Banking Performance In Tenth District States

By William R. Keeton and Katherine M. Hecht

The year 1985 was a difficult one for commercial banks in Tenth District states. Asset growth slowed as borrowers reduced their demand for credit and banks became more cautious about making new loans. But the retrenchment came too late to curb loan losses. Writeoffs of bad loans continued to mount and bank profitability was reduced to less than half the peak level reached four years earlier. Banks were able to maintain high capital-asset ratios despite these lower earnings. However, this achievement resulted from slower asset growth rather than reinvestment of earnings or infusion of capital.

The continued decline in overall banking performance in 1985 obscured a remarkable diversity in performance among banks—not just among banks of different size, lending specialization, and location, but also among banks that are similar in all these respects. Some district banks did very poorly, dragging down most measures of average performance. But other banks continued to do well, growing rapidly and earning high profits.

This article examines district banking performance in 1985, focusing on both the decline in overall performance and the divergence in performance among banks. The article first reviews two key aspects of performance, growth and profitability. Next, the article discusses the contribution of net interest income and loan losses to profitability. The article then turns to another aspect of performance, the adequacy of banks' capital. The article concludes with a brief analysis of banking performance in each of the Tenth District states, revealing which states did better than average and which states did worse.

Growth

One aspect of performance is growth. The faster the banking industry grows, the more services it can provide to businesses and households. However, if excessive, growth can divert resources from more productive uses and undermine financial stability. In the past, growth in the banking industry has occurred in two ways—

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through increases in the number of banks and increases in the size of banks.

Changes in number

In banking, as in other industries, it is not unusual for new firms to enter the industry at the same time other firms are exiting through failure or merger. From 1970 until 1985, the number of commercial banks started in Tenth District states every year exceeded the number of banks closed by a significant margin. As a result, the total number of insured banks grew steadily—from about 2,500 banks at the end of 1970 to about 3,000 banks at the end of 1984.

In 1985, the steady growth in the number of district banks came to an end as bank closings exceeded bank openings.

TABLE 1
Change in number of insured commercial banks, Tenth District states*

	1984	1985
Banks established *de novo*	70	38
− Failed banks†	23	63
+ Banks established to succeed failed banks	16	22
− Open banks merged with other banks	32	56
= Net change in number of banks	31	−59

*Excludes the change due to banks switching from uninsured status to insured status. Seventeen industrial banks made this switch in 1984 and 17 in 1985.

†Includes one bank that closed for reasons other than financial difficulties.

In 1985, the steady growth in the number of district banks came to an end as bank closings exceeded bank openings. As shown in Table 1, 38 banks were started last year, despite the sharp decline in average profitability since 1981. However, the number of banks started in 1985 was only half as great as the previous year. Also, 63 banks failed during the year, almost three times as many as in 1984. Although some of the banks that failed were replaced by new banks formed to take over their deposits, most of the failed banks were either merged with existing banks or liquidated altogether. Finally, a relatively large number of open banks disappeared in 1985 through mergers. The result of these various changes was a net decline of 59 in the number of insured commercial banks, compared with a net increase of 31 banks in 1984.

Changes in size

The decrease in the number of district banks in 1985 was accompanied by a significant slowdown in the growth of assets and loans at remaining banks. Over the course of 1985, assets grew 4.8 percent and loans increased 2.7 percent. In 1984, by contrast, assets grew 6.2 percent and loans increased 11.6 percent.

Although banks in aggregate grew slower during 1985 than 1984, growth differed greatly by size and type of bank. Table 2 shows the growth in assets and loans at banks in three size categories. Each of the three size categories holds a third of total bank assets in the district. In 1985, small banks had assets of less than $57 million, medium-size banks had assets between $57 million and $266 million, and large banks had assets of more than $266 million.[1] Table 2 also shows how growth within the two smaller size

[1] Because inflation and economic growth tend to increase the assets of all banks, the two size thresholds have risen over time. In defining size groups, many studies of bank performance use the same dollar thresholds in early years as in later years. That

TABLE 2
Growth in loans and total assets, commercial banks in Tenth District states*
(percent)

	Number of Banks, 1985	Growth in Assets		Growth in Loans	
		1984	1985	1984	1985
All banks	2,890	6.2	4.8	11.6	2.7
Small banks	2,341	7.9	5.3	9.9	2.7
Agricultural	1,212	5.2	2.6	3.9	−3.2
Nonagricultural	1,129	10.5	7.9	15.6	7.6
Medium banks	495	7.0	4.0	11.3	3.9
Agricultural	79	4.7	2.0	5.4	−4.0
Nonagricultural	416	7.4	4.3	12.4	5.0
Large banks	54	4.0	4.9	13.5	1.5

*Growth from beginning of year to end of year at banks in operation the entire year.

groups differed between agricultural banks and nonagricultural banks. Agricultural banks are defined as those with at least 25 percent of their loan portfolios in farm real estate loans or farm operating loans. In 1985, over 90 percent of these banks were small and all but one of the rest were medium size.

Over the course of 1985, growth in assets and loans was fastest at small nonagricultural banks and slowest at the two sizes of agricultural banks. At small nonagricultural banks, assets increased 7.9 percent and loans increased 7.6 percent. These growth rates were lower than in 1984 but still relatively rapid. At agricultural banks, growth was much slower. For example, the assets of small agricultural banks increased only 2.6 percent in 1985, half the 1984 rate. And loans fell 3.2 percent in 1985, a sharp reversal from the moderate increase the year before.

approach can produce severe distortions over long periods of time, because the tendency for all banks to grow in dollar terms causes the small size group to shrink relative to the larger groups.

