offset reductions in service.

The view that mergers encourage new bank formation has recently come into question. Examining data on new bank charters and mergers in the 1990s, a study released early last year concluded that mergers have actually discouraged new bank formation. Shortly thereafter, another study came to the opposite conclusion, finding that mergers encourage new entry. Economists are famous for disagreeing, but it is surprising that two studies examining the same period could reach such different conclusions on an important issue of public policy.

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Taken together, these studies raise two important questions. First, is merger activity positively or negatively related to new bank formation? Second, if mergers *are* positively related to new bank formation, which types of mergers account for the link? The mergers that could reasonably be expected to encourage start-ups are those in which small banks are taken over by large banks or local banks are taken over by distant banks, because such mergers can drive away small businesses and other customers who value personal service. Thus, the more these mergers account for the positive relationship between merger activity and new bank formation, the more confident we can be that the relationship is not just a coincidence.

This article reexamines the relationship between mergers and new bank charters, distinguishing more carefully than the other two studies between different types of mergers. The results, based on data for the second half of the 1990s, provide strong support for the view that mergers encourage the formation of new banks. Specifically, the article finds that markets with more merger activity experienced higher rates of new bank formation, and that the mergers with the strongest link to new bank formation were those in which small banks were taken over by large banks or local banks by distant banks.

The first section of the article describes how the controversy over the relationship between mergers and new bank formation arose. The second section explains the economic arguments behind the controversy, pointing out how mergers could either encourage or discourage new bank formation. The third section summarizes and evaluates the two recent studies. The fourth section looks at the relationship between new bank formation and total merger activity in roughly 300 urban markets from June 1995 to June 1999. The fifth section investigates whether new bank formation depends on the form taken by bank mergers.

I. HOW THE CONTROVERSY OVER MERGERS AND NEW CHARTERS AROSE

While economists have long been interested in the determinants of new bank formation, they have only recently become interested in the influence of bank mergers on new charters. This interest was first aroused in the second half of the 1990s by the coincidence of high merger activity and high rates of new bank formation. Interest in the relationship between mergers and new bank charters then intensified last year with the appearance of two empirical studies employing similar methods but reaching opposite conclusions.

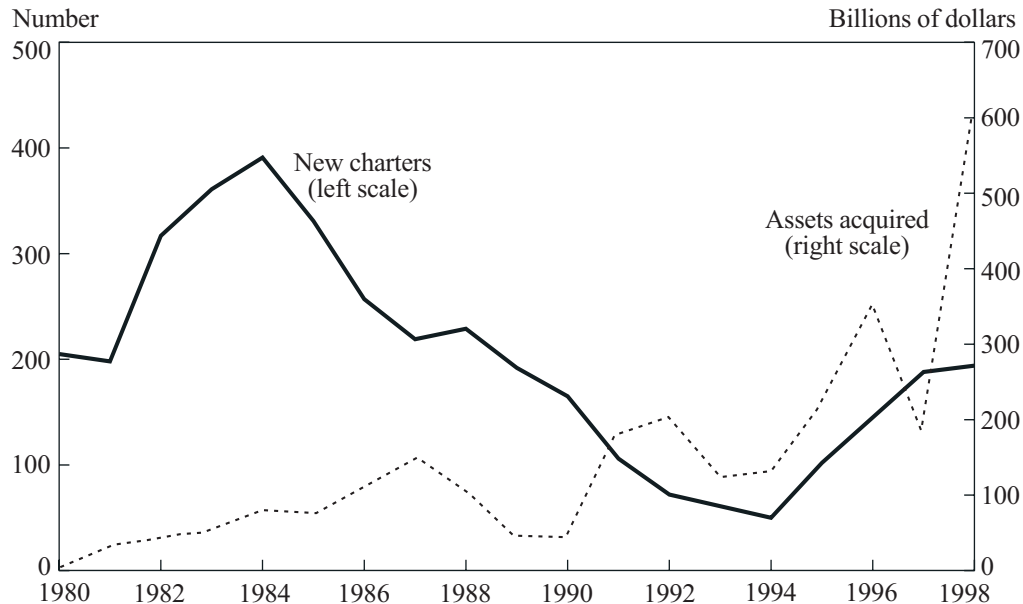
Empirical studies of new bank formation before the 1990s did not focus on the link between mergers and start-ups (Amel and Liang; Hanweck; Rose; Moore and Skelton). Instead, the studies examined how entry to local markets depended on factors such as recent rates of population and income growth, the profitability of banks operating in the market, and the extent to which loans and deposits were concentrated in a few banking organizations. While differing in some of their findings, the studies typically found that the rate of new bank formation was higher in markets with high bank profitability, high rates of population and income growth, and lower levels of market concentration.

The influence of bank mergers on new bank formation began to attract attention in the second half of the 1990s, when a jump in new bank charters coincided with a continued rise in merger activity. As shown in Chart 1, the number of new bank charters surged to almost 400 in the early 1980s, fell steadily over the next ten years, and then rebounded sharply in the second half of the 1990s. While showing considerable year-to-year volatility, merger activity trended upward over the period, averaging three times as much in the 1990s as the 1980s. The fact that merger activity was high prior to and during the rebound in new charters led many banking analysts to claim that mergers helped spark the rebound. This view was supported by numerous stories of new banks being started to serve dissatisfied customers of merging banks or to take advantage of merger-related layoffs.

The view that mergers lead to more new bank charters was not seriously questioned until the appearance early last year of a new empirical study on the issue (Seelig and Critchfield). The study pointed out that the coincidence of heavy merger activity and high new bank formation in the second half of the 1990s did not prove that mergers lead to more new banks. Instead, merger activity and new bank activity could both have increased in response to other factors such as high bank profits and strong economic growth. Controlling for these other factors and examining data on mergers and new bank charters across markets, the study concluded that mergers actually *discourage* start-ups.

Adding to the controversy, a second study appeared shortly afterward confirming the popular view that mergers lead to more new banks (Berger and others). While differing from the first study in many details, the second study was similar in two key respects—it examined data on mergers and new bank charters across markets in the second half of the 1990s, and it controlled for other factors that could have

Chart 1
MERGER ACTIVITY AND NEW BANK CHARTERS



Source: FDIC for new charters and Rhoades for merger activity (updates supplied by author).

simultaneously boosted mergers and new bank charters during that period. Despite these key similarities, the second study reached the opposite conclusion from the first, finding that mergers *encourage* start-ups.

II. ECONOMIC ARGUMENTS BEHIND THE CONTROVERSY

Which of the two studies is to be believed? This section points out that reasonable economic arguments can be made for both sets of findings. Consistent with the findings of Seelig and Critchfield, mergers could discourage start-ups by producing organizations with enough local market power to deter entry. But consistent with the findings of Berger and others, mergers could also encourage start-ups by creating gaps in ser-

vice to small customers who put a premium on personal service. Neither effect can be ruled out, given the types of mergers that actually occurred during the 1990s.

