

Banking Market Structure In Tenth District States, 1973-83

By Charles S. Morris

The structure of local banking markets has been of interest to many people over the years. There are various reasons for this interest. Some people are concerned about banking market structure because they think high concentration reduces the competitiveness of the banking industry. Others are interested in local banking market structure because they believe it provides information about bank cost conditions. And some people look at banking market structure because they feel that high concentration in banking markets is undesirable for noneconomic reasons.

The structure of local banking markets has traditionally been measured under the assumption that only commercial banks provide banking services.¹ However, in recent years, changes in federal laws have allowed savings

and loan associations to provide many services traditionally furnished by commercial banks, such as checkable deposits and commercial loans. As a result, savings and loan associations have become major competitors to commercial banks. For this reason, measures of market structure that do not take account of savings and loan associations could be misleading.

This article examines the trends in local banking market structure in states of the Tenth Federal Reserve District between 1973 and 1983 under alternative assumptions about the role of savings and loan associations. The article shows that under the assumption that commercial banks are the only suppliers of banking services, the concentration of local banking markets was high in 1973 and 1983 but it declined between those years. Under the assumption that savings and loan associations also supply banking services, local market concentration was significantly lower in 1973 and 1983 and the percentage decline in concentration between those years was about the same. Although these results can be inter-

¹ For example, see Samuel H. Talley, "Recent Trends in Local Banking Market Structure," Staff Economic Studies No. 89, Board of Governors of the Federal Reserve System, 1977.

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TABLE 1
Growth of commercial banking industry
Tenth District states

Area*	Number of Banking Organizations†			Number of Banks			Number of Offices			Total Deposits (millions of dollars)		
	1973	1983	Percent change	1973	1983	Percent change	1973	1983	Percent change	1973	1983	Percent change
Tenth District states	2,380	2,414	1.4	2,571	2,928	13.9	3,160	4,280	35.4	41,821	107,107	156.1
Colorado	196	242	23.5	251	389	55.0	289	497	72.0	6,089	15,742	158.5
Kansas	607	611	0.1	610	622	2.0	689	830	20.5	6,515	16,434	152.2
Missouri	587	461	-21.5	680	732	3.7	847	1,242	46.6	13,473	29,648	120.1
Nebraska	437	453	3.7	443	463	4.5	493	587	19.1	4,714	11,133	136.2
New Mexico	55	62	12.8	72	92	27.8	237	359	51.5	2,317	6,795	193.2
Oklahoma	442	518	17.2	444	519	16.9	532	650	22.2	7,580	23,745	213.3
Wyoming	58	69	19.0	71	111	56.3	73	115	57.5	1,132	3,610	218.8

Note: Institutions with commercial bank charters but no deposits are excluded from all calculations.

*Multibank holding companies were allowed in Colorado, Missouri, New Mexico, and Wyoming.

†Banking organizations are defined as bank holding companies and non-affiliated banks. The sum of the number of banking organizations in the individual states is greater than the total for the district states as a whole because there is a bank holding company that controls banks in Colorado, New Mexico, and Wyoming.

Source: Federal Deposit Insurance Corporation Summary of Deposits report

preted in different ways, they suggest that there is no trend toward banking markets in Tenth District states becoming dominated by only a few banks.

The first section of the article provides background information on the growth of the banking and savings and loan industries in district states. Next, there is a discussion of why banking market structure is examined and how market structure is typically measured. Finally, the trends in local market structure in Tenth District states are presented and compared under alternative assumptions about the role of savings and loan associations.

Growth of the banking and savings and loan industries

The commercial banking industry in Tenth District states grew between 1973 and 1983,

but growth was stronger by some measures than others. Between those years, the number of banking organizations—bank holding companies that control one or more banks and banks that are not affiliated with a holding company—increased a little more than 1 percent (Table 1). There was rapid growth in the number of banking organizations in Colorado, New Mexico, Oklahoma, and Wyoming, and almost no growth in Kansas and Nebraska. The number of banking organizations in Missouri actually declined by more than 20 percent. The number of commercial banks in district states increased 14 percent, which is significantly more than the increase in the number of banking organizations. There was rapid growth in Colorado, Wyoming, and New Mexico, and almost no growth in Kansas, Missouri, and Nebraska. The number of bank offices in district states also increased,

TABLE 2
Growth of savings and loan industry
Tenth District states

Area	Number of Savings and Loans			Number of Offices			Total Deposits* (millions of dollars)		
	1973	1983	Percent change	1973	1983	Percent change	1973	1983	Percent change
Tenth District states	385	308	-20.0	901	1,794	99.1	15,989	48,466	203.1
Colorado	46	39	-15.2	181	366	102.2	2,958	9,995	237.9
Kansas	87	66	-24.1	168	281	67.3	2,628	7,799	196.8
Missouri	115	85	-26.1	294	484	64.6	5,780	15,351	165.6
Nebraska	38	25	-34.2	81	243	200.0	1,636	4,751	190.3
New Mexico	33	26	-21.2	61	109	78.7	709	2,842	300.9
Oklahoma	52	54	3.8	98	255	160.2	2,009	6,673	232.2
Wyoming	14	13	-7.1	18	56	211.1	268	1,055	292.9

*Since 1977, noninterest-bearing NOW and demand deposits at savings and loan associations are reported for the entire association, rather than for each office. For these years, noninterest-bearing NOW and demand deposits were allocated to each office according to its share of interest-bearing deposits.

