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The annual number of bank failures in the U.S. has climbed dramatically in recent years. In the 32 years from 1943 through 1974, the number of bank failures nationwide requiring disbursements by the Federal Deposit Insurance Corporation never rose as high as 10 per year. Since 1979, by contrast, the annual number

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¹Here, and throughout the article, a bank "failure" is defined to include not only liquidations but also forced mergers and open bank assistance—in short, any response to a distressed bank that involved a cost to the FDIC.

of failures has never been lower than 10 and has exhibited an almost exponential increase. A disproportionate number of such failures have occurred among the nation's smallest banks. It makes sense, therefore, to take a closer look at the health of the smallest banks and at their prospects for the 1990s.

Some indicators appear to suggest an optimistic picture. When interest rates were deregulated in 1980, and later when interstate banking began to proliferate, many people were concerned that the dozen or so largest banks (the multinationals) would swallow up most of the smaller banks. Fewer banks in each market, it was feared, might decrease competition. This

sort of massive consolidation has not occurred, however. The multinationals have been less acquisitive than some feared. Even though the mid-sized regional banks have been steadily buying up smaller competitors, there are still over 13,000 commercial banks nationwide, and a bit less than 10,000 separate banking organizations even allowing for multibank holding companies.

Several factors make it unlikely that the giant multinational banks will expand significantly at the expense of the smaller regional or community banks in the near future. In fact, compared with the multinationals, regional banks have exhibited superior growth and profitability over the past few years. Among other things, new regulations adopted in 1988 require off-balance-sheet items, such as loan commitments and standby letters of credit, to be accompanied by proportional amounts of equity capital.² Because multinationals have a large amount of such items, these regulations have further limited their ability to expand rapidly within the next few years; for a bank that barely meets the regulation, any expansion must be accompanied by a corresponding new issue of capital, and the cost of raising capital makes expansion less profitable for such banks.

The aggregate failure statistics and the recent behavior of the multinational banks might seem to suggest contradictory conclusions about the viability of the smallest banks. Resolving the issue requires a deeper look.

HOW HEALTHY ARE THE SMALLEST BANKS?

Two sets of evidence can help us determine how viable the smallest banks are in today's market: statistical estimates of banking cost functions, and actual performance data.

Statistical Cost Studies. Dozens of studies

on economies of scale in the banking industry have been carried out over the past 35 years. Many have been summarized in a handful of excellent survey articles.³ Focusing on the question of whether expenses tend to rise less than proportionately with bank size, each of these studies measures the statistical relationship between historical data on size and total expenses. Various measures of bank size have been employed, such as assets, deposits, or the number of accounts; however, an essential element in all is to make allowance for the prices each bank must pay for its inputs, such as wages and rents. In general, all of the studies find that there is some minimum efficient size of bank. A bank falling below that level typically faces higher average costs than a larger bank and is therefore less able to compete effectively in the marketplace.

Much controversy exists over the exact threshold of efficient size. Most recent studies, which generally exclude banks with total assets larger than \$1 billion, conclude that the minimum efficient scale lies somewhere in the range between \$50 million and \$200 million in total assets. Some estimates are outside this range, however. At least one puts the figure as low as \$25 million in assets, while several studies of the largest banks have found a minimum efficient scale as large as 1,000 times this size.⁴

All studies agree that banks smaller than \$25 million in assets are, on average, less efficient than larger banks, and nearly all agree that the true minimum efficient scale is at least \$50 million.⁵ On the basis of historical experience it

²See Moulton (1987).

³See Gilbert (1984), Mester (1987), and Clark (1988).

⁴See Shaffer (1984, 1988), Hunter and Timme (1986), and Shaffer and David (1986).

⁵Sometimes these comparisons are complicated by the use of nominal rather than real (inflation-adjusted) measures of size, so that a figure of \$25 million in 1975 dollars would correspond to perhaps twice that figure in 1988 dollars. Some studies measured bank size in terms of

seems fairly certain that, on average, banks with total assets below the range of \$25 million to \$50 million are handicapped by higher costs relative to larger banks. Since roughly one-third of all U.S. banks are smaller than \$25 million and nearly 60 percent are smaller than \$50 million, this finding could have potentially serious implications. At the same time, it is important to keep in mind that these patterns describe average banks and do not rule out the possibility that some individual small banks can be as cost efficient as larger ones.