How mergers could lead to fewer start-ups

The main way mergers could reduce new bank formation, as found by Seelig and Critchfield, is by increasing concentration in local banking markets. Some mergers have no effect on local market concentration because the combining organizations operate in completely different geographic markets. Many mergers, however, involve market overlap—some or all of the markets in which the combining organizations operate are the same. Such mergers tend

Table 1

DEPOSITS ACQUIRED IN MERGERS

Market overlap between merger participants

<u>Year*</u>	<u>Deposits acquired (billions of dollars)</u>	<u>Percent of total deposits</u>	<u>Percent of all deposits acquired in mergers</u>
1993	37	1.6	37.8
1994	32	1.3	32.3
1995	35	1.5	43.8
1996	119	4.9	40.0
1997	39	1.5	42.0
1998	59	2.1	29.3
1999	50	1.7	13.6
Average	53	2.1	34.1

* For 12-month periods ending in June.

Note: Deposits are for domestic offices only. For each market and merger, the amount of acquired deposits with market overlap is the lesser of two amounts—the local deposits of the acquired organization and the local deposits of the acquiring organization.

Source: Summary of Deposits and Natural Information Center Database.

to increase the concentration of local markets, unless the organizations are required by regulators to divest themselves of branches before merging.

Some analysts believe new banks are less likely to be chartered in highly concentrated markets because the dominant banking organizations in such markets can act in ways that discourage entry. For example, in a highly concentrated market, potential entrepreneurs may refrain from starting a new bank out of fear that the dominant organizations will engage in cutthroat competition to drive them out of business. Not all analysts agree that high concentration deters entry, arguing that the short-term losses dominant banks would have to incur to drive out new entrants would be too great for the threat of cutthroat competition to be credible. As noted earlier, however, empirical studies of new bank charters before the 1990s generally found that highly concentrated markets

do experience lower rates of new entry (Amel and Liang; Hanweck; Rose).¹

Could merger activity have increased concentration in some markets to the point that entry was discouraged? For mergers to have had such an effect in the 1990s, a substantial fraction would have had to involve market overlap. Table 1 shows that mergers with market overlap have indeed been important during the 1990s, although they account for well under half of total merger activity during the period. For the years 1993-99, the first column shows the amount of deposits acquired in mergers with market overlap during each 12-month period ending in June. The second column expresses this amount as a percent of total bank deposits at the beginning of the period, while the third column expresses the amount as a percent of total deposits acquired in mergers. Mergers with mar-

ket overlap varied widely from year to year but were substantial both in absolute and relative terms over the period as a whole. Specifically, an average of \$53 billion in deposits was acquired in mergers with market overlap each year, representing 2.1 percent of total deposits and 34.1 percent of total merger activity.

While mergers with market overlap have been important in the 1990s, it does not necessarily follow that they increased concentration enough to deter entry. Before approving a merger, bank regulators consider the impact of the merger on local market concentration. If the merger would increase concentration above an established threshold, either the merger is rejected or the merging organizations are required to divest some of their branches.² Some analysts argue that such behavior by regulators has prevented mergers with market overlap from increasing local market concentration to the point that potential entrants have to worry about cutthroat competition from dominant banking organizations.

How mergers could lead to more start-ups

The main way mergers could increase new bank formation, as found by Berger and others, is by driving customers away from acquired banking organizations. Mergers sometimes cause temporary disruptions in service to customers due to difficulties in combining the computer systems or establishing new reporting relationships. Even more important, mergers may cause a permanent reduction in service to some customers because the acquiring organization is less willing or able to serve those customers than was the acquired organization. The more dissatisfied bank customers become following a merger, the easier it is for new banks operating in the same market to attract enough business to make a profit.

Some analysts assert that the mergers most likely to encourage new bank formation by reducing service to some customers are those in which small banking organizations become part of large

organizations or local banking organizations become part of distant banking organizations. Specifically, these analysts argue that mergers in which ownership shifts away from small organizations or toward distant organizations tend to reduce services to small businesses and other customers who value personalized service. New banks are then tempted to enter the market to serve these disaffected customers.

The most common argument in support of this view is that large or geographically dispersed banking organizations have a disadvantage in serving small businesses due to their long lines of managerial control.³ It is usually not feasible for the top managers of a large or geographically dispersed banking organization to review every lending decision on small loans. As a result, when a small banking organization is taken over by a large organization or a local organization is acquired by a distant organization, lending officers are usually given less autonomy and required to follow more rigid rules in granting credit. This more rigid approach to small business lending may result in the acquired organization making fewer small business loans, allowing newly chartered banks to step in and fill the gap.⁴

A related argument is that mergers in which ownership shifts away from small organizations or toward large organizations reduce services to depositors who want a personal relationship with their bank. According to this view, large or geographically dispersed banking organizations are uninterested in providing personalized service to depositors, preferring to cater to depositors who are comfortable conducting their business by phone, computer, or ATM.⁵ Thus, when ownership shifts to a large or distant organization as a result of a merger, depositors who put a premium on personalized service may become dissatisfied. Such dissatisfaction among depositors makes it easier for new banks to build up their own deposit base, increasing the number of entrepreneurs willing to start a bank.

Table 2

DEPOSITS ACQUIRED IN MERGERS

Shifts away from small organizations or toward distant organizations

<u>Year*</u>	<u>Deposits acquired (billions of dollars)</u>	<u>Percent of total deposits</u>	<u>Percent of all deposits acquired in mergers</u>
1993	72	3.1	73.7
1994	66	2.8	67.9
1995	63	2.6	78.8
1996	113	4.6	38.2
1997	53	2.0	56.8
1998	156	5.7	78.3
1999	258	8.8	70.6
Average	112	4.2	66.3

*For 12-month periods ending in June.

Note: Deposits are for domestic offices only. Shifts away from small organizations are shifts in ownership of local deposits from organizations with less than \$1 billion in premerger assets to organizations with more than \$1 billion in postmerger assets (1998 dollars). Shifts toward distant organizations are shifts in ownership of local deposits from in-market organizations to out-of-market organizations or from in-state organizations to out-of-state organizations.

Source: Summary of Deposits, Reports of Income and Condition, and Natural Information Center Database.

Could merger activity in the 1990s have reduced services to small, relationship-based customers enough to increase the rate of new bank formation? Such an outcome would be more plausible if a significant proportion of mergers shifted ownership away from small organizations or toward distant organizations. Table 2 shows that mergers of this kind were indeed important in the 1990s, accounting for well over half of all merger activity. The table reports the total amount of deposits acquired each year in two types of mergers: 1) those in which ownership of local deposits shifted from an organization with less than \$1 billion in assets to an organization with more than \$1 billion in assets, and 2) those in which ownership of local deposits shifted to an out-of-market or out-of-state organization. Such mergers varied widely from year to year but were even more substantial than mergers involving market overlap over the period as a whole. Specifically, an aver-

age of \$112 billion in deposits was acquired each year, representing 4.2 percent of total deposits and 66.3 percent of total merger activity.