Source: Federal Home Loan Bank Board office deposit report

advancing 35 percent between 1973 and 1983. As with the number of banks, the most rapid growth was in Colorado, Wyoming, and New Mexico. In Missouri, where the number of banking organizations declined and the number of banks grew very little, the number of offices grew almost 50 percent. Finally, commercial bank deposits in Tenth District states grew a rapid 156 percent.² The increase was especially large in Wyoming, Oklahoma, and New Mexico. Even in Missouri, where growth was slowest, deposits increased 120 percent.

The savings and loan industry also grew, but not in all categories.³ The number of savings and loan associations (S&L's) in district

states declined 20 percent between 1973 and 1983 (Table 2). The largest percentage decrease was in Nebraska, where there were a third fewer S&L's in 1983 than in 1973. However, the number of S&L offices nearly doubled between 1973 and 1983. The number of offices grew rapidly in all seven states, with the number in Nebraska tripling and the number in Wyoming more than tripling. Moreover, total deposits at S&L's in district states more than tripled between 1973 and 1983, increasing almost 50 percentage points more than total deposits at commercial banks.

Why measure market structure?

Market structure, often measured as the extent to which an industry's economic resources are concentrated in the hands of a few, is measured for various reasons. Some measure market structure for socio-political

² Inflation, measured by the growth of the gross national product deflator, was 104 percent between 1973 and 1983. Therefore, commercial bank deposits also grew in real terms in every area.

³ The number of savings and loan association holding companies is not reported because the data were not available.

reasons. Others measure market structure for economic reasons. Still others measure structure for legal reasons.

Americans have long had a deep-rooted fear of concentration of economic resources in the hands of a few for socio-political reasons. Their fear is that those who control large amounts of economic resources would be able to exert undue political influence. If the concentration of an industry were declining, those concerned with market structure for socio-political reasons would conclude that the industry would have less influence over political decisions.

Some economists think market structure directly affects firm behavior and performance. Economists who believe these structural theories of competition argue that firms in highly concentrated industries refrain from competing among themselves. Banks, for example, might refrain from raising deposit rates or from lowering loan rates. The lack of such competition, it is believed, results in a deterioration of industry performance as firms restrict the industry's output to less than competitive levels and provide lower quality services in an effort to raise prices and profits. For example, the volume of deposits and loans might be held below competitive levels. If the concentration of an industry were declining, these economists would conclude that the industry was becoming more competitive.⁴

Other economists think market structure provides information only about firm cost con-

ditions. These economists argue that in the long run, competition among firms will cause the number of firms and the size distribution of firms in an industry to adjust until industry output is supplied in the least costly way. For example, if firms can lower their unit costs by investing in additional capacity and producing larger levels of output, then concentration will rise over time as some of the firms expand and others leave the industry. On the other hand, if firms can lower their unit costs by reducing capacity and producing lower levels of output, then concentration will fall over time as existing firms contract and new firms enter the industry.⁵ In the long run, therefore, high concentration only implies that the least costly way to meet market demand is through a few large firms. If the concentration of an industry were declining, these economists would conclude that the larger firms in the industry had been producing above the level of output at which long-run unit costs were lowest, and that the competitive process was responsible for these firms reducing their levels of production.

Market structure is also measured for legal reasons. The Department of Justice and the courts are responsible for enforcing antitrust laws that make anticompetitive behavior illegal, and many regulatory agencies are legally responsible for promoting competitive conditions in the industries that they regulate. In banking, for example, the Board of Governors of the Federal Reserve System is required by law to consider the competitive effects of actions proposed by bank holding companies. For these responsibilities to be carried out, the competitive conditions in an industry have to

⁴ Many economists argue, however, that market structure does not affect the extent to which firms compete among themselves because there are strong profit incentives to compete even when there are only two firms in the market. As a result, even highly concentrated industries will produce the competitive level of output, charge the competitive price, and earn the competitive rate of return. For a more detailed discussion of this argument, see Charles S. Morris, "The Competitive Effects of Interstate Banking," *Economic Review*, Federal Reserve Bank of Kansas City, November 1984, pp. 3-16.

⁵ Most industries are composed of firms of many sizes. If the largest firms can reduce their unit costs by reducing their capacity and the smallest firms can reduce their unit costs by increasing their capacity, concentration will decline over time as the smaller firms expand and the larger firms contract.

be measured. Although economists disagree about the usefulness of concentration as a measure of competitive conditions in a market, the courts and most regulators—including banking regulators—use concentration as a measure of competitive conditions. Market structure, therefore, plays a central role in public policy decisions regarding the competitiveness of banking markets.