Small-Bank Performance. Massive evidence from statistical cost studies thus suggests that as many as half of the nation's banks may be under financial pressure due to inefficiencies associated with small size. This finding is consistent with the recent pattern of bank failures alluded to earlier. Is there more specific evidence that would either corroborate or refute the implications of the cost studies?

It is sometimes claimed that there are at least two different types of banking customers.⁶ Some want a full array of services while some want personalized service. A large bank may have an advantage over a smaller one in the range of services it can provide, but a small bank may have an advantage in offering personalized service. In that case a small bank, by catering to the second type of customer, may be able to match the profitability of a larger bank despite the overall cost structure.

Let's consider actual performance data for banks of various size categories. The ideal measure of performance would reflect both for bearing the risk. In practice, no single statistic perfectly reflects these two factors, but a general picture can be obtained by looking at several measures. The rate of return on assets reflects raw profitability unadjusted for risk. The rate of return on equity would adjust the rate of return on assets for one component of risk, the leverage ratio, if equity is measured by market value rather than book value; however, the true market value of equity is not available for all banks, and there are other components of risk besides leverage. Therefore, return on equity, while useful to examine alongside the return on assets and other statistics, is not by itself a completely satisfactory measure of performance. The rate of default on loans made by a bank

profitability and risk, since a riskier bank must

earn a higher return to compensate its owners

The rate of default on loans made by a bank indicates the average credit quality of its assets, the soundness of the bank's management and lending decisions, and the long-run prospects for the bank's survival. Two common measures of default are net charge-offs, reflecting actual defaults, and noncurrent loans, which have stopped repaying according to schedule but have not yet been officially written off by the banks. The number of failed banks within each size category, of course, provides an after-the-fact measure of health.

Some surveys from the financial press and other sources suggest the more comforting message that the community banks have been outperforming the multinational banks. But

deposits, further complicating a cross-study comparison since assets typically exceed deposits by over 25 percent (1987 aggregate U.S. figure); thus, a minimum efficient scale of \$25 million in deposits would imply a larger minimum efficient scale in terms of assets.

⁶Of course, it is an oversimplification to speak of only two types of consumers, but the point remains valid for a richer variety of tastes.

⁷For example, Rose (1988), in an article titled "Small Banks Recover; Big Banks Languish," reports survey data indicating a 1987 average return on assets of .81 percent for banks smaller than \$100 million, .66 percent for banks with assets of \$100 million to \$1 billion, and .81 percent for banks larger than \$1 billion. Danker and McLaughlin (1987) report that banks smaller than \$100 million earned higher returns on assets than banks with assets between \$100 million and \$1 billion in every year from 1981 to 1984, and that both groups outperformed the giant money-center banks in every year from 1981 to 1986.

such conclusions are misleading, at least in part because they are based on too coarse a gradation of size categories; the "smallest banks" are defined as all those with assets smaller than \$100 million or even \$300 million.

What the Numbers Show. A finer gradation of size categories portrays a different picture. Figures 1 through 5 show various measures of profitability, loan quality, and failure rates for all insured U.S. commercial banks smaller than \$500 million that were continuously in operation throughout each respective year. These banks are broken down into five size categories, with the smallest two being \$0-25 million and \$25-50 million.

