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In Tenth District States, 1973-83

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Rising Household Debt in Perspective 3

By Douglas K. Pearce

Household debt has increased rapidly during the current business upturn, raising concerns that households may have become overextended. The increase can be explained, however, by historical patterns combined with regulatory changes. The overall financial condition of households should not be an impediment to future consumer spending, assuming there is no general economic downturn.

Banking Market Structure In Tenth District States, 1973-83 18

By Charles S. Morris

The concentration of local banking markets in Tenth District states declined between 1973 and 1983. Moreover, while concentration was relatively high both years when commercial banks were assumed to be the only suppliers of banking services, it was significantly lower when savings and loan associations were also assumed to provide banking services.

Rising Household Debt in Perspective

By Douglas K. Pearce

The total debt of U.S. households has increased at a rapid pace during the current economic upturn. With household debt now exceeding two trillion dollars, the increase has rekindled concerns that households have become financially overextended.¹ If households start finding their debt burdensome, credit-financed consumer spending on housing and durable goods could weaken substantially.² In addition, a fragile financial position

¹ "Will the Weight of Debt Crush Consumer Spending?" *Business Week*, March 18, 1985, p. 20, and Randall Smith, "Soaring Levels of Debt, National and Private, Cause Rising Worries," *Wall Street Journal*, May 9, 1985, pp. 1, 20.

² For empirical evidence that higher debt and lower liquidity depress consumer durable purchases, see Frederic S. Mishkin, "Illiquidity, Consumer Durable Expenditure, and Monetary Policy," *American Economic Review*, September 1976, pp. 642-654.

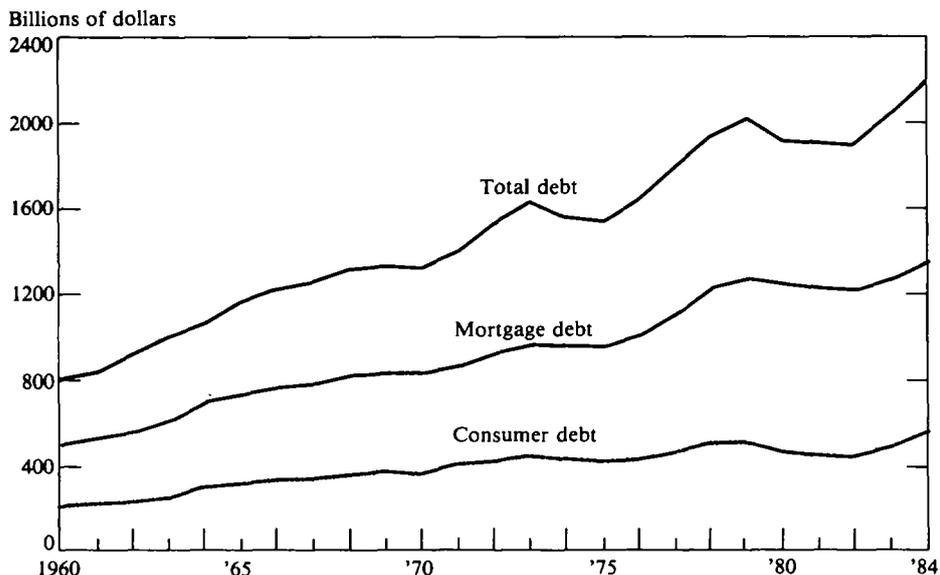
Douglas K. Pearce is an associate professor at North Carolina State University and a visiting scholar at the Federal Reserve Bank of Kansas City. John E. Young, a research associate at the bank, assisted in preparation of the article. The views expressed in this article are those of the author and do not necessarily reflect the views of the Federal Reserve Bank of Kansas City or the Federal Reserve System.

for households could worsen the effects of any economic downturn.

This article argues that the recent surge in household borrowing can be explained by historical patterns combined with regulatory changes and that households are not yet seriously overextended. The increase in debt reflects the net impact of several factors affecting the demand for and supply of household credit. The upswing in economic activity has been the main cause of higher demand for credit, while financial deregulation and innovation have increased the supply of credit available to households. Although some indicators of the debt burden faced by households are at historic highs, balance sheet data and other evidence suggest that households are not in a weakened financial position.