Measurement of market structure

The purpose of any measure of market structure is to describe the characteristics of a market's structure in a single number. The main characteristics are the number of firms in a market and the distribution of their size. Two of the most common measures of market structure are the concentration ratio and the Herfindahl Index. Although these two measures are easily defined, their application to banking markets is more difficult.

Measures of market structure

The concentration ratio measures the size of the largest firms in an industry relative to the total size of the industry. Firm size is often measured by output, although other measures, such as total assets, employees, sales, or value added, can be used. A four-firm concentration ratio, for example, is the percentage of market output produced by the four largest firms. The concentration ratio has some drawbacks, however. Although it provides information about the distribution of firm size, that information is only about the size of the largest firms in the market relative to the other firms. The size distribution of the other firms is ignored. Also, the number of firms included in the largest group is arbitrary.

The Herfindahl Index equals the sum of the squared market shares of industry output of

every firm in the market, where market share is measured in percent. For example, in a four-firm industry where the firms have market shares of 40, 30, 20, and 10 percent, the Herfindahl Index would be $40^2 + 30^2 + 20^2 + 10^2 = 3,000$. The minimum value of the index for a given number of firms—say, n —is $10,000/n$, and it is reached when all the firms in a market are the same size. The maximum value of the index is 10,000, and it is reached when there is only one firm in the market ($100^2 = 10,000$). As a market becomes less concentrated due to the number of firms rising or the size distribution of firms becoming more equal, the Herfindahl Index will fall. The Herfindahl Index is the measure of market structure used here because, unlike the concentration ratio, it accounts for the size of every firm.

Application to banking

The concepts of commercial bank output, commercial banking firm, and commercial banking market must be defined empirically before the measures of market structure can be calculated. While all are fairly straightforward theoretical concepts, their empirical counterparts can be difficult to define.

Commercial bank output is difficult to define empirically because commercial banks are multiproduct firms. Their main products, however, are loan-making and deposit-taking services. Because deposit data are available by individual office and loan data are not, total deposits are used in this article to measure commercial bank output.

The commercial banking firm can be defined as either the individual bank or the bank holding company. To facilitate the comparability of this study with others, the bank holding company is the definition of a commercial bank used here.⁶

A banking market can be defined empirically by identifying the product, the suppliers, and the consumers. The product, commercial banking services, has already been defined empirically as total deposits. But not all depository institutions are suppliers of commercial banking services because commercial banks also supply many services other than deposit-taking services. Savings and loan associations, however, have become a major alternative supplier of many commercial banking services ever since the passage of the Depository Institutions Deregulation and Monetary Control Act of 1980 and the Garn-St Germain Depository Institutions Act of 1982.⁷ Nevertheless, not all analysts agree that commercial banks and S&L's compete in the same markets. Therefore, two sets of market structure statistics have been calculated—one for the assumption that commercial banks are the

⁶ This implicitly assumes that banks affiliated with the same holding company do not compete with each other. There are problems, however, with defining the firm as the bank holding company. First, it is just as likely that the banks affiliated with the same holding company do compete with each other. For example, this could occur if the market for managers evaluates the abilities of bank managers by the profitability of the bank that they manage instead of by the profitability of the bank holding company. Second, data on savings and loan association holding companies were not available. As a result, the measures of market structure were calculated using banking organization data for banks and individual S&L data for the S&L's. The resulting bias depends on the extent to which savings and loan association holding companies control more than one S&L in the same local market.

⁷ The Depository Institutions Deregulation and Monetary Control Act of 1980 allowed federally chartered S&L's to offer Negotiable Order of Withdrawal (NOW) accounts to individuals and nonprofit organizations, to make a limited amount of consumer loans, to hold limited amounts of commercial paper and corporate debt securities, to offer credit card services, and to exercise trust and fiduciary powers. The Garn-St Germain Depository Institutions Act of 1982 allowed federally chartered S&L's to offer demand deposit and money market deposit accounts, to provide overdraft loans, to make, purchase, or participate in limited amounts of secured or unsecured commercial loans, and to provide leasing services.

only suppliers of commercial banking services and one for the assumption that both commercial banks and S&L's supply commercial banking services.

