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The Rhyme and Reason of Bank Mergers

Lately it seems that not a week goes by without a major bank merger announcement: Chemical will merge with Chase Manhattan, First Union with First Fidelity, Fleet Financial with Shawmut. Although the pace of bank mergers and acquisitions this year is running somewhat behind last year (156 versus 218 in the first half of each year), this year's crop has been much better publicized, because they often involve much bigger partners—according to SNL Securities, average target bank assets equaled $751.9 million in the first half of 1995, compared to $239.4 million in the first half of 1994.

Is this pace of consolidation a good thing? In the past, some analysts have been skeptical of the merger phenomenon, citing results showing that, in general, bank mergers do not increase efficiency. However, research in this area continues and banks' regulatory and technological circumstances are changing. In this *Weekly Letter*, I discuss what past and current research tells us about the likely reasons for and results of bank mergers in this changing environment.

The efficiency of bank mergers

One reason banks may merge is to improve efficiency. Efficiency can be measured by the cost of producing a given amount of a given product. When efficiency improves, the cost per unit of output falls, thereby increasing the firm's profits. An increase in efficiency also benefits society, because it frees up resources for other uses.

Bank mergers *might* increase efficiency simply by making banks larger. Economists say that the production of a certain good or service is subject to "economies of scale" if unit costs decrease as the scale of production increases. This may happen if, for example, production over a range of output requires using a fixed amount of a certain input. In the case of banking, the delivery of certain services requires that the bank build a branch. That branch could provide facilities for serving anywhere from, say, one to one thousand customers. But, the cost of building and maintaining the branch would be the same, no matter how many customers were served. Clearly, then, branch costs per customer would decrease as the number of customers increased, at least up to some point.

Of course, banks produce many products and services, some of which are very difficult to measure, and this substantially complicates any assessment of whether banking is subject to economies of scale. Nevertheless, some observers maintain that banks must grow larger to survive and that recent technological changes have only made this more true. For example, technological improvements have encouraged the growth of areas that favor larger banks, such as credit enhancement, mutual funds, and derivative products. In addition, the introduction of automated teller machines and other forms of electronic delivery means that one branch can serve many more customers than in the past, thereby increasing the range of production over which economies of scale apply to branch costs.

If larger banks are more efficient, last year's interstate branching legislation may have been the catalyst for some recent mergers. The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 permits a bank in one state to acquire a bank in another state and then turn the acquired institution's offices into branches, beginning on June 1, 1997. Bank holding companies that already own separately capitalized banks in more than one state may consolidate them into one bank with branches in more than one state at that time. It may be the case that certain banking activities are subject to economies of scale, but only if the organization is consolidated under one bank. For many banking organizations, it may be too expensive to run operations in each state under a separately capitalized bank. If this is the case, bank holding companies may currently be acquiring banks in other states in anticipation of being able to consolidate them in 1997.

Decreasing risk

Banks may merge to decrease risk rather than to increase expected profits. (Of course, the two motivations are not mutually exclusive.) For any

firm, profits vary, and investors generally prefer less variability to more, for a given level of expected profits. Regulators, and therefore taxpayers, also prefer less variability, because it means less chance that the bank fails.

One way to decrease variability, or risk, may be to diversify earnings. In some cases, a bank can reduce risk by merging with a bank from another geographic area. This can happen, if, for example, the bank's new area tends to experience a relatively strong economy whenever the home area experiences a relatively weak economy, and vice versa. The combined earnings stream from these two areas would then be smoother than the earnings stream from either one alone. (See Levonian (1994), who found that, on average, if all Twelfth District banks became fully diversified across the nine District states, the variability of the return on assets would decline.) In addition to geographic diversification, product diversification also may provide opportunities to reduce risk. For example, the combination of certain fee-based activities with interest-sensitive activities may help to smooth earnings.

The 1994 interstate banking and branching legislation may have spurred some banks to merge to gain risk reduction benefits. Again, bank holding companies that previously may not have acquired out-of-state banks despite possible risk-reducing benefits may now find that such benefits do justify interstate acquisitions that soon can be consolidated. In addition, relaxation of certain product restrictions, such as those involving mutual funds and securities underwriting, may have introduced new risk reduction opportunities. Some banks may have found that taking full advantage of such opportunities required mergers rather than just expansion of their own activities into new areas.

Research findings

Economists have conducted numerous studies aimed at determining whether bank mergers increase efficiency. Generally, these studies compare the expense ratios of merged banks to those of the pre-merger component banks, using nonmerging banks as a control group. Both bank mergers and bank holding company acquisitions of banks have been studied, using, for example, total expenses to assets and noninterest expenses to assets for the cost ratios.

To date, most of the studies find that bank mergers, do not, on average, decrease cost ratios. Moreover, such results hold even when banks with overlapping branch networks merge and close branches. In addition, even more sophisticated studies that take into account the cost effects of changes in the output mix generally come to the same conclusion. These findings also are consistent with the results of much of the research on economies of scale in banking, which tend to show that the minimum average cost point of production is below the size of many post-merger consolidated banks.