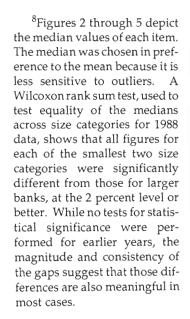
Relative to banks with assets between \$25 million and \$500 million, banks smaller than \$25 million show a discouraging and worsening picture.⁸ From 1986 through 1988, these smallest banks, compared with larger banks, on average earned only two-thirds to three-fourths the rate of return on assets and as low as half the rate of return on equity. At the same

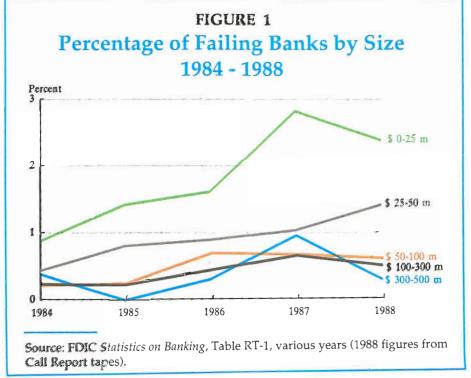
time, they suffered up to 50 percent more noncurrent (problem) loans as a

percentage of total loans and over twice the net charge-off (loan loss) ratio, indicating more serious problems of credit quality than those faced by the larger banks. Thus, the smallest banks are less profitable than larger banks, even before adjusting for risk; any form of adjusting for risk reveals an even bleaker picture. As a percentage of banks in their peer group, small banks experienced a failure rate that was three to four times as high as that among larger banks.^{9,10}

This picture was also present, if to a slightly

⁹While it is possible that some banks change size categories immediately prior to failure, this possibility is unlikely to bias the figures, for two reasons. First, any size change associated with distress can go in either direction: a failing bank may shrink as it tries to liquidate assets (for instance, to accommodate an outflow of deposits), or else management may choose to expand assets in an attempt to "grow out of trouble." Both patterns are observed and tend to offset each other in the aggregate. Second, the size categories are broad enough that, on average, a bank would need





more moderate degree, at least as far back as 1984. Figures available for the years prior to 1984 suggest that some of these problems have persisted even longer while others have emerged only recently. In every year from 1979 through 1983, banks with assets smaller than \$25 million experienced a lower rate of return on equity and higher average loan losses than banks with assets of between \$25 million and \$500 million.¹¹ Since 1981, the smallest banks have even suffered heavier relative loan losses

to double or halve its size in order to change categories. Regulators almost always close down a failing bank before changes of this magnitude can occur.

¹⁰There may be other reasons besides economies of scale why small banks fail more often than large banks. For example, large banks have the potential to diversify more completely, thereby lowering their financial risk. However, any such factors would only compound the challenges facing a small bank.

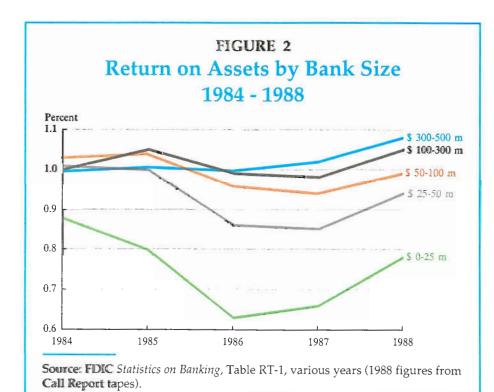
¹¹See Wall (1984), pp. 20 and 22.

than the very largest banks.¹² However, it was only in 1982 and 1983 that the average rate of return on assets for the smallest banks began to fall below the level for larger banks.¹³

Structural patterns over time tell a similar story (see Table 1). The annual decline in the number of banks smaller than \$25 million has exceeded 300 in every year but one since at least 1980. Until 1984, however, this decline was matched by an increase in the number of larger banks, indicating that much of the decline represented a mere redistribution as some of the smaller banks grew. But with more failures concentrated among the smallest banks in recent years, this is no longer the case. In the four years from 1984 to 1988 the number of FDIC-insured commercial banks with assets of less than \$25 million fell by 30 percent.

These patterns are consistent with an ongoing and accelerating shake-out of inefficient banks from the industry, resulting from intensified competition of the 1980s.¹⁴ Actual performance data, therefore, bear out the concern

prompted by the combination of economies of scale and increasing market competition.



¹²See Wall (1984), p. 20.

¹³See Wall (1984), p. 21.