With the firms that supply banking services identified, the empirical definition of a banking market is completed by identifying the group of consumers serviced by a particular group of firms. Although some consumers purchase banking services from institutions located outside of their local areas, it is generally agreed that most consumers purchase banking services from local institutions. Local banking markets are usually defined, therefore, as Metropolitan Statistical Areas (MSA's) and non-MSA counties.⁸ Although these geographic areas may actually be too large to make up a single market, data for smaller geographic areas are not readily available. For that reason, all the commercial banks and S&L's in the same MSA or non-MSA county is the empirical definition of a commercial banking market used here.⁹

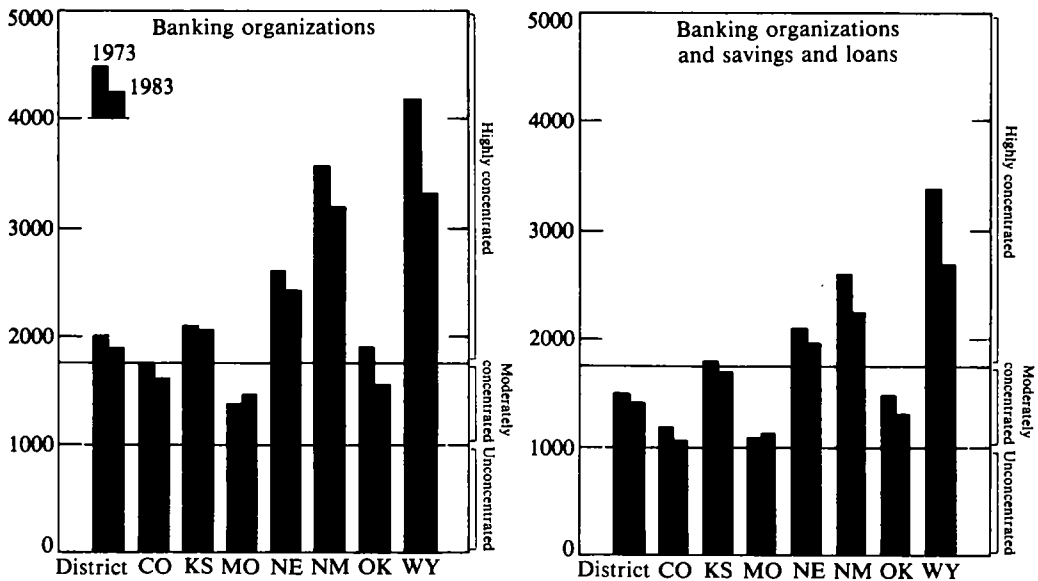
Trends in banking market structure

This section presents two sets of measures of the structure of local banking markets in Tenth District states and compares them. One set uses only commercial bank deposit data, while the other uses commercial bank and

⁸ As of June 30, 1983, Standard Metropolitan Statistical Areas (SMSA's) were reclassified as either Metropolitan Statistical Areas (MSA's) or Consolidated Metropolitan Statistical Areas (CMSA's). CMSA's were divided into two or more Primary Metropolitan Statistical Areas. For purposes of calculating measures of local market structure, the MSA category includes SMSA's before June 30, 1983, and SMSA's that were reclassified as CMSA's after June 29, 1983.

⁹ For a more complete discussion and review of the literature on the empirical definition of commercial banking markets, see John D. Wolken, "Geographic Market Delineation: A Review of the Literature," Staff Studies No. 140, Board of Governors of the Federal Reserve System, October 1984.

CHART 1
Aggregate Herfindahl Indexes: by state



Note: Degree of concentration based on June 1982 Department of Justice merger guidelines

S&L deposit data.¹⁰ Both sets of measures show that, on average, local market concentration declined between 1973 and 1983. The main differences in the two sets of measures are that when S&L data are included, the average level of local market concentration is significantly lower in every state in 1973 and 1983.

The Herfindahl Index was calculated for every MSA and non-MSA county in the seven district states.¹¹ Local market Herfindahl

¹⁰ The commercial bank deposit data are of June 30. They are from the Federal Deposit Insurance Corporation Summary of Deposits report for each year. The S&L data are of September 30. They are from the Federal Home Loan Bank Board office deposit report for each year. Although data from the same date of each year would be preferable, such data are not available. The resulting errors in the reported statistics are very likely insignificant.

¹¹ Although MSA's that cross state lines are excluded from most studies of local market structure, they are included here because they make up a large component of the banking industry in Tenth

Indexes were then aggregated for the district states as a whole, for every state in the district, for the MSA markets, and for the non-

District states. In 1983, five of the 25 MSA's in Tenth District states crossed state lines. Of these five, two—St. Louis and Kansas City—were the first and third largest MSA's in terms of deposits. Together, the five MSA's accounted for 37 (39) percent of commercial bank (commercial bank and savings and loan association) total deposits in the region's MSA's, and for 21 (23) percent of commercial bank (commercial bank and savings and loan association) total deposits in the seven-state region. The measures of local market structure for the five MSA's that cross state lines were calculated from deposits for the entire MSA. The weighted averages, however, were calculated only from deposits at banks in Tenth District states.

Some researchers would argue that including the five MSA's results in measures of local market structure that are lower than they should be because banks could not open branches and bank holding companies generally could not control banks across state lines. However, banks and bank holding companies could compete with each other across state lines in other ways. For example, banks could offer lower loan rates and higher deposit rates or open loan production offices across state lines. In addition, bank holding companies could compete through nonbank subsidiaries.