III. CRITIQUE OF THE TWO STUDIES

The previous section showed that the disagreement between the two recent studies on mergers and new bank charters cannot be resolved on the basis of economic arguments alone. Another way to resolve the controversy is to see if one study was clearly superior to the other in the way it estimated the impact of mergers on new bank charters. This section argues that the second study had a number of advantages over the first study, such as not lumping bank mergers with thrift mergers and measuring merger activity more carefully. The section also points out, however, that the second study had shortcomings of its own.

Seelig and Critchfield

The first study examined the relationship between new charters and prior merger activity in roughly 300 urban markets during the years 1995-97. Specifically, regression analysis was used to determine if merger activity helped explain why entry by banks or thrifts occurred in some markets and years but not others. Merger activity was measured by the number of locally based banks and thrifts that had been absorbed by other banks and thrifts in recent years. In the analysis, the authors controlled for a variety of other factors that could also affect entry. These factors were similar to those considered in earlier studies, such as recent population growth, recent bank profitability, and the current level of market concentration.

The main finding of the study was that mergers discourage start-ups. The effect of mergers on the likelihood of entry was allowed to depend on two features of the merger. The first was whether the merging banks or thrifts belonged to the same holding company (intra-holding company consolidation). The second was whether the acquiring bank or thrift was headquartered outside the market (out-of-market merger). The study found that no type of merger increases the likelihood of entry, and that out-of-market mergers between banks in different holding companies actually decrease the likelihood of entry.⁶

While this study marks an important advance in research on new bank formation, it can be criticized on three grounds. The first problem is that the study lumped thrifts together with banks. As noted earlier, one of the main ways bank mergers can encourage new bank charters is by reducing small business lending. Thrift mergers are unlikely to have this effect on new thrift charters because thrifts do little business lending of any kind. Thus, lumping thrifts together with banks may mask the tendency for bank mergers to encourage start-ups by reducing services to small businesses.

A second problem is the way the study measured merger activity. Because the merger measure was based on the number of mergers, it did not take into account the size of the banks involved. Furthermore, the measure excluded two important types of merger—those in which the acquired bank was headquartered outside the market and those in which the acquired bank retained its charter. There is no obvious reason why such mergers should not also affect new bank formation, and thus, no reason to exclude them from the measure of merger activity.

Finally, the authors offered no explanation for their finding that some mergers reduce the likelihood of entry. As suggested earlier, one way mergers might discourage entry is by increasing local market concentration. However, only out-of-market mergers were found to decrease the likelihood of entry, and these mergers typically have little or no effect on local market concentration.⁷ Furthermore, even if such mergers *did* increase local market concentration, the effect on entry should already be accounted for by the control variables, one of which is concentration during the year of entry.

Berger and others

The second study obtained opposite results from the first study despite similarities in the basic approach used, the period of time covered, and the set of markets included. As in the first study, regression analysis was used to determine if recent merger activity helped explain the likelihood of entry, controlling for other factors that could also influence the decision to start a bank. A longer period of time was covered, 1980-98, and both rural and urban markets were included. However, the regression analysis was performed separately for urban markets during the years 1995-98, a sample similar to the one used in the first study.

While similar in many respects, the second study also differed from the first in two impor-

tant ways. First, instead of lumping banks and thrifts together, the study focused on banks alone, avoiding the problem that thrift mergers may have very different effects on entry than bank mergers. Second, the study used a superior measure of local merger activity. Merger activity was measured not by the number of mergers but by the deposits of banks involved in mergers, which has the advantage of taking into account the size of merger participants. Moreover, the merger measure included the two types of mergers ignored by the first study—takeovers of banks based outside the market and mergers in which banks changed holding companies but kept their charters.⁸

The main finding of the study was that mergers encourage start-ups. In the empirical analysis, the impact of mergers on the likelihood of entry was allowed to depend on only one feature of the merger—whether the bank acquired in the merger kept its charter. The study found that mergers increased the likelihood of entry in urban markets, whether or not the bank acquired in the merger retained its charter. This result held both for the entire period 1980-98 and for the more recent period 1995-98.⁹

Although improving upon the first study in important ways, the study by Berger and others can also be criticized on several grounds. One problem is that the merger variable used in the study may have overstated merger activity in some markets. In those mergers in which one bank was absorbed by another, the merger variable included not only the deposits of the acquired bank, but also the deposits of the acquiring bank. Such an approach can greatly overstate the amount of merger activity in a market, especially in those cases in which a very large bank acquires a very small bank.

Another problem is that some of the impact of mergers on new bank formation may be captured by the variables used to control for local banking structure. Among the control variables are the

level of concentration, the deposit share of very small banking organizations, and the deposit share of complex banking organizations (companies that operate in more than one state or have multiple ownership layers). The problem is that these variables measure banking structure in the year just before entry, whereas the merger variable measures merger activity during the three years before entry. Thus, if mergers affect entry by changing local banking structure, some of the effect may be captured by the structure variables rather than the merger variable.¹⁰

Finally, like the first study, the study by Berger and others can be criticized for failing to show that the conclusions on the relationship between mergers and new bank formation are consistent with results for specific merger types. The authors indicated they tried including additional information on the type of merger and that this information did not help explain the likelihood of entry.¹¹ They interpreted this finding as confirming their main conclusion that mergers lead to more new bank charters. Elsewhere in the study, however, they noted that the main way mergers can encourage start-ups is by reducing services to small, relationship-based customers. They also pointed out that the mergers most likely to have this effect are those that produce large or complex organizations. This argument suggests that some mergers should have a greater tendency than others to encourage start-ups. Thus, rather than supporting their main conclusion, the finding that the type of merger does not matter casts some doubt on that conclusion.

IV. ARE MERGERS AND NEW CHARTERS POSITIVELY RELATED?

The two studies on new bank formation released last year were the first to examine the impact of mergers on start-ups in a rigorous way. Taken together, however, the studies leave important questions unresolved. First, are mergers negatively related to new bank formation, as

argued by the first study, or positively related, as claimed by the second study? Second, is the overall relationship between mergers and start-ups consistent with the results for specific types of mergers? This section provides new evidence on the first question, while the following section addresses the second question. The main finding of this section is that new bank charters were *positively* related to total merger activity in the second half of the 1990s, the same result obtained by Berger and others.¹²

Measuring new bank formation and merger activity

Like the two previous studies, this article uses regression analysis to examine the relationship between merger activity and new bank formation, controlling for other factors besides mergers that might affect the incentive to start a bank. The set of markets included and the period of time covered are also similar to the previous studies—urban markets during the period from June 1995 to June 1999.