¹⁴It is unlikely that these comparisons are noticeably distorted by spotty performance from new banks included in the smallest size category; the figures in Table 1 exclude banks that were in operation less than a full year. Similarly, some of the statistical cost studies excluded banks less than five years old and reached similar conclusions. Moreover, the pattern persists to a lesser degree into larger size ranges, such as \$25 million to \$50 million.

Number of Banks by Size Category

\$0-500 Million in Assets'

(Percentage change from previous year in parentheses)

Year	Size Categories				
	50-25M	\$25-50M	\$50-100M	\$100-300M	\$300-500M
1988	3948	3380	2730	1845	331
	(-13.6%)	(-6.0)	(-3.1)	(0.0)	(5.4)
1987	4571	3596	2817	1845	314
	(-7.0)	(-3.5)	(-2.2)	(1.1)	(-2.8)
1986	4914 (-7.8)	3725 (-0.1)	2880 (3.3)	1825 (3.6)	`323 (9.5)
1985	5327	3729	2788	1762	295
	(-5.6)	(-0.4)	(2.2)	(7.1)	(15.2)
1984	5645	3742	2728	1645	256
	(-3.0)	(-0.1)	(3.2)	(4.2)	(-0.8)

*U.S. FDIC-insured commercial banks operating throughout the year (year-end figures). Size categories are total assets in nominal dollars. Rescaling the categories to real dollars would make some difference, since \$1 in 1984 was worth \$1.09 by 1987 (based on the GNP deflator, Table B-3, *Economic Report of the President*, 1989). However, the essential conclusion of the comparison would remain the same.

Source: FDIC Statistics on Banking, Table RT-1, various years; 1988 figures are from Call Report tapes and the FDIC.

TURNING UP THE HEAT

If indeed the smallest banks have always been intrinsically handicapped by higher costs, then why are patterns of distress and failure consistent with that view only now emerging? The answer lies in recent changes in banking markets, in regulation, in technology, and in consumer sophistication. In former decades, banking markets were relatively localized, insulated from external pressures by a comprehensive web of regulations. In such an environment, many small banks could survive,

even though they were less efficient than some of their rivals. However, the degree of competition across the industry has increased sharply in recent years and will likely continue to increase.

Market forces had initiated the competitive pressures even before deregulation began. Following the 1966 lowering of the ceilings on the interest rates that banks were allowed to pay on deposit accounts, the market responded by creating money-market mutual funds as an alternative to bank accounts, allowing depositors to take advantage of higher interest rates. The impetus to switch intensified during the decade of the 1970s as inflation and interest rates rose. Predictably, consumers responded by withdrawing a significant amount of their funds from the

commercial banking sector and placing it in these new institutions that were not subject to the same regulations. The entry of large non-bank financial firms or conglomerates, such as Sears and Merrill Lynch, into the market for bank-like services has intensified the competitive pressure on commercial banks. Finally, competition from foreign banks and financial firms has been on an upsurge, responding to the increased globalization of financial markets in general and the attractiveness of the U.S. market in particular.

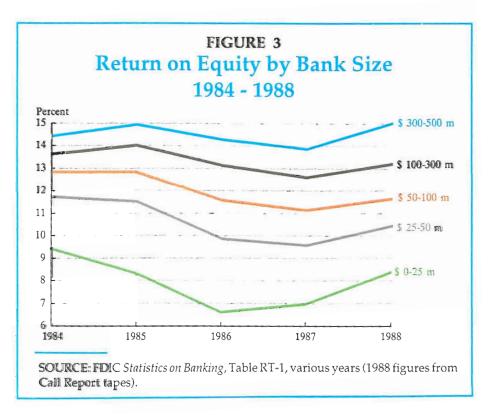
Sometimes viewed as the cause of the increased competition, deregulation has to some extent enabled banks to meet the competitive pressures already imposed by the market. This was the main result of the interest rate deregulation that was phased in following the passage of the Depository Institutions Deregulation and Monetary Control Act of 1980—the banks were now able to compete for deposit funds on an equal basis with money-market mutual funds. This increased ability to deal with competition from outside the banking industry, however, has been at the cost of increased competition among banks. Interstate banking and liberalized intrastate branching laws in certain states have intensified the competition among banks and have eroded traditional geographic market boundaries. Moreover, limited deregulation of the products and services that banks are allowed to offer has been accompanied by a certain amount of product-line deregulation for thrift institutions that permits them to compete more fully with commercial banks.