MSA county markets.¹² The aggregate Herfindahl Indexes are weighted averages of the local market values, where the weights are the share of district state deposits in local markets. These results are reported in the Appendix.¹³

The June 1982 Department of Justice merger guidelines are used to help interpret the results. According to these guidelines, markets with a Herfindahl Index of less than 1,000 are unconcentrated, markets with a Herfindahl Index between 1,000 and 1,800 are moderately concentrated, and markets with a Herfindahl Index of more than 1,800 are highly concentrated.

Commercial banks

If commercial banks are assumed to be the only suppliers of banking services, local banking markets in Tenth District states in 1973 were, on average, highly concentrated according to the June 1982 Department of Justice merger guidelines. These results are shown in the left panel of Chart 1. On average, local markets were moderately concentrated in Missouri, where the weighted average Herfindahl Index was 1,426, and highly concentrated in the other six states. The most concentrated state was Wyoming, where the weighted average Herfindahl Index was 4,208.

¹² Although most market structure studies aggregate measures of local market structure only across states with similar branching laws, no such distinction is made here. For the period under study, New Mexico allowed limited branching and the six other states were unit banking states. Because New Mexico's share of deposits in Tenth District states was small, New Mexico MSA's and non-MSA counties were included in the aggregate measures of local market structure. Excluding New Mexico markets from the aggregate measures does not significantly change any of the qualitative results.

¹³ Aggregated four-firm concentration ratios are also reported in the Appendix for readers more comfortable with that measure of market structure.

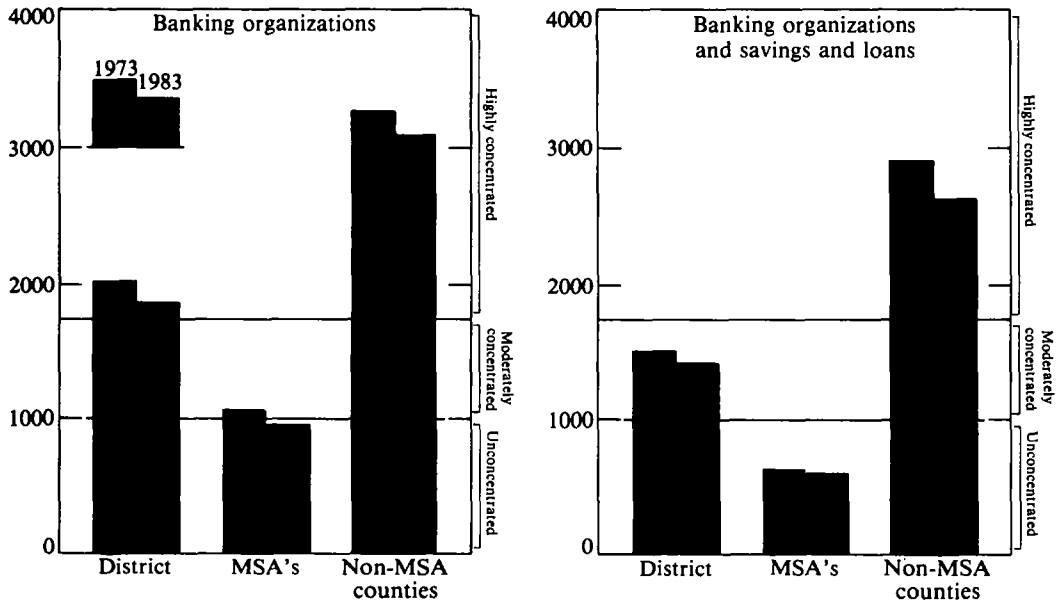
The left panel of Chart 1 also shows a downward trend in local market concentration between 1973 and 1983.¹⁴ The weighted average Herfindahl Index for the district states as a whole (hereafter the aggregate Herfindahl Index) fell just over 5 percent, from 2,016 in 1973 to 1,911 in 1983. However, local markets in the district states were still highly concentrated on average. The weighted average Herfindahl Index for the individual states (hereafter the state aggregate Herfindahl Index) fell in every state except Missouri. The percentage declines in Colorado, Nebraska, New Mexico, Oklahoma, and Wyoming were greater than the aggregate decline. On the other hand, the percentage decline in Kansas was less than the aggregate decline, and Missouri's aggregate Herfindahl Index actually rose a little more than 5 percent.¹⁵ The declines in Colorado's and Oklahoma's aggregate Herfindahl Indexes moved those states from the highly concentrated to the moderately concentrated category. Despite the increase in concentration in Missouri, local markets in that state were still the least concentrated in 1983. And even though the largest absolute decline in average concentration was in Wyoming, local markets there were still the most concentrated in 1983.

The left panel of Chart 2 shows the MSA and non-MSA county aggregate Herfindahl Indexes, again using only bank data. The difference in concentration between the two types of markets is striking. On average, the MSA's were moderately concentrated in 1973 and unconcentrated in 1983. In contrast, the non-

¹⁴ To help put this result in proper perspective, it should be noted that most studies find a downward trend in concentration in most local banking markets across the country over the past several years.