New bank formation is measured by the amount of entry relative to the size of the market. If mergers influence the incentive to start a new bank, then the volume of merger activity should affect not only whether entry occurs, but also how much entry occurs. Moreover, the amount of entry should be measured relative to the size of the market because, other things equal, larger markets will tend to experience both greater entry and higher levels of merger activity.

Two measures of entry are used: the number of new banks chartered during each 12-month period as a percent of the number of banking organizations operating in the market at the beginning of the period, and the amount of equity capital at new banks chartered during the period as a percent of total market deposits at the beginning of the period.¹³ The first measure focuses on the *number* of start-ups, while the second measure focuses on the total *investment*

in new banks. Both measures are used because the effects of entry on such factors as competition and service are likely to depend on both the number of new banks and the amount of resources these banks start out with.

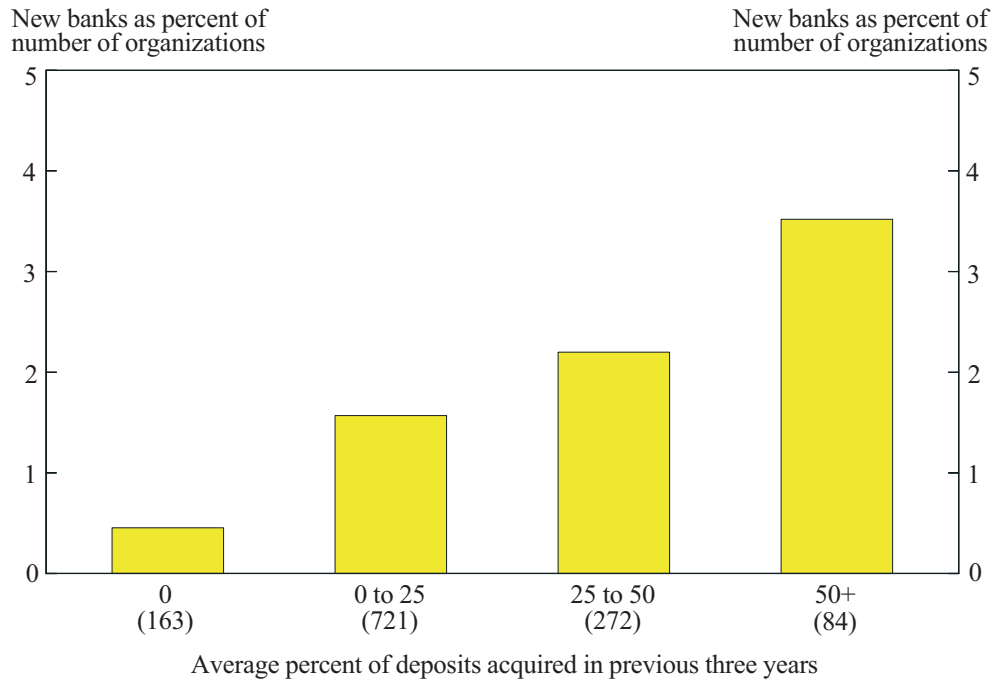
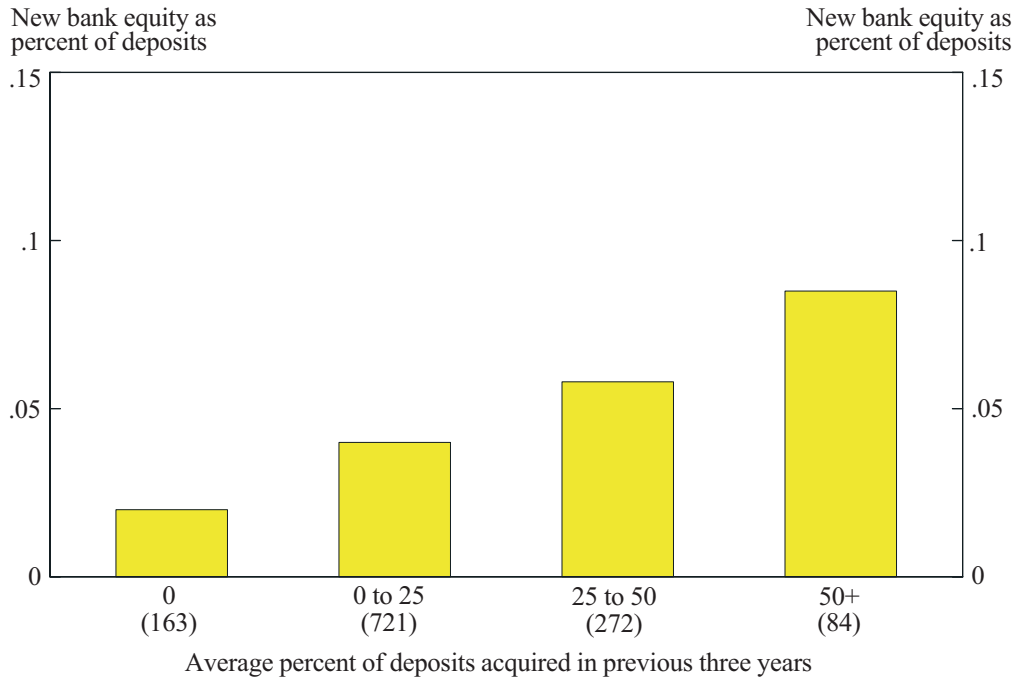
Merger activity is measured by the amount of local deposits acquired in mergers as a percent of total deposits at the beginning of the period.¹⁴ As in the study by Berger and others, mergers are defined to include transactions in which the acquired bank changes ownership but retains its charter. In contrast to that study, however, the merger measure does not include the deposits of the acquiring bank, which as noted earlier can greatly overstate the amount of merger activity in a market. Furthermore, intra-holding company consolidations are excluded because there is no obvious reason why such internal reorganizations should affect either the degree of competition in a market or the level of service to small, relationship-based customers.

Mergers and new bank charters: a preliminary look

A first step in establishing whether new bank charters are positively related to prior merger activity is to see if such a relationship exists even without controlling for other factors affecting the attractiveness of markets to banks. The upper panel in Chart 2 shows how new bank formation and merger activity are related when new bank formation is measured by the ratio of new bank equity to market deposits. The lower panel shows the same relationship when new bank formation is measured by the ratio of new banks to the number of organizations.