Boundaries of local markets have also been weakened by technological advances, such as more widespread applications of electronic funds transfer, which allow many banking services to be provided from a distance. Regional networks of automated teller machines are commonplace. Numerous banking services also are available by mail, allowing a potentially nationwide market for those services; credit cards are perhaps the most widespread type of service marketed in this way.

Accompanying these

changes has been the increasing sophistication of the average bank customer. Experience with recent periods of high interest rates and uncertainty over future rates have made depositors and borrowers more inclined to shop around rather than rely on a single long-term banking relationship. People have also become more comfortable with banking at a distance. Accordingly, even banks in remote areas of the country are less insulated from outside competition than before, and those that are less efficient are beginning to pay the penalty. Barriers that once protected small banks from their more efficient rivals are either gone or are disappearing fast.

Deregulation is not the villain here; it was a necessary response to changing market conditions. By the same token, increased competition should not be viewed as bad either. Competition generally carries with it the benefits of more favorable prices to consumers, along with higher quality service, relative to a situation in which local monopolists or ineffi-



cient producers control the market. Thus, even if competitive pressures have potentially painful consequences for inefficient producers, it is generally better for the economy as a whole to recognize and eliminate the inefficiencies rather than continue to subsidize them through paying higher prices commensurate with the higher costs.

WHAT IS LIKELY TO HAPPEN?

The evidence suggests that banks with assets smaller than \$25 million to \$50 million are, on average, less efficient than somewhat larger banks. Increasing competition is intensifying the pressure on these banks either to become efficient or to leave the market. Performance data and failure rates support this view. By 1985, the annual number of failures had risen to over 100, of which 77 were smaller banks with total assets of less than \$25 million. Some 200 banks failed in 1987, of which 130 had less than \$25 million in assets and 167 had less than \$50 million. In 1988, out of 221 failed banks, 100

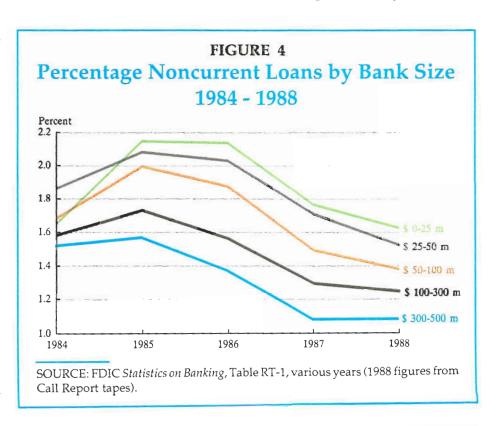
had less than \$25 million in assets while 148 had less than \$50 million. If all this is true, then what are the likely consequences for the structure of the U.S. banking industry?

As of year-end 1988, there were 13,114 FDIC-insured commercial banks in the United States. Of these, 3,948 (or 30 percent) had total assets of less than \$25 million. A total of 7,328 (or 56 percent) had assets of less than \$50 million. According to statistical cost studies, these are the banks that historically have had costs above the industry

average. If all of these banks encounter direct competition from larger, more efficient banks, then in the long run, any individual bank with above-average costs will be driven out of the market if it fails to contain its costs or find a way to insulate itself from the competition.

Even if the most extreme restructuring were to occur (meaning if all banks smaller than \$50 million in assets were to disappear), the nation would still be left with over 5,700 commercial banks, not to mention other depository institutions such as savings and loan associations. This number, while dramatically smaller than at present, should be more than enough to maintain a high degree of competition in the production of financial services, assuming an ongoing vigilant enforcement of antitrust laws within local markets. Thus, there appear no compelling grounds for concern over the impact on competition one way or the other.