We have only indirect evidence on whether, in general, bank mergers reduce risk. Boyd and Graham (1991) found that, between 1971 and 1988, banks with $1 billion or more in assets failed at roughly twice the rate of banks with less than $1 billion in assets. It is possible, then, that even though larger banks may have available greater risk reducing opportunities through diversification, they may not, in practice, take advantage of these opportunities. An alternative interpretation is that large banks' higher failure rate was due to their lower capital ratios and says little regarding these banks' operating risk.

Alternative hypotheses

The efficiency and risk-reduction hypotheses will continue to be tested as new data reflecting banks' current technological and regulatory circumstances become available. Meanwhile, economists have considered alternative hypotheses regarding the motivations for bank mergers and the likely benefits or costs to society.

Some economists have suggested that banks may merge to take better advantage of an implicit "too-big-to-fail" regulatory policy. In 1984, the Comptroller of the Currency suggested that the very largest banks were too big for the government to allow to fail. To the degree that banks believe that they have a greater chance of the government rescuing them from bankruptcy if they are larger, the too-big-to-fail policy may be encouraging more bank mergers than is socially optimal. However, some recent research by Benston, Hunter, and Wall (1995) suggests that this is not the case. The same motivation that might prompt banks to try to increase in size in order to take advantage of an implicit government guarantee also would likely encourage them to increase risk to get the most out of any such guarantee. These authors find that, contrary to this hypothesis, acquiring banks do not pay more for riskier banks than less risky banks.

Another hypothesis is that banks merge to gain market share and thereby market power. The "structure-conduct-performance" paradigm hypothesizes that markets in which the share of output is concentrated in a few large firms are less competitive than markets in which there are numerous smaller firms with roughly equal market shares. The decrease in competition

means that firms can make higher profits by holding prices above socially optimal levels. In one of the few studies of the market power hypothesis, Berger (1991) suggests that many within-market mergers may result in minor increases in market power for the consolidated firms.

Revenue effects

While many within-market mergers may increase market power for the merged banks, the average size of this effect likely is small. Moreover, such an effect would not motivate the many inter-market mergers that we see. About half of the 75 largest bank and thrift acquisitions announced in the first half of 1995 were inter-state transactions, and this likely understates the proportion of inter-market mergers.

A more likely source of overall merger benefits may stem from changes in the bundle of products and services that banks produce. Although sophisticated cost studies take into account the effect on costs of changes in the product mix, they do not generally take into account the effect on revenues. If a bank can increase revenues by changing the collection of goods and services it produces, without generating an offsetting increase in costs, its profits will increase. So, too, will the net benefits to society, as more highly valued goods and services replace less valued goods and services.

In a recent overview of the literature, Berger, Hunter, and Timme (1993) pointed out that a few studies do find efficiency gains from bank mergers, and that all of these studies include revenue effects. In contrast, they said, studies that do not find efficiencies generally use only cost data. These authors suggest that a bank merger may help the consolidated bank better achieve a higher-revenue output bundle through, say, improved marketing or product innovation. Indeed, Benston, et al., find that acquiring banks pay relatively more for smaller banks than larger banks. One interpretation these authors give is that a smaller bank offers greater opportunities for the acquirer to offer new products that the smaller bank is not already producing.

As many observers have emphasized, banking is changing rapidly, with new electronic banking and off-balance sheet financial management products partially replacing traditional deposit-taking and lending activities. Although it is unclear why mergers would be necessary to carry out such changes, they may help facilitate them. For example, mergers may replace relatively ineffective managers with managers that are better able to carry out a shift in product mix.

Conclusion

The rapid pace of bank mergers continues to draw the attention of the public and the economics profession. While there still is much to learn about why banks merge and what it means, economic research has revealed several general conclusions. First, up until the recent past, at least, bank mergers have not, on average, increased efficiency by decreasing unit costs. Second, while risk reducing, risk increasing, and market power motivations have not been extensively investigated, available research indicates that these likely do not play major roles in the merger phenomenon. And, third, whether banks merge in order to facilitate shifts in product mix remains an intriguing and very open question.

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References

Benston, George J., William C. Hunter, and Larry D. Wall. 1995. "Motivations for Bank Mergers and Acquisitions: Enhancing the Deposit Insurance Put Option versus Earnings Diversification." *Journal of Money, Credit, and Banking* 27, pp. 777–788.

Berger, Allen N. 1991. "The Profit-Concentration Relationship in Banking." *Finance and Economics Discussion Series* 176, Board of Governors of the Federal Reserve System.

Berger, Allen N., William C. Hunter, and Stephen G. Timme. 1993. "The Efficiency of Financial Institutions: A Review and Preview of Research Past, Present, and Future." *Journal of Banking and Finance* 17, pp. 221–249.

Boyd, John H., and Stanley L. Graham. 1991. "Investigating the Banking Consolidation Trend." *FRB Minneapolis Quarterly Review* (Spring), pp. 3–15.

Levonian, Mark E. 1994. "Interstate Banking and Risk." *FRBSF Weekly Letter* 94-26.

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