¹⁵ This is primarily a result of increases in the Herfindahl Indexes for the St. Joseph, Mo., and St. Louis, Mo.-Ill., MSA's.

CHART 2
Aggregate Herfindahl Indexes: by type of local market



Note: Degree of concentration based on June 1982 Department of Justice merger guidelines

MSA counties were highly concentrated in both years. Also, between 1973 and 1983, the percentage decline in the MSA aggregate Herfindahl Index was greater than the decline in the non-MSA county aggregate Herfindahl Index.¹⁶

The large difference between the MSA and non-MSA county aggregate Herfindahl Indexes explains much of the differences among the state aggregate Herfindahl Indexes for a given year. States with the highest (lowest) ratio of MSA deposits to total state deposits were also the states with the lowest

(highest) state aggregate Herfindahl Indexes. Colorado, Missouri, and Oklahoma had the highest ratios of MSA deposits to state deposits in 1973 and 1983 and the lowest state aggregate Herfindahl Indexes. Wyoming had the lowest ratio of MSA deposits to state deposits and the highest state aggregate Herfindahl Index.¹⁷

The left panel of Chart 2 obscures the fact that there are large differences in concentration even among the MSA's (Table 3). The most concentrated MSA in 1973 was Lincoln, Nebraska, which had a Herfindahl Index of 3,237. The least concentrated MSA was St. Louis, Missouri-Illinois, which had a Herfindahl Index of 470. Seven MSA's were highly concentrated in 1973, nine were moderately

¹⁶ The percentage declines in both the MSA and non-MSA county aggregate Herfindahl Indexes were larger than the decline in the aggregate Herfindahl Index because the share of deposits in non-MSA counties increased between 1973 and 1983. Because the non-MSA counties were much more concentrated than the MSA's, the shift in deposit shares tended to retard the decline in the aggregate Herfindahl Index.

¹⁷ There were no MSA's in Wyoming in 1973.

TABLE 3
MSA Herfindahl Indexes
Tenth District states

MSA*	Commercial Banking Organizations†			Commercial Banking Organizations and Savings and Loan Associations		
	1973	1983	Percent change	1973	1983	Percent change
Albuquerque, N.M.	2,868	2,530	-11.8	1,940	1,518	-21.8
Casper, Wyo.	—	3,091	—	—	2,079	—
Colorado Springs, Colo.	1,533	1,167	-23.9	936	616	-34.2
Columbia, Mo.	2,341	2,038	-12.9	1,525	1,211	-20.6
Denver, Colo.	1,045	977	-6.5	591	574	-2.8
Enid, Okla.	—	2,495	—	—	1,545	—
Fort Collins-Loveland, Colo.	—	1,934	—	—	973	—
Fort Smith, Ark.-Okla.	1,367	1,015	-25.8	1,004	758	-24.5
Greeley, Colo.	—	1,863	—	—	1,225	—
Joplin, Mo.	—	1,320	—	—	1,046	—
Kansas City, Mo.-Kans.	509	386	-24.1	317	246	-22.4
Las Cruces, N.M.	—	3,465	—	—	1,847	—
Lawrence, Kans.	—	2,139	—	—	1,533	—
Lawton, Okla.	2,096	1,271	-39.4	1,614	1,432	-11.3
Lincoln, Neb.	3,237	2,449	-24.3	1,924	1,386	-28.0
Oklahoma City, Okla.	1,046	781	-25.3	738	575	-22.1
Omaha, Neb.-Iowa	1,479	997	-32.6	975	770	-21.0
Pueblo, Colo.	2,303	1,988	-13.7	1,245	1,017	-18.3
St. Joseph, Mo.	2,642	2,700	2.2	1,577	1,717	8.9
St. Louis, Mo.-Ill.	470	513	9.1	266	347	30.5
Sioux City, Iowa-Neb.	1,726	1,474	-14.6	1,226	1,051	-14.2
Springfield, Mo.	1,989	1,548	-22.2	971	927	-4.5
Topeka, Kans.	1,774	1,533	-13.6	1,627	1,529	-6.0
Tulsa, Okla.	1,265	793	-37.3	939	625	-33.5
Wichita, Kans.	1,192	1,121	-6.0	767	754	-1.6

Note: The Herfindahl Index is a weighted average of local market values, where the weights are market deposit shares. Metropolitan Statistical Areas (MSA's) that cross state lines are weighted by market deposit shares in Tenth District states. There are no data entries for some MSA's in 1973 because those areas were not then classified as MSA's.

*Multibank holding companies were allowed in Colorado, Missouri, New Mexico, and Wyoming.