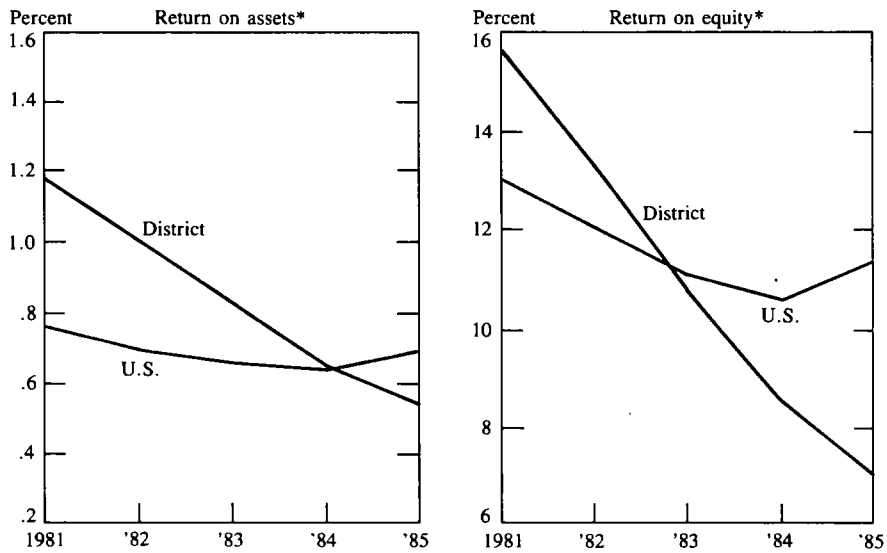
The decline in loans at agricultural banks during 1985 reflected both a reduced demand for credit from farmers and an increased desire for safety on the part of banks. In contrast to agricultural banks, many small nonagricultural banks are newer banks located in prosperous urban areas. The age and location of small nonagricultural banks help explain why their assets and loans continued to grow rapidly in 1985.

Profitability

A second dimension of performance is profitability.[2] To survive over the long run, banks must earn a reasonable rate of profits. Without profits banks cannot pay dividends to their

[2] For a longer run analysis of profitability focusing on the period from 1977 to 1984, see William R. Keeton and Lyle Matsunaga, "Profits of Commercial Banks in Tenth District States," *Economic Review*, Federal Reserve Bank of Kansas City, June 1985.

CHART 1
Profitability of commercial banks



shareholders, and without dividends banks cannot attract the new equity funds required for growth.

To compare profitability across time or across banks, profits must be deflated by some measure of bank size. Return on equity (ROE) deflates a bank's profits by its equity, the amount owners have invested in the bank through the purchase of stock or retention of earnings. Return on assets (ROA) deflates profits by total assets, including both financial and physical assets.

Measured by either ROE or ROA, the profitability of commercial banks in Tenth District states fell in 1985 for the fourth year in a row (Chart 1).[3] The decline in profitability in 1985 was somewhat smaller than in 1984. Nevertheless, ROA was only 0.55 percent in 1985, less than half the 1981 peak. Similarly, ROE was only 7.1 percent in 1985, down from 15.6 percent at the 1981 peak. For the nation as a whole, profitability has been much more stable in recent years. At banks nationwide, both ROA and ROE declined moderately from 1981 to 1984 and then rebounded in 1985.

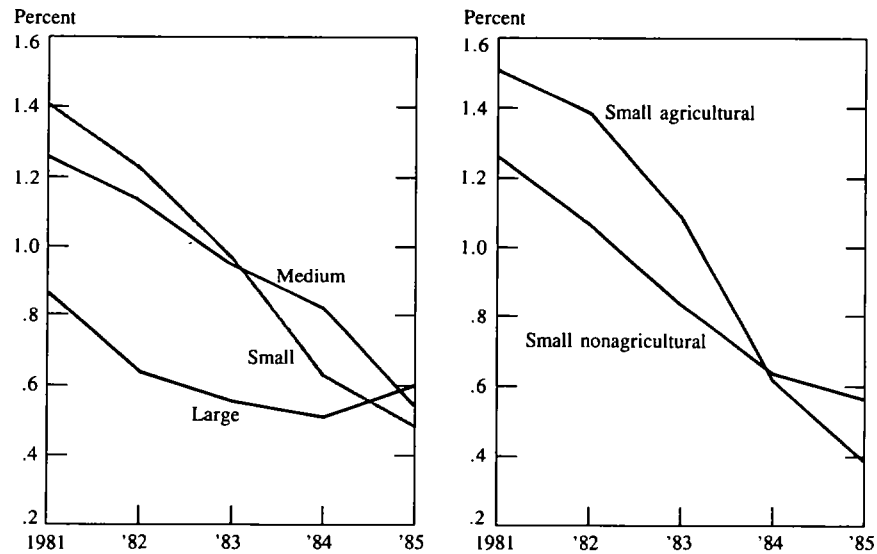
Profitability by size and type

In 1985, as in previous years, earnings performance varied by size and type of bank. On average, changes in profitability were most

[3] All data in this article were taken from the Reports of Condition and Income filed by insured commercial banks. Balance sheet data for 1981 to 1983 were adjusted for mergers at the Board of Governors of the Federal Reserve System to ensure that the assets and liabilities of merging banks were combined as close as possible to the date at which they began reporting their income jointly. Data for 1984 and 1985 were adjusted the same way by the authors.

CHART 2

Return on assets at banks in Tenth District states*



*Profits divided by average assets

favorable at large banks and least favorable at medium-size banks and banks specializing in agricultural lending.

The left panel of Chart 2 shows how profitability has changed at the three size groups, as measured by ROA. From 1981 to 1984, ROA fell less at medium-size banks than at small banks. Last year, though, ROA fell more at medium-size banks, bringing the two groups closer together. In contrast to small and medium-size banks, large banks became more profitable in 1985. This improvement left large banks with a slightly higher ROA than the other two size groups, reversing the ranking of 1981.[4]

Measured by ROE, differences in the relative profitability of the three size groups in 1985 were even greater. Large banks earned 9.4 percent on their equity, up a percentage point from 1984. In contrast, small banks earned only 5.5 percent and medium-size banks 7.1 percent. The reason the three size groups differed more in terms of ROE than ROA is that larger banks tend to have greater leverage, relying less on equity and more on borrowed funds to finance their assets.

Among banks of similar size, profitability continued to decline more at agricultural banks than at nonagricultural banks. As noted earlier, most agricultural banks are small. The right panel of

[4] These changes in profitability were partly due to shifts in the composition of the three size groups. In 1985, for example, slow growth caused a dozen banks that were just over the size cutoff for the large group to shift to the medium-size group. Because these banks were also unprofitable, the shift tended to raise the average ROA of large banks and reduce the average ROA of medium-size banks. In the absence of this shift, the change in ROA would still have been least favorable at medium-size banks and most favorable at large banks. However, instead of increasing moderately, the ROA of large banks would have decreased moderately.

TABLE 3
Income and expense of insured commercial banks, Tenth District states*
(percent)

	1981	1982	1983	1984	1985
Net interest income (NIM)†	4.70	4.67	4.41	4.29	4.36
− Loan loss provisions	0.30	0.56	0.65	0.85	1.05
− Net noninterest expense	2.24	2.36	2.34	2.28	2.37
+ Net security gains‡	−0.13	−0.04	0.01	0.03	0.10
− Total taxes	0.86	0.70	0.60	0.54	0.49
Profits (ROA)	1.18	1.00	0.83	0.66	0.55

*All variables are expressed as a percentage of average annual assets net of loan loss reserves. Average annual assets are computed from beginning-of-year, middle-of-year, and end-of-year figures, with weights of one-quarter, one-half, and one-quarter, respectively.
†Interest income is calculated on a taxable-equivalent basis. That is, each bank's tax-exempt income from state and local securities is adjusted by its marginal tax rate.
‡Includes net gains on extraordinary items.