Of course, no one is predicting that 3,948 (or 7,328) banks will necessarily disappear from the scene. The consequences may be far less



severe, even if the designated size thresholds are accurate and reliable predictors of bank viability. For instance, imagine that all banks with less than \$25 million in assets were recombined to form larger banks, each with \$25 million in assets. These banks total 3,948 and together accounted for \$60.35 billion in assets as of year-end 1987. If these 3,948 banks were recombined to form banks with exactly \$25 million each, there would be only 2,414 such banks (\$60.35 billion divided by \$25 million), a decline of 1,535.

Similarly, banks smaller than \$50 million in assets together account for \$182.4 billion in assets. If all these banks were recombined into banks having exactly \$50 million each, the total number would be 3,648. In this scenario, the number of banks would decline by 3,680—still a large number, but only about half the total number of banks in this size category.

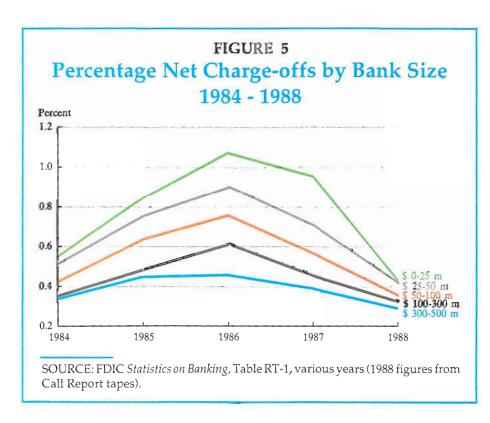
Thus, apart from other factors, a naive interpretation of the statistical cost studies would predict that competition could lead to some

combination of mergers and failures that would reduce the number of banks in the U.S. over time by some 1,500 to over 3,600. Among the stylized assumptions in this assessment are perfect competition among all banks, perfectly efficient restructuring, and an unalterable minimum efficient scale in the range of between \$25 million and \$50 million in total assets. The first assumption probably errs on the side of overstating the likely structural shift, while the last two may well understate the shift. On balance, it would be difficult to assess whether the naive interpretation is overly pessimistic or overly optimistic. At least two recent studies anticipate a more drastic consolidation of industry structure than suggested here, leaving as few as perhaps 2,000 to 4,000 banks nationwide.15

WHAT CAN SMALL BANKS DO?

Are several thousand of the nation's banks really doomed to be bought up by larger banks or else fail? The answer is not so simple.

Clearly, a typical small bank these days does face a major challenge. But, depending on various demand factors, there may be ways in which such a bank could respond to this challenge creatively and productively. Even assuming there is an overall cost disadvantage that the bank cannot change, smaller banks may be able to take advantage of some potentially offsetting factors. There may be a



¹⁵See Kaufman et al. (1983) and Miller (1988).

subset of banking services for which the small bank is not at a cost disadvantage. Alternatively, or in addition, there may be some customers who are willing to pay for the type of services that a small bank, but not a large bank, can easily provide.

If either condition is present, then a small bank could try to identify and stake out a profitable market niche. The key is for the bank not to attempt everything that a large bank might do, but rather to focus its business in a way that capitalizes on some specialized expertise of its staff. This strategy is useful whether the bank hopes to overcome an overall cost disadvantage, to appeal to a particular group of consumers, or both.

Regarding the first possibility, at least one study finds statistical evidence that certain types of specialization by small banks (such as locating in a small geographic market and deemphasizing large commercial and industrial loans) may overcome overall cost disadvantages. ¹⁶ Unfortunately, evidence is sparse and mixed concerning which subsets of banking services may minimize or reverse the cost disadvantage of a typical small bank.

Even if specialization fails to reduce costs, a small bank may find specialization beneficial if certain customers are willing to pay extra for the special things that a small bank can do better than a large bank. The point here is not just *which* services are offered but how a service is offered; knowing its customers is an often-cited example. This advantage not only allows the bank to offer more personalized service, which to some customers is worth a bit extra, but also confers a potential edge in credit quality control over the relatively anonymous screening procedures of a larger bank.

A cautionary note must be sounded in either case: the bank should avoid focusing on a line of business that may be fashionable now but won't survive a downturn. Nor should it undertake an emphasis that would be unsustainable if a key officer or employee were to leave the bank.