†Bank holding companies and non-affiliated banks

concentrated, and two were unconcentrated. The most concentrated MSA in 1983 was Las Cruces, New Mexico, which had a Herfindahl Index of 3,465. The least concentrated MSA was Kansas City, Missouri-Kansas, which had a Herfindahl Index of 386. Eleven MSA's were highly concentrated in 1983, eight were moderately concentrated, and six were unconcentrated. Between 1973 and 1983, concentra-

tion declined at least 6 percent in 16 of the 18 MSA's that existed both years. There were increases in concentration only in St. Joseph, Missouri, and St. Louis, Missouri-Illinois. And of the 16 MSA's where concentration declined, two dropped from the highly concentrated to the moderately concentrated category, and four dropped from the moderately concentrated to the unconcentrated category.

Commercial banks and S&L's

If commercial banks and S&L's are both assumed to supply banking services, local banking markets in Tenth District states in 1973 were, on average, only moderately concentrated according to the June 1982 Department of Justice merger guidelines. These results are shown in the right panel of Chart 1.¹⁸ On average, local markets were moderately concentrated in Colorado, Missouri, and Oklahoma, and highly concentrated in Kansas, Nebraska, New Mexico, and Wyoming. Again, Missouri was the least concentrated state, with a weighted average Herfindahl Index of 1,121. The most concentrated state was Wyoming, with a weighted average Herfindahl Index of 3,422.

The right panel of Chart 1 also shows a downward trend in local market concentration between 1973 and 1983 when S&L's are included in the measures of market structure. The aggregate Herfindahl Index for the district states fell almost 6 percent, dropping from 1,565 in 1973 to 1,474 in 1983. The aggregate Herfindahl Indexes declined for every state except Missouri. Except for Kansas and Missouri, the percentage decline for every state was greater than the aggregate decline. The degree of concentration changed only in Kansas, which dropped from the highly concentrated to the moderately concentrated category. By 1983, Colorado had replaced Missouri as the state with the lowest aggregate Herfindahl Index. As when S&L's were not included, Wyoming was still the state with the highest aggregate Herfindahl Index.

¹⁸ Since 1977, noninterest-bearing NOW and demand deposits at savings and loan associations have been reported for the entire association, rather than for each office. For these years, noninterest-bearing NOW and demand deposits were allocated to each office according to its share of interest-bearing deposits.

The right panel of Chart 2 shows the MSA and non-MSA county aggregate Herfindahl Indexes with S&L's included. As when commercial banks were assumed to be the only suppliers of banking services, the difference between the MSA and non-MSA county aggregate Herfindahl Indexes in 1973 and 1983 is large. And again, the difference accounts for much of the differences among the state aggregate Herfindahl Indexes for a given year. On the other hand, when S&L's are included, the percentage decline in the MSA aggregate Herfindahl Index is less than the decline in the non-MSA county aggregate Herfindahl Index.

Table 3 shows that when S&L's are included there are still large differences in concentration among the MSA's. In 1973, the concentration of MSA's ranged from 1,940 in Albuquerque, New Mexico, to 266 in St. Louis, Missouri-Illinois. Two MSA's were highly concentrated in 1973, seven were moderately concentrated, and nine were unconcentrated. In 1983, the concentration of MSA's ranged from 2,079 in Casper, Wyoming, to 246 in Kansas City, Missouri-Kansas. Two MSA's were highly concentrated in 1983, 12 were moderately concentrated, and 11 were unconcentrated. Again, concentration increased only in St. Joseph, Missouri, and St. Louis, Missouri-Illinois.

Comparison of results

The aggregate Herfindahl Indexes are substantially lower in every area when S&L's are assumed to be suppliers of banking services. Under this assumption, as Charts 1 and 2 show, the aggregate Herfindahl Indexes are at least 12 percent lower in every area in 1973. The aggregate Herfindahl Index for the seven states falls just over 22 percent, moving the district states as a whole from the highly con-

TABLE 4
Percent change in aggregate Herfindahl Indexes
for alternative assumptions about suppliers of banking services
Tenth District states

Area†	Suppliers of Banking Services*		
	Banking organizations in 1973 compared with 1983	Banking organizations and savings and loan associations in 1973 compared with 1983	Banking organizations in 1973 compared with banking organizations and savings and loan associations in 1983
Tenth District states	-5.2	-5.8	-26.9
Colorado	-7.4	-9.9	-39.3
Kansas	-2.5	-4.7	-17.3
Missouri	5.3	3.1	-19.0
Nebraska	-6.7	-6.5	-25.6
New Mexico	-11.2	-13.2	-36.7
Oklahoma	-16.7	-14.1	-31.0
Wyoming	-19.6	-20.7	-35.5
MSA's	-9.1	-6.5	-40.3
Non-MSA counties	-6.1	-7.5	-18.6

Note: The Herfindahl Index is a weighted average of local market values, where the weights are market deposit shares. Metropolitan Statistical Areas (MSA's) that cross state lines are weighted by market deposit shares in Tenth District states.

*Banking organizations are defined as bank holding companies and non-affiliated banks.