Chart 2 compares the recent earnings performance of small agricultural banks with that of small nonagricultural banks. At both types of banks, ROA fell less in 1985 than 1984. But the 1985 decline was three times greater at small agricultural banks, leaving their ROA well below that of small nonagricultural banks. Within the medium-size group, declines in ROA were roughly similar at agricultural banks and nonagricultural banks. However, this similarity was due only to shifts in the composition of the two subgroups. Adjusted for such shifts, ROA fell about twice as much at medium-size agricultural banks as at medium-size nonagricultural banks.

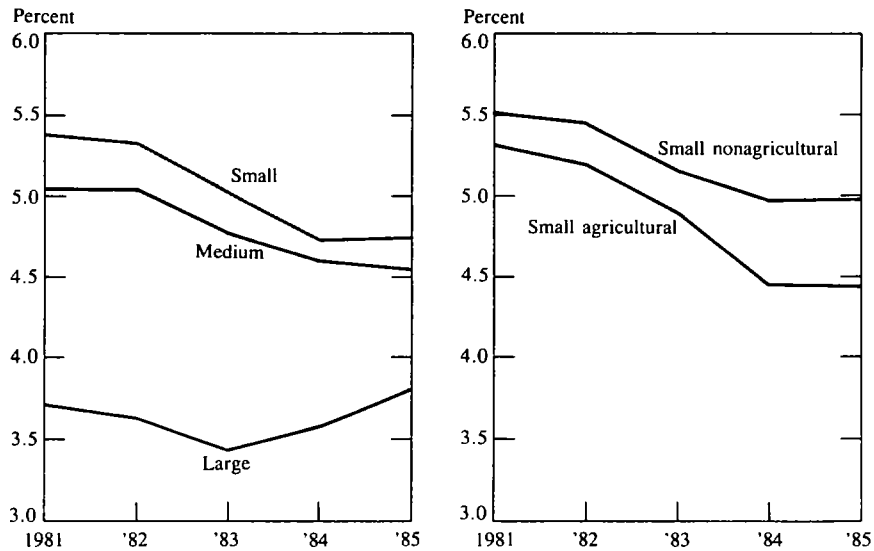
Although there were significant differences in earnings performance among different sizes and types of banks, there were also substantial differences within each category. In 1985, for example, 330 of the region's 1,300 agricultural banks suffered net losses, up from 250 the previous year. During the year, however, 470 agricultural banks managed to earn an ROA greater than 1 percent—fewer than in 1984 but a significant number nevertheless. Changes in profitability also varied greatly, with ROA declining more than 50 basis points at 430 agricultural banks but increasing more than 50 basis points at 220 banks. Within each of the three categories of nonagricultural banks, the story was much the same—some banks did very poorly in 1985 while others performed quite well.

Determinants of profitability

The decline in average profitability in 1985 was due primarily to a large increase in the provision of funds for loan writeoffs. Profits can be defined as net interest income and net gains from security sales minus loan loss provisions, net noninterest expense, and taxes. Table 3 deflates each of these components by total assets for the years from 1981 to 1985. As shown in the table, loan loss provisions increased in 1985 for the fourth consecutive year, reaching 1.05 percent of assets. Reinforcing this increase was a jump in net

CHART 3

Net interest margin at banks in Tenth District states*



*Net interest income divided by average assets

noninterest expense. These adverse developments were partly offset by an improvement in net interest income, an increase in net gains on security sales, and a decline in taxes. However, the improvement in the latter components of profits was not enough to prevent a net decline in ROA, from 0.66 percent in 1984 to 0.55 percent in 1985.

The next two sections take a closer look at net interest margin and loan loss provisions, the two items that have accounted for most of the change in district profitability over the last several years.

Net interest margin

The moderate improvement in net interest margin (NIM) in 1985 ended a steep decline over the previous two years. The NIM of district banks increased seven basis points in 1985, following declines of 26 points in 1983 and 12 points in 1984 (Table 3).

NIM by size and type

In 1985, as in 1984, changes in NIM were most favorable at large banks. As shown in the left panel of Chart 3, the NIM of small banks remained virtually unchanged in 1985 and the NIM of medium-size banks fell slightly. At the region's large banks, by contrast, NIM increased a very strong 22 basis points. This increase was the second in a row for large banks, raising their NIM above the 1981 level.

For the most part, NIM behaved the same at agricultural banks as at nonagricultural banks of similar size. As shown in the right panel of Chart 3, NIM remained virtually unchanged in 1985 at both small agricultural banks and small nonagricultural banks. This similarity was in sharp contrast to 1984, when NIM fell significantly more at small agricultural banks. Within the medium-size group, there was more of a

TABLE 4

Changes in interest income and expense by size of bank, Tenth District states
(percentage-point change in ratio to average assets)

	1983-84	1984-85
Small banks		
Change in interest income ratio	+0.12	−0.71
Portfolio shift	+0.02	−0.02
Rate effect	+0.10	−0.69
Change in interest expense ratio	+0.44	−0.72
Portfolio shift	+0.25	+0.14
Rate effect	+0.19	−0.86
Change in NIM	−0.32	+0.01
Portfolio shift	−0.23	−0.16
Rate effect	−0.09	+0.17
Medium banks		
Change in interest income ratio	+0.33	−0.82
Portfolio shift	+0.07	−0.01
Rate effect	+0.26	−0.82
Change in interest expense ratio	+0.51	−0.76
Portfolio shift	+0.22	+0.13
Rate effect	+0.28	−0.89
Change in NIM	−0.18	−0.06
Portfolio shift	−0.15	−0.14
Rate effect	−0.02	+0.07
Large banks		
Change in interest income ratio	+0.83	−0.78
Portfolio shift	+0.20	+0.05
Rate effect	+0.63	−0.83
Change in interest expense ratio	+0.68	−1.00
Portfolio shift	+0.08	+0.03
Rate effect	+0.60	−1.02
Change in NIM	+0.15	+0.22
Portfolio shift	+0.12	+0.02
Rate effect	+0.03	+0.19
Memo:		
Change in 6-month Treasury bill rate	+1.05	−2.13

divergence between the two types of banks in 1985, with NIM rebounding at agricultural banks but continuing to fall at nonagricultural banks.