The first section of the article gives a brief overview of the patterns in household borrowing over the past 25 years. The second section looks at the factors underlying changes in the demand for credit by households and the supply of credit to households. The third section

CHART 1
Household debt
 (in 1984 dollars)



Source: Flow of Funds, Federal Reserve Board

presents evidence on whether households have become financially overextended.

Overview of household debt

Types of household debt

Household debt is generally divided into mortgage debt and consumer debt. Mortgage debt originates when households borrow to purchase houses or use their current house as collateral for a loan. Traditionally, mortgage loans have been fixed-interest rate, 30-year loans with constant monthly payments over the life of the loan. Adjustable-rate mortgages have become increasingly important, however, and made up more than 60 percent of new mortgage loans in 1984. These loans have monthly payments that vary periodically with market interest rates. The largest source of

mortgage credit to households are the "thrift" institutions, savings and loan associations and mutual savings banks.

Consumer debt is composed of installment and noninstallment loans. Consumer installment debt consists of all household loans with an option to repay in two or more payments. Included in installment debt are the outstanding balances on bank credit cards and revolving charge accounts, even though a substantial part of these balances are paid in full when households receive their monthly statements. Much consumer installment debt arises from households' purchases of automobiles and consumer durables. Although variable-rate installment loans have appeared, fixed-rate loans still dominate. Noninstallment loans include 30-day credit extended through charge accounts and travel and entertainment credit cards as well as single-payment personal

loans. The main sources of consumer credit are commercial banks, finance companies, and credit unions.

Trends in household debt

The nominal value of household debt has grown at an average rate of 10 percent a year since 1960. Adjusted for inflation, however, the annual growth rate has been about 4.3 percent. Chart 1 plots the real (inflation-adjusted) levels of total household debt and its two components—mortgage and consumer debt.³ As the chart indicates, mortgage debt has remained at about two-thirds of total household debt, rising at an annual rate of 4.2 percent since 1960. Real debt per household, though, has increased at a lower rate, 2.3 percent a year, since the number of households has also increased.

The strong procyclic pattern of household borrowing is illustrated by Chart 2 which plots quarterly changes in inflation-adjusted mortgage and consumer debt. Except for the short recovery period between the 1980 and 1982 recessions, growth in both types of debt has accelerated at the start of each business expansion and slowed around the start of each recession (the shaded areas).⁴

The increase in mortgage debt in the first two years of the current expansion, 1983-84, was roughly the same as the increase in the first two years of the 1976-80 expansion.

³ The household sector balance sheets in the Flow of Funds Accounts include the assets and liabilities of personal trusts and nonprofit organizations and, therefore, overstate somewhat the assets and liabilities of households.

⁴ Consumer credit fell more sharply than usual in the 1980 recession due to the credit restraint program of the Carter administration. In March 1980, the Federal Reserve, under provisions of the 1969 Credit Control Act, required lenders to maintain non-interest bearing deposits equal to 15 percent of any increase in their outstanding credit card balances and other unsecured consumer loans. A voluntary credit constraint program was also put into place.

Growth in real mortgage debt was 6.1 percent a year in 1983-84, compared with 7.6 percent in 1976-77. Growth in consumer debt has been unusually rapid over the last two years, however, increasing 11.8 percent a year compared with 7.2 percent in 1976-77.

Although there has been little change in the relative proportions of mortgage and consumer debt, the composition of consumer debt has changed. Installment debt rose from about two-thirds of total consumer debt in 1960 to about four-fifths in 1984. Changes also occurred within the consumer installment debt segment. While automobile loans accounted for more than 40 percent of installment credit in the early 1960s, they accounted for only 33 percent by the mid-1970s. Later, automobile loans rose to about 38 percent of installment credit, and have remained there for the last few years. Revolving credit, including the outstanding balances on bank credit cards and revolving charge accounts at gasoline companies and retailers, increased to over 20 percent of all installment debt by 1984.⁵