For each urban market and each 12-month period from June 1995 to June 1999, two numbers were calculated—the rate of new bank formation during the 12-month period and the average volume of merger activity during the previous three years. The 1,240 observations on markets and years are grouped into four catego-

Chart 2
RELATIONSHIP BETWEEN MERGERS AND NEW BANKS



Note: Number in parentheses is the number of observations in the group.

ries according to the level of prior merger activity. At one extreme are the cases in which no deposits were acquired in mergers during the previous three years, represented by the bar on the far left. At the other extreme are the cases in which the average proportion of deposits acquired in mergers exceeded 50 percent, represented by the bar on the far right. For each group of observations, the height of the bar shows the average rate of new bank formation in the group. The number in parentheses below each bar is the number of observations in the group.

Chart 2 suggests a strong positive relationship between the rate of new bank formation and prior merger activity. In the upper panel, the average ratio of new bank equity to market deposits increases steadily with the amount of prior merger activity, from a low of 0.02 percent for the group with no prior merger activity to a high of 0.08 percent for the group with very high merger activity. As shown in the lower panel, an equally strong relationship exists between mergers and the alternative measure of new bank formation, the ratio of new banks to the number of organizations. That measure ranges from a low of 0.5 percent in the group with no merger activity to a high of 3.5 percent in the group with very high merger activity.

Mergers and new bank charters: a closer look

The fact that new bank formation is positively related to prior merger activity does not prove that mergers were responsible for the surge in new bank charters during the second half of the 1990s. Specifically, mergers and new bank charters could be positively related only because other factors made some markets more attractive both to banking companies looking for acquisition targets and entrepreneurs interested in starting new banks. As in the previous two studies, multiple regression analysis was used to determine if start-ups were positively related to mergers even after controlling for these other factors.

Two sets of control variables were included in the regression. The first set control for the overall attractiveness of the market and are very similar to those used in the other two studies. These variables include population growth, per capita income growth, and the average profitability of small banks—all measured over the previous three years. The second set of variables control for aspects of local banking structure that could affect the incentive to start a bank. These variables include the size of the market, the deposit share of large banking organizations, and the deposit share of distant banking organizations—all measured as of three years ago. These variables are similar to those used in the previous two studies but differ in one key way—they measure local banking structure *before* mergers rather than after. Thus, in contrast to the other two studies, any tendency for mergers to encourage or discourage entry by changing local banking structure should be fully captured by the merger variable.

The main results are shown in Table 3.¹⁵ New bank formation is positively related to the level of prior merger activity, even after controlling for other influences on the rate of entry. For each one-percentage-point increase in the share of deposits acquired in mergers, the ratio of new bank equity to total deposits increases 0.004 percentage point and the ratio of new banks to total organizations increases 0.13 percentage point. Both effects are also statistically significant, indicating that they are too large to be attributed to chance.¹⁶ Thus, whether the relationship between mergers and new bank charters is considered in isolation, as in Chart 2, or after controlling for other factors, as in Table 3, the results support the view that a higher volume of merger activity leads to a higher rate of new bank formation.

V. DOES THE TYPE OF MERGER MATTER?

The previous section provided evidence that

Table 3

ESTIMATED EFFECT OF MERGERS ON NEW BANK FORMATION

Urban markets, June 1995 to June 1999

Measure of merger activity	Measure of new bank formation	
	New bank equity as percent of total deposits	New banks as percent of number of organizations
Percent of deposits acquired in mergers	.004***	.13***

*** Significant at 1 percent level.

Note: Regressions were estimated by the Tobit method. Complete results are reported in the appendix.

new bank formation is positively related to prior merger activity. This section shows that the positive relationship between new bank formation and total merger activity is consistent with the results for specific types of mergers. In particular, new bank formation increases mainly in response to mergers that shifted ownership away from small organizations or toward distant organizations—the same types of mergers that could be reasonably expected to encourage start-ups by reducing services to small, relationship-based customers.

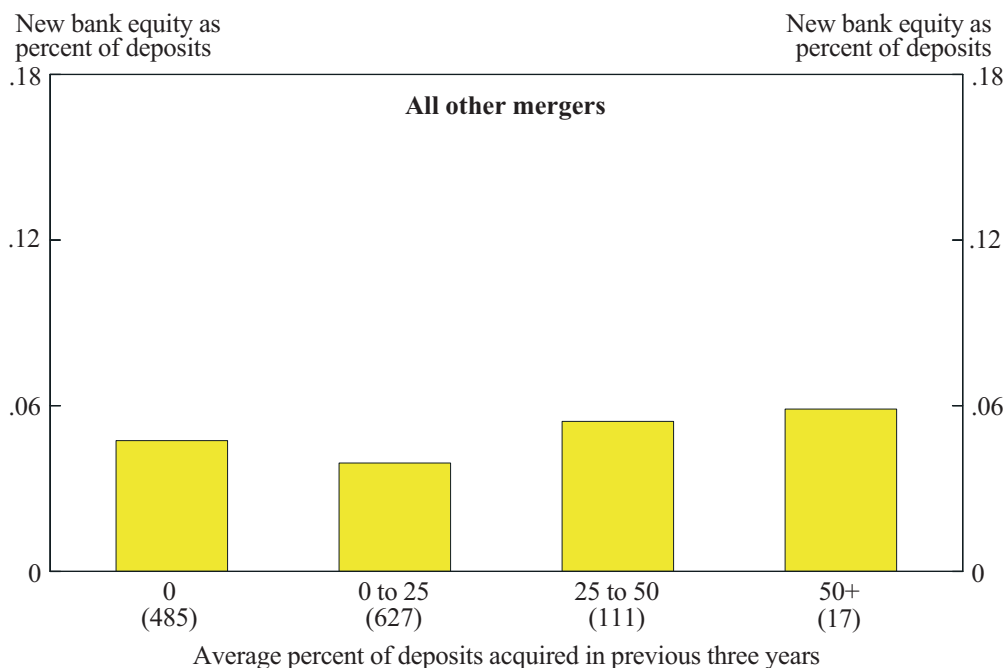
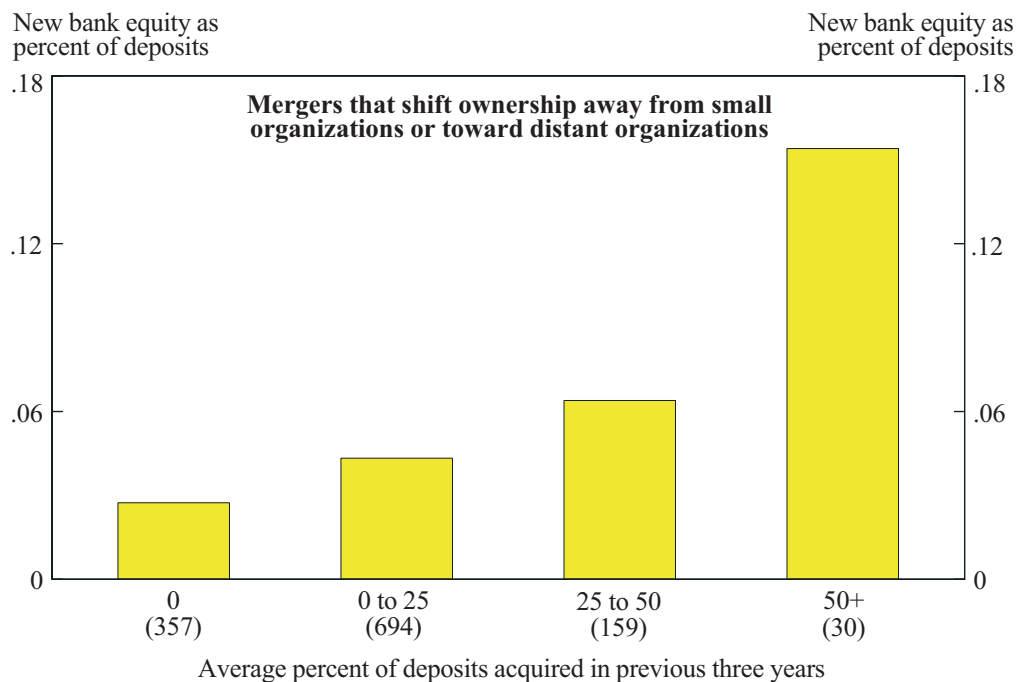
New bank charters and mergers by type: a preliminary look