Over and above any specialization, small banks must become familiar with and take advantage of new technological or financial developments that could allow them to reduce costs or risks and thereby compete on a more even footing with the larger institutions. The development of relatively inexpensive desktop computers provides capabilities formerly limited to expensive mainframes, and associated software is commercially available that in years past would have required costly in-house development. With these tools, some backoffice operations could be performed more efficiently. Calculating "what if" scenarios to evaluate alternate business plans or economic shifts can also be a productive use of these machines to reduce costs or risks. "Expert systems" software can even supplement (but not replace!) the usual evaluation of loan applications, improving the control of credit risk.¹⁷ It is not clear, however, whether such innovations would narrow the existing gap between large and small banks' costs and performance, or merely prevent further erosion of the position of small banks.

On the financial side, relatively new instruments allow banks much better control of interest rate exposure and other forms of risk than in earlier times. Intelligent use and pricing of adjustable rate mortgages is by now a familiar

¹⁶See Shaffer (1985).

¹⁷Expert systems software walks the user through a questionnaire to obtain information relevant to a particular situation, then applies proven procedures and standards to analyze the situation and produce a case profile and recommendation. It is more efficient than an operating manual, since the program will omit questions that prior answers imply to be irrelevant, and more flexible than a rigid set of guidelines, in that a wider range of possibilities can be considered and more sophisticated techniques applied within a short amount of time. See Bestor (1987) and Turner (1987).

response to the possibility of fluctuating interest rates combined with a short average maturity of liabilities. But community banks may also stand to benefit from appropriate use of interest rate swaps and even asset securitization.¹⁸ These new instruments, and others like them, may well become part of every banker's standard tool kit. It is important for small banks to learn not only the potential but also the pitfalls of the techniques behind such instruments. As an initial step, some of the techniques can be effectively implemented using only one or a few standardized instruments, such as Treasury bill futures to hedge interest rate risk. Sophistication of this sort may not benefit a small bank more than a large bank, but at least it could help a small bank not to fall further behind the large banks.

Finally, it is possible to take advantage of networking economies while remaining a small bank. Using a third-party vendor for some services, such as payroll data processing, can sometimes cut costs. A "bankers' bank," a correspondent bank, or even a Federal Reserve Bank can sometimes provide certain back-room services at a savings. A more ambitious step would be to affiliate with several other likeminded small banks by forming a multibank holding company, an alternative that many small banks would view as preferable to being absorbed into an existing large organization with an incompatible focus.

CONCLUSION

Statistical cost studies, failure rates, and performance data agree: several thousand of the nation's smallest banks are facing a significant challenge to their long-run survival. Specialized market niches can offer some protection to these banks, and there are other defensive steps they can take. But current figures on asset quality and failure rates indicate that the challenge has not been adequately met.

The reality is that a substantial number of banks may disappear from the industry over the next decade or so. Small banks must recognize that it is no longer "business as usual" and take greater advantage of the possible opportunities. Bank regulators, when considering particular mergers and acquisitions involving small banks, have already been assessing what cost a blocked merger proposal will have on the health—or survival—of the banks involved.

At least part of the challenge to small banks appears to stem from intrinsically higher costs than large banks face. What translates this cost handicap into a challenge to survival is the increasing competition in banking markets. We cannot reverse this trend of the past two decades, nor even the trend of the past decade toward deregulation of the banking industry. Even if these trends could be reversed, it would not be advisable to do so. To the extent that true inefficiencies exist, it is to the common good to replace them with efficiently provided banking services.

In any case, the degree of consolidation anticipated should not lessen competition. There would still be on the order of 10,000 banks in the United States. Rather, what should emerge from the process is a stronger, more cost-efficient industry that meets the nation's financial needs even more effectively than before.

¹⁸See Findlay (1987) and Nadler (1987).

¹⁹Shaffer (1985) has found evidence that the use of correspondent banking services can enable a typical small bank to reduce or overcome an overall cost disadvantage.

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