Factors affecting household debt

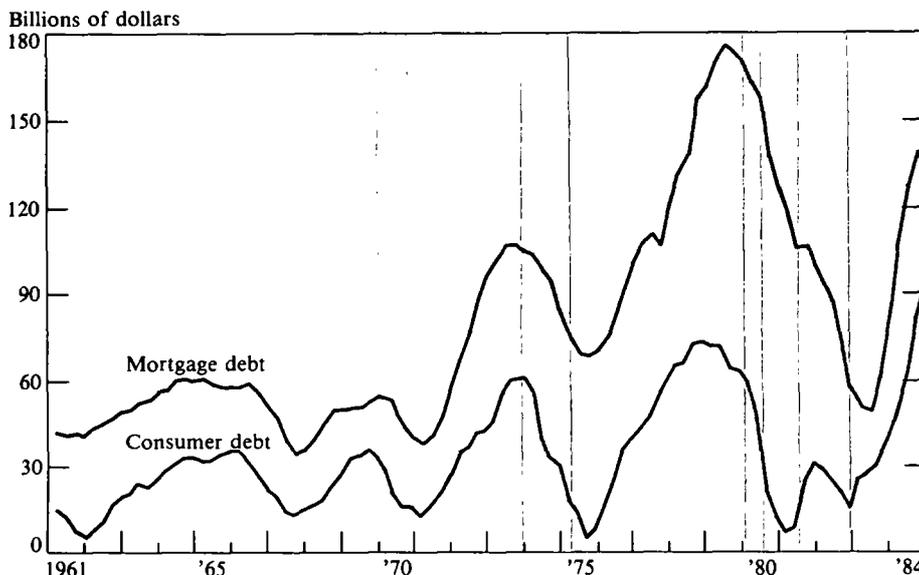
Several factors influence the demand for and supply of household credit. This section discusses the effects on credit demand of demographic changes, the cost of credit, and income expectations, and the effects on credit supply of restrictions on interest rates and changes in the source of credit.

Demand factors

It is generally thought that households try to maintain a fairly smooth pattern of consumption over their lifetimes. This view, called the

⁵ Some of the increase was caused by a change in the classification of revolving credit in 1977 to include retailers' revolving charge accounts.

CHART 2
Changes in household debt
 (over previous four quarters in 1984 dollars)



Source: Flow of Funds, Federal Reserve Board

life-cycle theory of consumption, asserts that households base their spending on the expected flow of income over their lifetimes rather than just their current income.⁶ Credit markets can help households in achieving their consumption objectives in several ways. First, households may want to consume more than their current income by going into debt in anticipation of higher future income. Second, households often prefer to purchase houses and such durable goods as automobiles and household appliances that provide a flow of services over several years rather than rent or buy the services directly. Access to credit

markets allows households to buy such physical assets and start receiving the flow of services without having to reduce spending initially to save for an outright purchase. Third, households can offset some of the spending effects of unexpected declines in income by borrowing. According to the life-cycle theory, a household's borrowing needs decline as the household ages. For that reason, demographic changes should be an important determinant of aggregate credit demand.

Other factors besides life-cycle motives affect the demand for credit by households. Fluctuations in the cost of credit are likely to influence household borrowing, particularly as many credit-related purchases can be postponed until credit terms are more favorable. And as future incomes are uncertain, households may alter their income expectations when general business conditions change.

⁶ See Franco Modigliani and Richard Brumberg, "Utility Analysis and the Consumption Function," in *Post-Keynesian Economics*, ed. by Kenneth K. Kurihara, Rutgers University Press, New Brunswick, N.J., 1954, and Albert Ando and Franco Modigliani, "The 'Life Cycle' Hypothesis of Savings: Aggregate Implications and Tests," *American Economic Review*, March 1963, pp. 55-84.

TABLE 1
Ratios of debt to income and assets
by age of family head, 1983

<u>Age of Family Head</u>	<u>Total Debt to Family Income</u>	<u>Total Debt to Total Financial Assets</u>
Under 25	38.7	198
25-34	70.0	208
35-44	96.1	165
45-54	58.5	72
55-64	42.4	18
65-74	24.3	5
Over 74	4.8	1

Source: Data for these ratios are from Robert B. Avery, Gregory E. Ellichhausen, Thomas A. Gustafson, and Glenn B. Canner. *1983 Survey of Consumer Finances*. Board of Governors of the Federal Reserve System, Washington, D.C., forthcoming.