As before, a useful first step in determining whether the type of merger matters for new bank formation is to see what kinds of relationship exist when no effort is made to control for other factors affecting entry. Chart 3 shows how the rate of new bank formation is related to two broad categories of prior merger activity. The first category includes those mergers in which ownership shifts away from a small organization or toward a more distant organization. The second category consists of all remaining mergers—for example, mergers in which ownership

remains with a small or locally based banking organization. In both cases, new bank formation is measured by the ratio of new bank equity to market deposits.¹⁷

Consistent with the view that mergers spur new entry by reducing service to small, relationship-based customers, only the first merger category shows a clear positive relationship to the rate of new bank formation. As shown in the upper panel of the chart, the ratio of new bank equity to market deposits increases steadily with the importance of the first type of merger. When no mergers of the first type occurred, the average ratio of new bank equity to market deposits was only 0.03 percent. In contrast, when more than half of local deposits were acquired through mergers of the first type, the ratio of new bank equity to market deposits was 0.15 percent. As shown in the lower half of the chart, no such relationship exists between the rate of new bank formation and the second merger category. The rate of new bank formation varies within a narrow range and is only slightly higher in the group with the most merger activity than in the group with the least merger activity.

Chart 3
RELATIONSHIP BETWEEN MERGERS AND NEW BANKS



Note: Number in parentheses is the number of observations in the group.

New bank charters and mergers by type: a closer look

While suggestive, Chart 3 has two limitations. First, because the chart does not control for the attractiveness and structure of banking markets, the positive relationship between new bank formation and the first merger category could be coincidental. Second, the chart does not reveal which mergers in the first category have the greater effect on subsequent entry—those in which ownership shifts away from small organizations or those in which ownership shifts toward distant organizations.

To overcome these limitations, the model in the previous section was reestimated using the same variables to control for the attractiveness and structure of the local banking market but distinguishing among four different types of mergers. The different merger types were 1) mergers involving a shift in ownership from a small organization to a medium-size organization, 2) mergers involving a shift in ownership from a small organization to a large organization, 3) mergers falling in neither of the first two categories but involving a shift in ownership to an organization in another market or state, and 4) all other mergers. As before, two equations were estimated—one for the ratio of new bank equity to total deposits and one for the ratio of new banks to the number of organizations. The results are reported in Table 4.¹⁸

The results indicate that the rate of new bank formation is strongly related to mergers that shift ownership away from small organizations or toward distant organizations, and is only weakly related to other mergers. Each of the first three merger types has a positive and statistically significant effect on the rate of new bank formation, whether that rate is measured by the ratio of new bank equity to total deposits or the ratio of new banks to the total number of organizations. In contrast, the fourth merger type has no appreciable effect on the ratio of new bank equity to

deposits and only a marginally significant effect on the ratio of new banks to organizations. The effects of the first three types of merger on new bank formation are not only much bigger than the effects of the last type of merger, but also statistically different in five out of the six cases (appendix). Thus, the differences shown in Table 4 are too large to be attributed to chance.

The results also show that the mergers with the strongest relationship to new bank formation are those in which ownership shifts from a small organization to a large one. For each percentage-point increase in deposits acquired through such mergers, the ratio of new bank equity to total deposits increases 0.012 percentage point, and the ratio of new banks to the total number of organizations increases 0.34 percentage point. These effects are not only many times larger than for the last merger category, but also twice as large as for the other two types of mergers with the potential to reduce service to customers—mergers that shift ownership from small to medium-size organizations and mergers that do not shift ownership away from small organizations but do shift ownership toward distant organizations.

There are two possible explanations for the finding that entry responds most to mergers that shift ownership from a small organization to a large one. The first explanation is that large organizations are less inclined to cater to small, relationship-based customers than medium-size organizations, and much less inclined to cater to such customers than small organizations. The second explanation is that acquisitions of small organizations by large organizations have an especially large effect because, in the vast majority of such mergers, the acquiring organization is not only large but also based in a different market or state.¹⁹

While having the biggest “bang per buck,” mergers that shifted ownership from small orga-

Table 4

ESTIMATED EFFECT OF MERGERS ON NEW BANK FORMATION,
BY TYPE OF MERGER*Urban markets, June 1995 to June 1999*

Percent of deposits acquired by type of merger	Measure of new bank formation	
	New bank equity as percent of total deposits	New banks as percent of number of organizations
Shift from small to medium-size organization	.005**	.19***
Shift from small to large organization	.012***	.34***
Neither of above but shift to distant organization	.005***	.16***
All other	.001	.06*

* Significant at 10 percent level.

** Significant at 5 percent level.

*** Significant at 1 percent level.

Note: A small organization is one with less than \$1 billion in assets, a medium-size organization is one with \$1 billion to \$10 billion in assets, and a large organization is one with more than \$10 billion in assets (1998 dollars). Shifts toward distant organizations are shifts from in-market organizations to out-of-market organizations or from in-state organizations to out-of-state organizations. Regressions were estimated by the Tobit method. Complete results are reported in the appendix.

nizations to large organizations were not the ones with the greatest total effect on entry during the sample period. That distinction goes to the third merger category—mergers that did not shift ownership away from small organizations but did shift ownership to distant organizations. On average, over three times as great a percentage of local deposits were acquired through these mergers as through small-to-large mergers, more than making up for the fact that each percentage point of deposits acquired had a smaller effect on entry.²⁰

The results by type of merger have two important implications. First, the results lend greater credibility to the finding in this article and the study by Berger and others that new bank formation is positively related to total merger activity. New bank charters turn out to be closely related only to those mergers that shift ownership away from small organizations or toward distant organizations. The fact that these mergers can create

gaps in service to small businesses and other customers with a strong preference for personal contact makes it more plausible that new bank formation and total merger activity would be positively related. Second, the results suggest that new bank formation may offset some of the harmful effects of mergers, making it more likely that banking consolidation is beneficial on balance. Specifically, the fact that entry increases in response to mergers that shift ownership away from small organizations or toward distant organizations means that any gaps in service created by these mergers will be filled more quickly.