Determinants of NIM

The two most important factors affecting NIM are movements in market interest rates and shifts in the composition of banks' portfolios. If banks' assets and liabilities are not equally sensitive to market interest rates, changes in rates will have a different effect on interest income than on interest expense, altering NIM. And if the composition of banks' assets or liabilities shifts between categories with low rates of return and categories with high rates of return, interest income and interest expense will be affected even without any change in market interest rates.

Table 4 shows the contribution of rate changes and portfolio shifts to the behavior of district banks' interest income ratio, interest expense ratio, and NIM since 1983. These estimates were obtained by splitting each size group's assets and liabilities into broad categories. The impact of portfolio shifts between categories was estimated by calculating the amount by which interest income, interest expense, and NIM would have changed if the average rate of return earned or paid on each category had remained constant. The rest of the change is the "rate effect," the part due to changes in the average rates of return on different categories.[5]

In 1985, small and medium-size banks continued to be hurt by adverse portfolio shifts but were benefited by the turnaround in market interest rates. As in previous years, the composition of funds shifted away from demand deposits, passbook savings accounts, and regular NOW accounts toward deregulated time and savings deposits paying higher rates of return. Although this shift was less important in 1985 than 1984, it raised the interest expense ratio of small banks by 14 basis points and the interest expense ratio of medium-size banks by 13 basis points. Working in the opposite direction was the decline in market rates. Because deposit deregulation had made most small banks liability sensitive, the decline in market rates in 1985 reduced their interest expense ratio 17 basis points more than their interest income ratio. This favorable rate effect just offset the adverse portfolio shift at small banks, preventing their NIM from falling. At medium-size banks, the rate effect was also favorable, but smaller. As a result, their NIM declined six basis points.

Relative to assets, loan loss provisions increased roughly the same amount in 1985 as in 1984.

Large banks did not enjoy as favorable a portfolio shift in 1985 as in 1984, but they received an even larger boost from the decline in market rates than small and medium-size banks. The improvement in large banks' NIM in 1984 was due to a large shift in the composition of their assets from money market instruments to higher yielding loans. This shift did not continue in 1985. However, the decline in market rates reduced large banks' interest expense ratio 19 basis points more than their interest income ratio, producing an even larger increase in NIM than the year before.

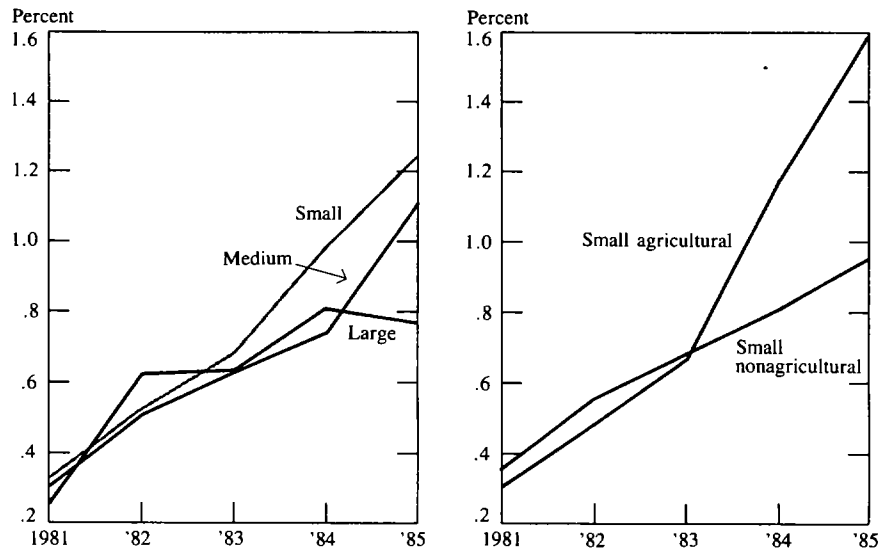
Loan loss provisions

Relative to assets, loan loss provisions increased roughly the same amount in 1985 as in 1984—about 20 basis points (Table 3). As in previous years, most of the increase in loss pro-

[5] For a more detailed explanation of the decomposition, see Keeton and Matsunaga.

CHART 4

Loan loss provisions at banks in Tenth District states*



*Provisions divided by average assets

visions in 1985 was to cover higher chargeoffs of bad loans. Only a tenth of 1985 loss provisions represented net additions to banks' loan loss reserves.[6]

Provisions by size and type

Although 1985 loan loss provisions were high at all sizes and types of district banks, the trend was much less favorable at small and medium-size banks than at large banks (Chart 4). At small banks, provisions increased almost as much in 1985 as in 1984, reaching 1.25 percent of assets. And at medium-size banks, loss provisions rose even more in 1985 than 1984, surpassing 1.1 percent of assets. Although large banks also had high loss provisions in 1985, their provisions were slightly lower than in 1984 and significantly lower than in the two smaller size groups.

As in 1984, loss provisions rose much more at agricultural banks than at nonagricultural banks of similar size. In 1985, provisions of small agricultural banks increased about 40 basis points, almost as much as in 1984. At small nonagricultural banks, provisions rose a little more than in 1984 but significantly less than at small agricultural banks. As a result, the gap in the loan loss provisions of the two types of banks widened further. Within the medium-size group, the story was much the same, with loss provisions increasing sharply at both agricultural banks and nonagricultural banks but especially at agricultural banks.

[6] When banks write off bad loans, they charge their loan loss reserves, not their earnings. Writeoffs affect earnings only to the extent that banks provide enough funds for their reserves to make up for the chargeoffs.

TABLE 5
Net chargeoffs by type of loan, Tenth District states

	Chargeoff Rate*		Percent of Total Loans,
	1984	1985	Dec. 1985
Real estate loans†	0.4	0.6	31
Credit card loans	1.3	1.8	3
Installment loans	0.6	0.9	16
Agricultural operating loans	2.2	4.2	10
Commercial and industrial and all other loans	1.7	2.1	40
Total loans	1.2	1.6	100

*Net chargeoffs as a percent of end-of-year loans.
†Includes farm real estate loans, which represent less than 2 percent of total loans.