Demographic changes. According to the life-cycle model, borrowing behavior should vary systematically with the age of the household. Younger households should have more debt relative to their assets and income. This is because they expect their incomes to rise and are typically willing to borrow so they can consume some of their future income. Young households are also more likely to have to borrow to acquire houses and consumer durables. This is because they are at the stage where these purchases are most often made and they are not likely to have the financial assets for noncredit purchases. Thus, the life-cycle model predicts that demographic changes influence aggregate household borrowing. All else constant, a larger proportion of young households in the population should raise the average ratios of debt to assets and debt to income.

An extensive survey of household finances conducted in 1983 supports the life-cycle model prediction that younger households will have higher ratios of debt to income and debt to assets. Table 1 gives the average of the ratio of total debt to family income and total debt to total financial assets by age of the family head. These ratios are higher for younger

families and drop off considerably for older families.

Given these borrowing patterns, recent changes in the age structure of the population may have stimulated aggregate borrowing by households. The proportion of the population between 25 and 44—the age bracket with the heaviest borrowing—declined throughout the 1960s, reaching a low of 23.6 percent by 1970. Since then, however, the relative size of this group has grown continuously, reaching 30.4 percent in 1984. The increase in the size of this group should have stimulated credit demand by households over the past decade.

Meanwhile, however, there has also been a steady increase in the proportion of the population over 65. This group increased from 9.8 percent of the population in 1970 to 11.8 percent in 1984. Since older people are least likely to use credit, this trend should have partially offset the effect of the increase in the 25 to 44 age group. Moreover, since the distribution of assets is concentrated more in the older age brackets than the distribution of income, the demographic changes are more likely to have raised the aggregate debt-income ratio than the debt-assets ratio. Relative growth in both groups is expected to continue until

1990, when the size of the younger group should begin declining, depressing credit demand.⁷

Changes in the cost of credit. Changes in the cost of credit also affect household borrowing. While the nominal interest rate is often identified as the cost of credit, households presumably take into account expected inflation and the tax deductibility of nominal interest payments. For a household paying a 25 percent marginal tax rate and expecting an inflation rate of 5 percent, a nominal interest rate of 10 percent implies a real after-tax rate of 2.5 percent.⁸ High nominal interest rates, therefore, need not reduce household borrowing demand if they reflect high expected inflation.

While the real after-tax interest rate is the relevant cost of credit for consumer loans, the cost of credit for mortgage loans involves other considerations. To a considerable degree, the decision to buy a house is an investment decision. If housing prices are expected to rise faster than the general price level, the real cost of mortgage credit is further reduced. As researchers have noted, investment in housing has additional attractions because the implicit rent a homeowner "pays" himself is not taxed and effective capital gains taxes are low.⁹

⁷ See *Projections of the Population of the United States, By Types, Sex, and Race: 1983 to 2080*, U.S. Bureau of the Census, 1984.

⁸ Before taxes, the household pays a nominal rate of 10 percent. Since it can deduct all nominal interest payments in computing its taxable income, the after-tax nominal rate is 10 percent times (1-t) where t is the marginal tax rate. In the example, $t = 0.25$ so the after-tax nominal rate is 7.5 percent. After subtracting an expected inflation rate of 5 percent, the household is faced with a 2.5 percent real after-tax interest rate.

⁹ For a detailed discussion of the rate of return on housing, see Patric H. Hendershott and Sheng Cheng Hu, "Inflation and Extraordinary Returns on Owner-Occupied Housing: Some Implications for Capital Allocation and Productivity Growth," *Journal of Macroeconomics*, Spring 1981, pp. 177-203.

Chart 3 plots estimates of the cost of credit for mortgage loans and consumer loans. The cost of credit for mortgage loans (CCMORT) is approximated by the following equation:

$$\text{CCMORT} = (1-t)\text{MORTRATE} - \text{HPEXP},$$

where MORTRATE = interest rate on fixed-rate 30-year mortgage

t = average income tax rate

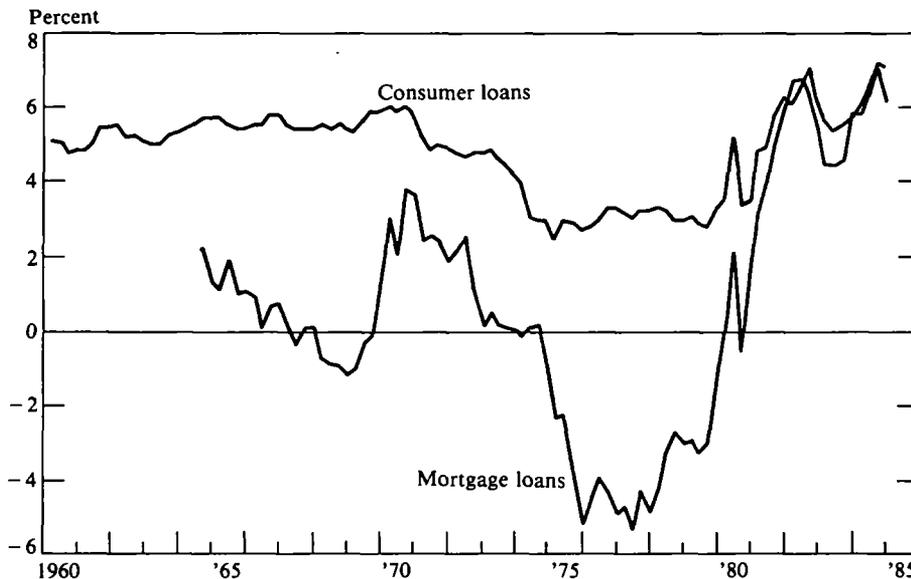
HPEXP = expected rate of increase in house prices, assumed to be a weighted average of past increases

As the chart indicates, this measure of the cost of mortgage credit fell from 1965 to 1969, rose sharply in 1970, and then declined again. From late 1974 to 1980, it was negative as housing prices increased rapidly relative to the nominal mortgage rate. This cost has risen substantially since 1980 and is now about 6 percent, higher than at any time in the 1960s or 1970s. The negative real after-tax cost of mortgage credit in the last half of the 1970s contributed to the large increase in mortgage debt undertaken by households in those years (Chart 2). While the steep increase in this cost since then is consistent with the much slower growth in mortgage debt from 1980 to 1982, the large increase in mortgage debt in 1983-84 occurred without any stimulus from declines in the cost of mortgage credit.

The real after-tax cost of consumer credit, also given in Chart 3, followed a roughly similar pattern to that for mortgage debt.¹⁰ It

¹⁰ The measure of the real after-tax cost of consumer credit follows the calculation described in footnote 7 where the nominal

CHART 3
Real after-tax costs of credit



Source: Data Resources Inc.

declined during most of the 1970s, dropping from the 5-6 percent range in 1970 to about 3 percent in 1975-79. As in the case of mortgage debt, the low cost of consumer credit was accompanied by substantial growth in consumer debt, which declined when the cost of borrowing rose in 1980. And again like mortgage debt, the large increase in consumer debt since 1982 took place despite historically high costs of consumer credit.¹¹

Changes in business conditions. The extent to which household demand for credit follows

rate equals the rate on new automobile loans, the tax rate is the average tax rate, and expected inflation is a weighted average of past inflation (from the Consumer Price Index) with weights declining exponentially.

¹¹ Concern has often been raised in the past about whether consumers understand the credit terms they face. For evidence that households have become more aware of finance rates since the Truth in Lending legislation of 1968, see Thomas A. Durkin, "Consumer Awareness of Installment Credit Terms: Evidence on the Impact of Truth in Lending After the Passage of Time," *Journal of Retail Banking*, March 1981, pp. 21-32.

the business cycle depends on the dominant reason for borrowing. Uncertainty about future incomes tends to make consumers reluctant to take on long-term financial commitments. They prefer to postpone purchases of houses and consumer durables until they are more confident. Household borrowing for houses and consumer durables, therefore, is likely to rise during business expansions when employment and income prospects are bright and fall during recessions. Surveys of consumers buying attitudes usually show evidence of this procyclic pattern. On the other hand, the demand for credit to offset unanticipated shortfalls in income should rise during economic downturns and fall in economic recoveries. The clearly procyclic patterns of both mortgage and consumer debt shown in Chart 1 support the importance of income uncertainty as a factor affecting household borrowing.