VI. CONCLUSIONS

The number of new bank charters increased sharply in the second half of the 1990s following a prolonged decline. This surge in new banks coincided with a record volume of bank mergers, leading many banking analysts to

claim that mergers had encouraged the start-ups by reducing service to small businesses and other bank customers. This view was not seriously questioned until early last year, when a study of mergers and new bank charters in the 1990s concluded that mergers had actually discouraged the formation of new banks. Adding to the confusion, another study soon appeared that came to the opposite conclusion, finding that mergers had led to more new banks during the 1990s.

Like the second study, the evidence in this article supports the popular view that mergers lead to more new banks. Taking a new look at the

data, the article finds that total merger activity and new bank formation were positively related in the 1990s. Distinguishing among different types of mergers, the article then shows that new bank formation was closely related only to those mergers that involved a shift in ownership away from small organizations or toward distant organizations. This finding not only provides a plausible explanation for the link between new bank charters and total merger activity, but also offers hope that any harmful effects of bank mergers on bank customers will be at least partly offset by new banks stepping in to fill gaps in service.

APPENDIX

This appendix provides the full regression results and explains the variables used to control for the attractiveness and structure of local banking markets. The results on total merger activity are reported in Table A1, while the results on mergers by type are reported in Table A2. The control variables are the same in each table and are explained below.

The first three variables control for the overall attractiveness of local markets to new banks. Average growth in population and per capita income during the three previous calendar years are included because new banks can attract customers more easily in fast-growing markets than slow-growing markets. Average profitability during the three previous calendar years is included because high profits may be a sign that the market is underserved or that existing banks are overcharging for services. Measuring local profitability has become increasingly difficult because profits are reported only at the bank level and many banks now do business in more than one market. Data on local profits can also be distorted by large holding companies shifting assets and liabilities among banks in different states to take advantage of differences in local tax rates. Accordingly, average profitability is measured by the average return on assets (ROA) at all banks with less than \$1 billion in assets and at least 80 percent of their deposits in the market. In some markets, no banks met this criterion, making it impossible to compute average ROA. A dummy variable was included for these markets to avoid excluding them from the regressions.

The next set of variables control for different aspects of local banking structure that could affect entry, all measured as of three years ago so that they do not reflect the impact of recent mergers. Concentration is included to allow for the possibility that dominant firms engage in entry-detering behavior. This variable is measured by the Herfindahl-Hirschman Index for local bank deposits, expressed as a percentage of its maximum value of 10,000. Even in the absence of mergers, markets dominated by large or distant organizations could experience high rates of entry because these organizations fail to meet the needs of small, relationship-based customers. To capture this possibility, the regressions include the deposit shares of four types of banking organization—those with \$1 billion to \$10 billion in total assets, those with more than \$10 billion in assets, those based in a different market but the same state, and those based in a different state.

The final control variable is the size of the market. The dependent variable in each regression was calculated by dividing a measure of new bank formation by a measure of market size. Specifically, the number of new bank charters was divided by the total number of organizations, and the amount of new bank equity was divided by total deposits. New bank formation need not increase proportionately with the size of the market, however. Accordingly, the regressions allow the rate of new bank formation to differ among three size categories of markets—those with less than \$1 billion in deposits, those with \$1 billion to \$10 billion in deposits, and those with more than \$10 billion in deposits.

Table A1

REGRESSION RESULTS FOR RATE OF NEW BANK FORMATION
IN URBAN MARKETS

June 1995 to June 1999

Independent variable	Dependent variable	
	New bank equity as percent of total deposits	New banks as percent of number of organizations
Population growth	.024***	.90***
Growth in per capita income	.015***	.63***
Average profitability	-.019	-.62
Market concentration	-.008***	-.21***
Deposit share of larger organizations		
Medium (\$1b to \$10b)	.001	.04
Large (>\$10b)	.003***	.13***
Deposit shares of out-of-market organizations		
In-state	-.001	-.04
Out-of-state	.000	-.01
Market size		
Medium (\$1b to \$10b)	.052	2.52*
Large (>\$10b)	.162**	6.69***
Deposits acquired in mergers	.004***	.13***
Memo:		
Number of observations	1,240	1,240
Number with nonzero dependent variable	290	290

* Significant at 10 percent level.

** Significant at 5 percent level.

*** Significant at 1 percent level.

Note: Equations were estimated by the Tobit method. All variables except market size are percentages. Population growth, income growth, average profitability, and deposits acquired in mergers are averages for the three previous years. Concentration, deposit shares, and market size are for three years ago.

Table A2

REGRESSION RESULTS FOR RATE OF NEW BANK FORMATION
IN URBAN MARKETS

By type of merger

Independent variable	Dependent variable	
	New bank equity as percent of total deposits	New banks as percent of number of organizations
Population growth	.022***	.85***
Growth in per capita income	.012**	.56**
Average profitability	-.013	-.45
Market concentration	-.009***	-.24***
Deposit share of larger organizations		
Medium (\$1b to \$10b)	.002*	.08**
Large (>\$10b)	.004**	.16***
Deposit shares of out-of-market organizations		
In-state	-.001	-.03
Out-of-state	.001	-.00
Market size		
Medium (\$1b to \$10b)	.045	2.35*
Large (>\$10b)	.143**	6.20***
Deposits acquired in mergers, by type		
1) Shift from small to medium-size organization	.005**	.19***
2) Shift from small to large organization	.012***	.34***
3) Neither of above but shift to distant organization	.005***	.16***
4) All other	.001	.06*
Memo:		
Difference between merger coefficients		
1) minus 4)	.004	.14*
2) minus 4)	.011***	.28***
3) minus 4)	.004**	.10**

* Significant at 10 percent level.

** Significant at 5 percent level.

*** Significant at 1 percent level.

Note: Equations were estimated by the Tobit method. All variables except market size are percentages. Population growth, income growth, average profitability, and deposits acquired in mergers are averages for the three previous years. Concentration, deposit shares, and market size are for three years ago.

ENDNOTES

¹ Some studies of other industries have also found evidence that high concentration discourages entry (Orr).