Table 5 breaks down the net chargeoffs of district banks by major categories of loans. Given the sharp increase in loan losses at agricultural banks, it comes as no surprise that the biggest increase in chargeoffs in 1985 was for agricultural operating loans. In 1984, the chargeoff rate for agricultural operating loans was only moderately higher than the chargeoff rate for commercial and industrial loans. Last year, however, the chargeoff rate for agricultural operating loans rose to 4.2 percent, twice the rate for commercial and industrial loans. Although some observers have pointed to real estate loans as the next problem area for commercial banks, Table 5 reveals that average losses on real estate loans remain relatively small. Last year, the chargeoff rate on real estate loans was only 0.6 percent, lowest of the major loan categories.[7]

Nonperforming loans

Future loan losses are closely related to the current level of nonperforming loans. These loans are loans that have not been written off but are 90 days or more overdue, nonaccruing, or renegotiated.[8] Some nonperforming loans may eventually be repaid in full, and others may be partly salvaged. Nevertheless, banks that have high levels of nonperforming loans today are likely to have high rates of loan losses in the future.

Table 6 shows that the percent of nonperforming loans increased sharply in 1985. In the district as a whole, nonperforming loans jumped from 3.3 percent of loans at the end of 1984 to 3.9 percent at the end of 1985. This increase occurred

[7] Data are unavailable on chargeoff rates for different types of real estate loans. However, banks specializing in farm real estate tended to have very high chargeoff rates on their real estate loans. Also, banks specializing in commercial real estate tended to have somewhat higher chargeoff rates on their real estate loans than banks specializing in residential real estate.

[8] Banks are allowed to count as income any interest that is due but not received, provided the interest and principal are less than 90 days overdue or the loan is well secured and in process of collection. Nonaccruing loans are overdue loans that do not meet either of these conditions. Renegotiated loans are troubled loans with terms that have been eased to facilitate repayment by the borrower.

despite the fact that district banks wrote off record amounts of their problem loans during the year.

As shown in Table 6, the increase in nonperforming loans was sharpest at the region's agricultural banks. By the end of the year, nonperforming loans had risen to 5.3 percent at small agricultural banks and 5.5 percent at medium-size agricultural banks. At all three sizes of nonagricultural banks, nonperforming loans were much lower—around 3½ percent. However, the percent of nonperforming loans was up sharply at the two smaller sizes of nonagricultural banks, eliminating the edge that these banks previously enjoyed over large banks.

For district banks in aggregate, delinquency rates were greatest for agricultural operating loans and lowest for consumer loans. At the end of 1985, 6.9 percent of agricultural operating loans were nonperforming, 4.8 percent of commercial and industrial loans, and 3.5 percent of real estate loans.[9] In the consumer category, which includes both credit card loans and installment loans, only 1.1 percent of loans were nonperforming. The lower delinquency rate on consumer loans results partly from the fact that they are not as well secured by collateral. The lack of collateral makes banks quicker to write these loans off when borrowers fall behind on their payments.

TABLE 6
Nonperforming loans by size and type of bank, Tenth District states*
(percent of total loans, end of year)

	1984	1985
All banks	3.3	3.9
Small banks	3.4	4.3
Agricultural	3.9	5.3
Nonagricultural	3.0	3.5
Medium banks	3.3	4.0
Agricultural	3.6	5.5
Nonagricultural	3.2	3.8
Large banks	3.3	3.4

*Nonperforming loans at banks in operation all of 1985.

Causes of loan losses

The main cause of increased loan losses at district banks has been the downturn in energy and agriculture, two sectors that are much more important in this region than in the nation as a whole. Falling prices have reduced the incomes of farm and energy borrowers and depressed collateral values. In addition, the recessions in energy and agriculture have had serious ripple effects in some communities, impairing bank loans to other borrowers.

Although adverse economic conditions are clearly the main cause of higher loan losses, wide variation in the severity of loan problems among district banks suggests that other factors may also have played a role. At the end of 1985, almost 5½ percent of total loans were nonperforming at the district's 1,300 agricultural banks. However, the proportion of nonperforming loans exceeded 5 percent at only 450 of these banks. Of the remaining banks, close to 400 had nonperforming loans between 2 and 5 percent and 450 had nonperforming loans less than 2 percent. Among nonagricultural banks, the variation in nonperforming loans was not quite as large, but still significant.

Some of these differences in delinquency rates can be explained by differences in local economic conditions. For example, some areas may have

[9] Data are unavailable on nonperforming loans for different types of real estate loans. However, a comparison of real estate delinquencies at banks with different lending specializations suggests that the delinquency rate on farm real estate loans was higher than that on any other type of bank loan. The delinquency rate on commercial real estate loans appears to have been slightly lower than that on commercial and industrial loans, while the delinquency rate on residential real estate loans appears to have been significantly lower.

TABLE 7
Variation in percent of nonperforming loans among small agricultural and nonagricultural banks, Tenth District states

Percent of Nonperforming Loans, 1985	Loan-Asset Ratio in 1981 (percent)	Return on Loans in 1981 (percent)
Small agricultural banks		
Greater than 5%	56.4	15.52
2 to 5%	52.9	15.24
Less than 2%	47.7	15.04
Small nonagricultural banks		
Greater than 5%	57.4	16.07
2 to 5%	54.3	15.66
Less than 2%	51.3	14.97

had worse crop conditions than others and some may have been more dependent on energy production. Even within the same metropolitan area or county, however, banks differ greatly in the severity of their loan problems. At the end of 1985, the average deviation of each bank's delinquency rate from the delinquency rate for its area was over three percentage points for agricultural banks and almost 2½ percentage points for nonagricultural banks.

There are several reasons why such large differences in delinquency rates could exist even within the same local market. Some of the variation may be random. When a bank makes a loan, it cannot be sure how creditworthy the borrower is or how favorably events will turn out for him. The banks with the highest delinquency rates may have accidentally ended up with the worst mix of borrowers. Another explanation for high delinquency rates is poor credit management. Banks with the most loan problems may have unwittingly made loans to borrowers that other banks rejected as bad credit risks. Finally, banks with the greatest loan problems may have consciously made risky loans, hoping to earn higher profits in return for greater risk.

It is impossible to say with certainty which of these factors accounts for the unusually severe loan problems at some district banks. However, Table 7 provides evidence that risk-taking may have played a role. This table divides small agricultural and nonagricultural banks into three categories according to their delinquency rates at the end of last year. For each category, the table also shows the average loan-asset ratio and the average rate of return on loans in 1981, the year profitability peaked.