†Multibank holding companies were allowed in Colorado, Missouri, New Mexico, and Wyoming.

centrated to the moderately concentrated category. Local banking markets in Colorado and Oklahoma drop from the highly concentrated to the moderately concentrated category. The MSA's drop from the moderately concentrated to the unconcentrated category. The largest percentage decline is 36 percent in the MSA's.

Charts 1 and 2 also show that the aggregate Herfindahl Indexes are substantially lower in 1983 when S&L's are assumed to be suppliers of banking services. In every area, the addition of S&L's reduces the area's aggregate Herfindahl Index at least 13 percent. The aggregate Herfindahl Index for 1983 falls almost 23 percent. Local banking markets in Kansas drop from the highly concentrated to

the moderately concentrated category. The largest percentage decline resulting from the addition of S&L's is 34 percent in the MSA's.

Although the addition of S&L's as suppliers of banking services reduces the level of the aggregate Herfindahl Index for every area in 1973 and 1983, it has little effect on the percentage declines in the aggregate Herfindahl Indexes for most areas between those years (Table 4). The first column of Table 4 shows the percentage declines in the aggregate Herfindahl Indexes when commercial banks are assumed to be the only suppliers of banking services. The second column shows the percentage declines when S&L's are included as suppliers of banking services. For the district

states as a whole and for every state except Nebraska and Oklahoma, the addition of S&L's results in a slightly larger percentage decline or a slightly lower percentage increase in the area's aggregate Herfindahl Index. The percentage decline in the non-MSA county aggregate Herfindahl Index is also greater when S&L's are included, but the percentage decline in the MSA aggregate Herfindahl Index is less.

Some analysts might argue that because the major expansion of S&L powers was after 1980, S&L's should be included in measures of market structure in 1983 but not in 1973. As the third column of Table 4 shows, including S&L's in measures of market structure in 1983 but not in 1973 results in a steep downward trend in local market concentration between those years. The aggregate Herfindahl Index declines 27 percent, with percentage declines in Colorado, New Mexico, Oklahoma, and Wyoming greater than the aggregate decline for the seven states. The decline in the index for MSA's is also greater than the aggregate decline for the seven states.

Conclusion

The structure of local banking markets has changed significantly in the states of the Tenth

District since 1973. Measures of market structure based on the traditional assumption that commercial banks are the only suppliers of banking services show that local banking markets in Tenth District states were, on average, highly concentrated in 1973. Between 1973 and 1983, there was a downward trend in concentration. When savings and loan associations are included in measures of banking market structure, the average level of local banking market concentration is significantly lower in 1973 and 1983, and the downward trend in local market concentration between those years is about the same.

Because measures of market structure mean different things to different people, the results reported in this article can be interpreted more than one way. Those concerned about market structure for noneconomic reasons will view the downward trend in banking market concentration as favorable. Others will conclude that banking markets in Tenth District states were more competitive in 1983 than in 1973. Still others will conclude that the long-run unit costs of banks begin rising at a moderate level of output. As a result, they would argue, the competitive process can be depended on to prevent banking markets in Tenth District states from becoming dominated by a few banks.

Appendix

Market structure statistics

Area*	Variable†	Commercial Banking Organizations‡		Commercial Banking Organizations and Savings and Loan Associations	
		1973	1983	1973	1983
Tenth District states	HI	2,016.4	1,910.9	1,564.9	1,474.3
	C4	69.8	68.5	60.9	59.4
Colorado	HI	1,805.7	1,672.5	1,217.6	1,097.0
	C4	69.1	67.7	53.7	49.1
Kansas	HI	2,118.8	2,066.6	1,837.6	1,751.8
	C4	73.1	72.0	67.6	65.0
Missouri	HI	1,425.6	1,501.7	1,120.6	1,155.8
	C4	56.8	58.4	46.9	49.3
Nebraska	HI	2,660.6	2,483.2	2,117.7	1,980.7
	C4	82.8	79.7	77.2	73.9
New Mexico	HI	3,618.1	3,213.2	2,636.0	2,289.2
	C4	97.2	93.0	90.1	83.7
Oklahoma	HI	1,929.9	1,606.7	1,549.4	1,331.1
	C4	70.2	63.0	64.7	58.6
Wyoming	HI	4,208.5	3,385.3	3,422.0	2,713.9
	C4	98.6	95.1	96.0	89.4
MSA's	HI	1,091.9	992.4	697.4	651.9
	C4	54.6	51.8	42.8	40.5
Non-MSA counties	HI	3,312.4	3,111.4	2,915.3	2,695.7
	C4	91.2	90.3	89.3	87.5

*Multibank holding companies were allowed in Colorado, Missouri, New Mexico, and Wyoming.

†The Herfindahl Index (HI) and Four-Firm Concentration Ratio (C4) are weighted averages of local market values, where the weights are market deposit shares. Metropolitan Statistical Areas (MSA's) that cross state lines are weighted by market deposit shares in Tenth District states.

‡Bank holding companies and non-affiliated banks