² Regulators typically measure local market concentration by the Herfindahl-Hirschman Index (HHI). This index is the sum of the squared percentage deposit shares of all organizations competing in a market, with thrifts typically assigned a weight of 50 percent. The HHI can take on values between zero and 10,000, with higher values representing higher levels of concentration. In the past, regulators have usually either disapproved mergers that raised the HHI above 1,800 or required the merging organizations to divest enough branches to keep the index below that threshold.

³ This argument has a long history, references to which can be found in Keeton. For a recent statement of the argument, see Berger and Udell.

⁴ The empirical evidence on the effect of mergers on small business lending is mixed. Some studies have found evidence that small business lending is reduced by acquisitions of small organizations by large organizations or local organizations by distant organizations, while other studies have not. For surveys of these studies, see Board of Governors and Berger and Udell.

⁵ For example, Berger and Udell argue that large organizations may avoid providing relationship-based services because they have a comparative advantage in providing transactions-based services and it is not efficient to provide both kind of services. This argument suggests that large organizations should not only be less interested in making small business loans than other organizations, but also less interested in providing personalized service to depositors. The idea that banking organizations specialize in different types of services is related to the theory of “strategic groups.” According to this theory, most industries are not homogeneous but are composed of two or more groups of firms, each following a different business strategy. For evidence that the banking industry fits this description, see Amel and Rhoades.

⁶ Following the usual convention, this article refers to one variable as having a positive (negative) effect on another only if the estimated coefficient is both positive (negative) and statistically significant. Roughly speaking, a variable is statistically significant if it is too large to be attributed to chance. In Seelig and Critchfield, the estimated coefficients on other types of mergers (in-market mergers and mergers between banks in the same holding company) are also negative, but they are not statistically significant.

⁷ An out-of-market merger will increase local market concentration only if the acquiring bank already has branches in

the market.

⁸ There are other differences between the two studies which do not seem as important but might also account for the difference in results. Most of these differences have to do with the set of variables used to control for the overall attractiveness of the market and local banking structure.

⁹ While the estimated coefficients were of similar magnitude in the two periods, statistical significance was somewhat lower in the 1995-98 period due to the smaller number of observations.

¹⁰ To take an extreme example, suppose that the only way mergers affected entry was by increasing concentration and that entry was inversely related to concentration at the start of the year. Then including concentration at the start of the year as a control variable would result in an estimated coefficient on the merger variable close to zero—the merger variable would not add any information beyond what was already contained in the concentration variable.

¹¹ The types of merger considered are those involving banks operating in the same market, those resulting in organizations under \$100 million in size, and those involving banks in the same holding company.

¹² In those key areas in which the second study improved upon the first, this article follows the second study. The article also tries to improve upon the second study, however, by refining the measures of new bank formation and merger activity and using a somewhat different set of control variables.

¹³ As in the other two studies, several types of newly chartered banks are excluded—banks formed to take over failed institutions, banks specializing in trust activities or credit card lending, and banks belonging to large holding companies.

¹⁴ In those mergers in which two or more organizations combine to form a new organization, rather than one organization formally acquiring the others, the largest organization is treated as the acquirer and the other organizations as the acquirees.

¹⁵ The full results are reported in the appendix. The impact of the control variables on entry was as expected, with a couple of important exceptions. Specifically, entry tended to be higher in large markets, markets with rapid population and income growth, markets with low levels of concentration, and markets with high deposit shares of large banking organizations. Contrary to expectations, entry did not depend on average bank profitability or on the deposit shares of

out-of-state or out-of-market banking organizations.

¹⁶ The reason merger activity causes a much smaller change in the ratio of new bank equity to market deposits than in the ratio of new banks to total organizations is that the average equity of new banks is much smaller than the average market deposits of existing organizations—\$6 million versus \$270 million.

¹⁷ Although not shown in the chart, the results are similar when new bank formation is measured by the ratio of new banks to the number of organizations.

¹⁸ The coefficients on the control variables were little changed and are reported in the appendix.

¹⁹ In the sample, over 90 percent of the merger activity involving a shift in ownership from a small organization to a large organization also involved a shift in ownership to a distant organization. A formal statistical test could not reject the hypothesis that the small-to-large mergers that *did not* involve shift to a distant organization had the same effect on entry as the small-to-large mergers that *did* involve such a shift. This test is not very reliable, however, because there were so few small-to-large mergers that did not involve a shift to a distant organization.

²⁰ In the sample, the average percent of deposits acquired in previous mergers was 2.2 for the first category, 1.7 for the second category, 6.0 for the third category, and 8.2 for the fourth category.

REFERENCES

- Amel, Dean F., and J. Nellie Liang. 1997. "Determinants of Entry and Profits in Local Banking Markets," *Review of Industrial Organization*, February.
- Amel, Dean F., and Stephen A. Rhoades. 1988. "Strategic Groups in Banking," *Review of Economics and Statistics*, November.
- Berger, Alan N., Seth D. Bonime, Lawrence J. Goldberg, and Lawrence J. White. 1999. "The Dynamics of Market Entry: The Effects of Mergers and Acquisitions on De Novo Entry and Small Business Lending in the Banking Industry," Board of Governors, Finance and Economics Discussion Series, 1999-41, July.
- Berger, Alan N., and Gregory F. Udell. 1998. "The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle," *Journal of Banking and Finance*, August, pp. 657-59.
- Board of Governors. 1997. "Report to the Congress on the Availability of Credit to Small Businesses," pp. 38-41.
- Hanweck, Gerald. 1971. "Bank Entry into Local Markets: An Empirical Assessment of the Degree of Potential Competition via New Bank Formation," Federal Reserve Bank of Chicago, *Proceedings of 30th Annual Conference on Bank Structure and Competition*, May.
- Keeton, William R. 1995. "Multi-Office Bank Lending to Small Businesses: Some New Evidence," Federal Reserve Bank of Kansas City, *Economic Review*, Second Quarter.
- Moore, Robert R., and Edward C. Skelton. 1998. "New Banks: Why Enter When Others Exit?" *Financial Industry Issues*, Federal Reserve Bank of Dallas, First Quarter.
- Orr, Dale. 1974. "The Determinants of Entry: A Study of the Canadian Manufacturing Industries," *Review of Economics and Statistics*, February.
- Rhoades, Stephen A. 1996. "Bank Mergers and Industrywide Structure, 1980-94," Board of Governors, Staff Study 169, January.
- Rose, John T. 1977. "The Attractiveness of Banking Markets for De Novo Entry: The Evidence from Texas," *Journal of Bank Research*, Winter.
- Seelig, Steven A., and Timothy Critchfield. 1999. "Determinants of De Novo Entry in Banking," Federal Deposit Insurance Corporation Working Paper 99-1.