Among both agricultural and nonagricultural banks, Table 7 reveals a clear tendency for banks with the highest delinquency rates to have invested more of their assets in loans and less of their assets in government securities and money market instruments. The willingness to take risk by investing heavily in loans does not prove that these banks were also willing to make riskier loans. However, the high loan-asset ratios of these banks

is at least consistent with the notion that they had a greater propensity to take risk.[10]

The risk-taking hypothesis receives further support from the relationship in Table 7 between delinquency rates and average rates of return on loans. The only incentive for a bank to make riskier loans is to earn a higher rate of return. Thus, if banks with high delinquency rates deliberately made riskier loans, they should have earned higher rates of return at the height of the boom, before their loans went sour. As shown in Table 7, this relationship holds for both small agricultural banks and small nonagricultural banks, though more so for the latter.

Capital

A final dimension of performance is capital, the amount by which banks' assets exceed their liabilities. The more capital a bank has, the more cushion it has against adverse shocks and the longer it can sustain losses without having to close. Like profitability, a bank's capital can be measured in various ways. The measure used in this article is primary capital, the sum of equity capital and loan loss reserves.

Despite sharply increased loan losses, district banks managed to maintain their capital-asset ratios last year. Primary capital edged upward from 8.2 percent of assets at the end of 1984 to 8.3 percent of assets at the end of 1985. Over the year, the ratio of equity capital to assets stayed the same and the ratio of loan loss reserves to assets increased. However, it was slow asset growth rather than strong equity growth that allowed banks' equity to keep pace with their assets. District banks not only earned lower profits in 1985 but also paid out a higher fraction of those profits in the form of dividends to shareholders. As a result, earnings retention contributed only three-fifths as much to equity growth in 1985 as in 1984.

The stability in capital-asset ratios last year extended to all three size groups and to agricultural and nonagricultural banks within each size group. At the end of the year, primary capital represented 7.0 percent of assets at large banks, 8.4 percent at medium-size banks, and 9.5 percent at small banks. Despite the steeper decline in their earnings, small agricultural banks continued to have the highest capital-asset ratio of all, just over 10 percent.

The adequacy of capital must be judged relative to the potential for future losses. As suggested earlier, a useful indicator of banks' future loan losses is the level of their nonperforming loans. At the end of 1985, almost 2,500 of the region's 2,900 banks still had more than twice as much primary capital as nonperforming loans. However, 116 banks ended the year with less primary capital than nonperforming loans, up from 70 at the end of 1984. The plight of these 116 banks resulted from a combination of three factors—more of their loans were delinquent, more of their assets were invested in loans, and fewer of their assets were backed by capital.

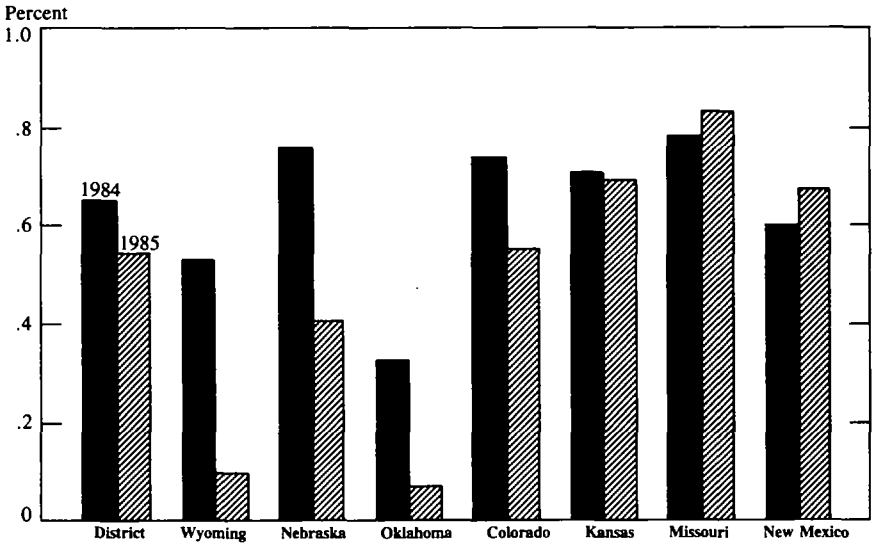
Despite sharply increased loan losses, district banks managed to maintain their capital-asset ratios last year.

Performance by state

The deterioration in banking performance in 1985 was not uniform across the seven states in the Tenth District. By most measures, performance declined more than average in Wyoming,

[10] The correlation among agricultural banks between delinquency rates and loan investment has also been noted by Emanuel Melichar. See "Agricultural Banks Under Stress," *Federal Reserve Bulletin*, Board of Governors of the Federal Reserve System, July 1986, pp. 445-446.

CHART 5
Return on assets at banks in Tenth District states*



*Profits divided by average assets.

Oklahoma, Nebraska, and Colorado but was relatively stable in Kansas, Missouri, and New Mexico. This section briefly analyzes the banking performance of each state in order of the decline in ROA last year.

Wyoming

Banking performance in Wyoming continued to be hurt in 1985 by the severe recession in energy and mining. Of Tenth District states, Wyoming had the largest decline in ROA in 1985, about 40 basis points (Chart 5). Five of the state's 120 banks failed during the year and only one new bank was started.[11] At other Wyoming banks, assets grew very slowly and loans declined (Chart 6).

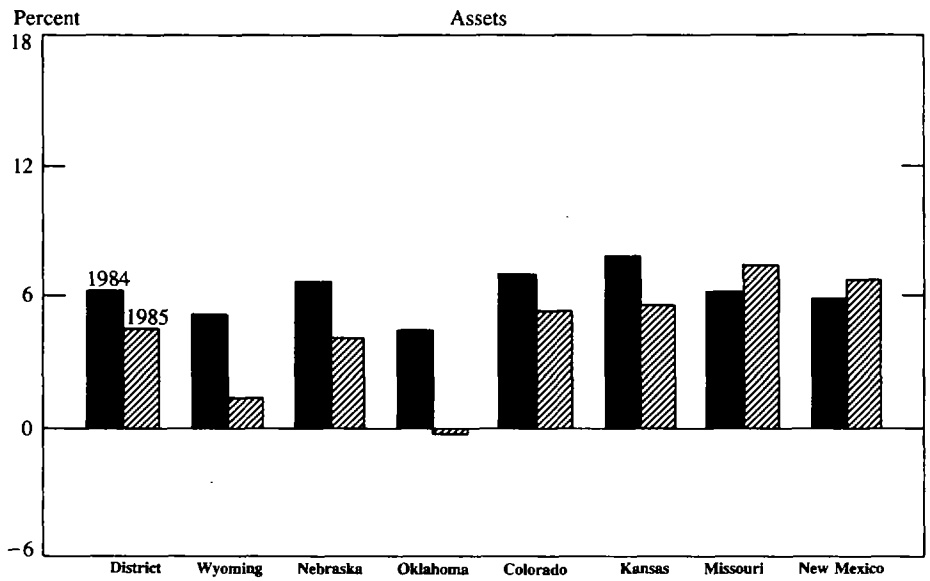
The decline in profitability in 1985 followed equally steep declines the previous two years. Although small banks earned about the same ROA in Wyoming as in the rest of the district, large and medium-size banks suffered net losses as a group. As a result, the average ROA for the state was only 0.1 percent in 1985, well below the district average.

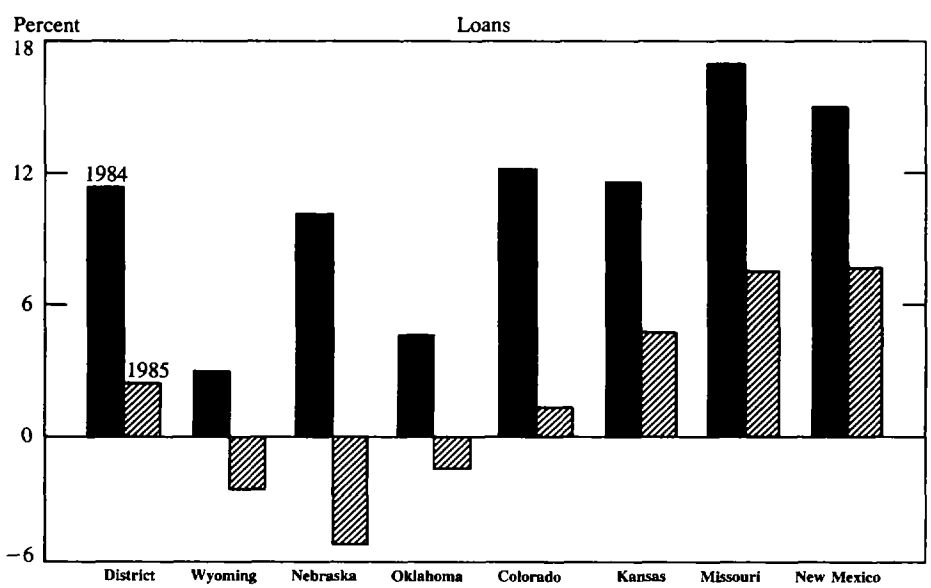
Most of the decline in profitability in 1985 was due to sharp increases in loan loss provisions. Provisions increased from 1.0 percent of assets in 1984 to 1.6 percent of assets in 1985, with all of the increase occurring at the state's large and medium-size banks. Also contributing to the decline in ROA was a significant increase in the net noninterest expense ratio. Banks' overhead costs responded sluggishly to the sharp slowdown

[11] Throughout this section, the term "new banks" refers only to banks established *de novo* and not to banks formed to take over the deposits of failed banks.

CHART 6

Growth in bank assets and loans in Tenth District states





in their asset growth, boosting the state's net expense ratio by 20 basis points.

At the end of 1985, 7.4 percent of loans at Wyoming banks were nonperforming. This delinquency rate was the highest in the district, reflecting slower than average repayment of real estate loans and commercial and industrial loans.

Nebraska

Because Nebraska has the largest proportion of agricultural banks in the district, its banking performance has been the most affected by the slump in agriculture. In 1985, ROA fell 35 basis points in Nebraska, the second largest decline in the district (Chart 5). Thirteen of the state's 470 banks failed during the year, and only three new banks were established. At other Nebraska banks, assets grew only slightly less than in the district as a whole, but loans fell sharply (Chart 6).

Last year's decline in profitability left ROA at 0.4 percent, higher than in Wyoming but lower than in the district as a whole. Besides accounting for a higher proportion of total assets, agricultural banks in Nebraska suffered a larger drop in ROA than agricultural banks in other states. Nebraska's large banks also suffered a steep decline in ROA in 1985. Despite the decline, though, these banks were still able to earn half a percent on their assets last year, close to the district average.

The decline in overall profitability in 1985 was due mainly to a sharp increase in loan loss provisions. Loss provisions increased from 1.1 percent of assets in 1984 to 1.6 percent in 1985. At agricultural banks, the increase was even greater, with loss provisions approaching 2 percent of assets. Meanwhile, rapid growth in nonsalary overhead costs boosted the state's net noninterest expense ratio by 15 basis points, reinforcing the increase in loss provisions.

At the end of 1985, nonperforming loans were 4.1 percent of total loans at Nebraska banks. This delinquency rate slightly exceeded the district average, but only because agricultural loans are three times more important in Nebraska than in the district as a whole.

Oklahoma

The adverse impact of the energy recession was no less evident in the performance of Oklahoma banks than Wyoming banks. Of Tenth District states, Oklahoma had the third largest decline in ROA in 1985, about 25 basis points (Chart 5). Thirteen of Oklahoma's 540 banks failed in 1985, but despite the recent decline in profitability, seven new banks were started. At other Oklahoma banks, total assets failed to grow over the year and loans fell (Chart 6).

The steep decline in profitability last year was the fourth in a row for Oklahoma banks, reducing the state's average ROA to only 0.1 percent. As in the case of Wyoming, small banks did not do any worse in Oklahoma than in the district as a whole. But large banks as a group incurred heavy losses, and medium-size banks earned only a small profit.

The decline in ROA last year was due to an increase of almost 30 basis points in the net noninterest expense ratio. Although loan loss provisions remained very high at 1.3 percent of assets, this level was only slightly higher than the year before, with decreases at large banks offsetting increases at small and medium-size banks. The unusually large increase in the net noninterest expense ratio was concentrated at the state's large and medium-size banks, reflecting slower growth in assets and faster growth in nonsalary overhead costs.

Oklahoma had the second highest delinquency rate in the district at the end of 1985, with 5.9 percent of loans nonperforming. The delinquency rate on agricultural loans was somewhat lower than in the rest of the district. However, delinquency rates on real estate loans and commer-

cial and industrial loans were both significantly higher.

Colorado

Banking performance in Colorado was close to the district average in 1985. ROA fell 20 basis points, a bit more than in the district as a whole (Chart 5). However, the total number of banks continued to increase, as six of the state's 450 banks failed but 12 new banks were started. Also, even though assets and loans increased less in 1985 than in 1984, growth remained significantly higher than in the more depressed states of Wyoming, Nebraska, and Oklahoma (Chart 6).

The continued decline in profitability in 1985 left the state's average ROA at just under 0.6 percent, the same as in the district as a whole. Medium-size banks experienced about the same decline in ROA as elsewhere, and the ROA of the state's large banks remained virtually unchanged. In contrast to other states, though, profitability fell very sharply at small nonagricultural banks. The average ROA of these banks fell 40 basis points last year, almost four times as much as in the district as a whole.

Performance declined more than average in Wyoming, Oklahoma, Nebraska, and Colorado

Higher loan loss provisions and lower net interest margins accounted for all of the 1985 decline in ROA at Colorado banks. The increase in loss provisions was widespread, reaching 1.1 percent of assets for the state as a whole. The decline in NIM was confined to the state's small and medium-size banks. Because these banks rely more heavily on demand deposits and passbook savings accounts than their counterparts in other states, their interest expense responded less to the decline in market rates.

Colorado had the third highest delinquency rate in the district, with 4.5 percent of loans nonperforming at the end of 1985. Delinquency rates were about average on real estate loans and consumer loans, but significantly higher than average on both agricultural loans and commercial and industrial loans.

Kansas

Although Kansas has the second highest proportion of agricultural banks in the district, its overall banking performance has been significantly better than average. ROA declined only slightly in 1985. During the year, 13 of the state's 630 banks failed and only six new banks were started. However, at remaining banks, assets and loans both grew at a respectable pace.

The stability of profits in 1985 was in sharp contrast to 1984, when ROA fell sharply. Throughout the downturn in bank profitability, though, ROA has remained higher in Kansas than the district as a whole, equaling 0.7 percent last year. As in other states, agricultural banks suffered a sharp drop in ROA in 1985. However, this decline was offset by strong performance at all three sizes of nonagricultural banks, where ROA either stabilized or increased slightly. The state's large banks continued to do especially well, earning an average ROA of almost 1.3 percent in 1985.

The relative stability in ROA last year was due to better than average behavior of net noninterest expense. Changes in loan loss provisions and NIM were about equal to the average for the district. But in contrast to the district as a whole, the state's net noninterest expense ratio failed to increase.

At the end of 1985, 3.2 percent of loans in Kansas were nonperforming. This rate was somewhat

lower than the average for the district, with below-average delinquency rates on real estate and commercial and industrial loans making up for the higher percentage of agricultural loans in the state.

Missouri

Because Missouri has a more diversified economy than other district states, its banking performance has held up much better during the recent downturn. ROA edged upward in 1985, making up for the small decline of the previous year. Nine of the state's 710 banks failed, and seven new banks were started. Forty Missouri banks were merged out of existence in 1985, an unusually large number. However, most of these banks merely combined with other banks in the same holding company. Assets grew even faster in 1985 than 1984, giving Missouri banks the highest rate of growth in the district. Loans also grew rapidly, but at less than half the 1984 rate.

Although Missouri had the lowest ROA of the district states at the peak in 1981, it had the highest ROA last year—0.8 percent. As in Kansas, the continued decline in profitability at Missouri agricultural banks was offset by the strong performance of the state's nonagricultural banks. Last year, ROA fell 30 basis points at agricultural banks but increased ten basis points at nonagricultural banks, with all three size groups sharing in the gain.

There were several reasons why Missouri banks escaped the districtwide decline in profitability in 1985. Loss provisions increased less in Missouri than in the district as a whole because of stable provisions at the state's nonagricultural banks. Also, NIM increased a strong 20 basis points in Missouri due to a relatively small decline in the average rate of return on loans at nonagricultural banks and a relatively large portfolio shift by these banks from securities to higher yielding loans. Finally, in contrast to the district as a whole, the net noninterest expense ratio of Missouri banks remained unchanged.

Missouri had the lowest proportion of nonperforming loans in the district at the end of 1985, 2.4 percent. Although the delinquency rate on agricultural loans was higher than elsewhere, delinquency rates on all other types of loans were significantly lower.

New Mexico

Like Kansas and Missouri, New Mexico enjoyed better than average banking performance. Average profitability was slightly higher in 1985 than in 1984. Three of the state's 100 banks failed during the year. But two new banks were started, and assets and loans at other banks grew considerably faster than in the district as a whole.

The improvement in profitability in 1985 left New Mexico's ROA at 0.7 percent, the same as in Kansas but less than in Missouri. The improvement in ROA was due entirely to the failure in 1985 of a large bank that incurred heavy losses the previous year. If this bank had not been present in 1984, ROA would have declined about the same in New Mexico last year as in the rest of the district. ROA remained well over 1 percent at the state's large banks. At medium-size banks, however, increases in loan provisions and net noninterest expense caused ROA to fall 40 basis points, twice as much as in the district as a whole.

At the end of 1985, 3.0 percent of loans were nonperforming at New Mexico banks. This figure was below the district average, reflecting lower delinquency rates on all types of loans.

Conclusions

The overall performance of district banks continued to decline in 1985. For the first time in many years, the number of banks closed in Tenth District states exceeded the number opened. Meanwhile, at other banks, the growth in assets

and loans slowed sharply. The average profitability of district banks also fell in 1985, leaving return on assets and return on equity at less than half their 1981 peaks. Net interest margins stabilized during the year, aided by a decline in market interest rates and a reduced outflow of funds from low-cost demand deposits and passbook savings accounts. Loan losses continued to mount, however, as the region's all-important energy and agricultural sectors remained weak. District banks did manage to maintain their capital-asset ratios during the year, but only because of slower asset growth and increases in loan loss reserves.

The decline in overall banking performance in 1985 was far from uniform. Growth and profitability declined much more than average at banks of medium size, banks specializing in agricultural lending, and banks located in energy-producing states. Performance also differed greatly among banks of the same size and type and among banks operating in the same market area. Some of these differences in performance may have been random. However, there is evidence that at least some of the variation in performance was due to conscious risk-taking in the past by the banks that now face the greatest problems.

As for 1986, there is both good news and bad news. The good news is that market interest rates have continued to decline during the year. Because deposit deregulation has made most district banks liability sensitive, the decline in rates should reduce interest expense more than interest income, boosting net interest margins. The bad news is that oil prices have also fallen sharply since the beginning of the year. The latest drop in oil prices may benefit banks in some parts of the district by stimulating household spending and reducing production costs of local farmers and manufacturers. However, the decline will obviously hurt many banks in energy-producing states, both by increasing their direct losses on energy loans and by depressing local economies. Difficult challenges lie ahead. But by looking to their capital and exercising prudent management, the vast majority of district banks should be able to weather their problems.