Over the longer run, the relative stability of the U.S. economy for most of the post-World

TABLE 2
Attitudes toward installment debt

Question: Is installment buying a good or bad idea?

<u>Response</u>	<u>Percentage Distribution</u>			
	<u>1959</u>	<u>1967</u>	<u>1977</u>	<u>1983</u>
Good	60	48	51	44
Good or bad depending	7	11	32	31
Bad	32	40	15	24
Not ascertained	1	1	3	1

Question: What is an appropriate reason for borrowing?

<u>Reason</u>	<u>Percentage Responding Yes</u>			
	<u>1959</u>	<u>1967</u>	<u>1977</u>	<u>1983</u>
Cover expenses due to illness	86	80	85	82
Finance educational expenses	70	77	80	79
Finance purchase of automobile	67	65	84	82
Finance purchase of furniture	44	52	60	49
Consolidate bills	44	43	47	49
Cover living expenses when income cut	26	40	49	47
Finance boats, snow mobiles, and other hobby items	—	—	23	19
Cover expenses of vacation	5	9	17	13
Finance purchase of fur coat or jewelry	2	4	6	5

Sources: Avery, Elliehausen, Gustafson, and Canner, *1983 Survey of Consumer Finances*, Tables 10-1 and 10-3; Durkin and Elliehausen, *1977 Consumer Credit Survey*, Table 10-3; George Katona, James N. Morgan, Jay Schmiedeskamp, and John A. Sonquist, *1967 Survey of Consumer Finances*, University of Michigan, 1968, Table 7-1.

War II period may have persuaded households that greater use of credit was not imprudent. People that experienced the Great Depression are often thought to be reluctant to incur sizable financial liabilities, while the post-World War II generations, accustomed to rather mild business cycles, may be more confident that credit is useful and manageable. Surveys of household attitudes toward credit use suggest, however, that these basic attitudes have not changed substantially. Table 2 reports the percentage distributions of responses to questions

about the appropriateness of installment buying. The upper part of the table indicates that fewer households in 1983 saw installment buying as unconditionally good than in earlier years. On the other hand, fewer households saw installment buying as unconditionally bad in 1983 than in 1959 or 1967, but more than in 1977.¹² The recent increase in consumer

¹² Variations in household attitudes over time may simply reflect the stage of the business cycle when the survey is conducted. Because none of the survey years were recession years, they should be roughly comparable.

debt does not appear to reflect changing attitudes toward what are suitable uses of installment credit. The lower part of Table 2 gives the percentage breakdown of the reasons for borrowing that households considered appropriate. While there was growing acceptance of different uses of credit from 1959 to 1977, this trend appeared to have reversed somewhat by 1983.¹³ The severity of the 1982 recession and the wide swings in interest rates in recent years may account for this apparent decline in the desirability of borrowing.

Supply factors

The financial intermediaries that supply most of the credit to households have undergone considerable change in recent years. The amount of credit supplied to households depends on the ability of these institutions to borrow and the structure of their assets. The impact of interest rate restrictions faced by these institutions is discussed below. Then the effects of financial deregulation and innovation are considered. Finally, the changes in the sources of household debt that have resulted from these factors are described.

Interest rate regulation. Many of the financial intermediaries that lend to households were restricted until recently in the rates they could offer when borrowing funds. Many states also had usury laws that limited the interest rates they could charge. When market interest rates rose enough to make these

restrictions effective, the supply of credit to households was reduced.

The thrift institutions were particularly susceptible to problems arising from increases in interest rates. Because the revenue from their mortgage holdings did not move with short-term interest rates, it was difficult for them to offer depositors competitive rates. When short-term rates moved above the legal ceilings on deposit rates, many depositors switched to primary securities or money market mutual funds. These factors resulted in slow growth in deposits at thrifts in 1973-74 and 1980-82 and, thus, slow growth in mortgage lending.¹⁴ To the extent that mortgage rates adjusted sluggishly and were not high enough to reduce demand in these periods—and from Chart 3 this appears to have been the case in 1973-74—mortgage credit was rationed through higher downpayment requirements and standards of credit-worthiness. Usury ceilings in many states also reduced the supply of mortgage credit when market rates rose above the ceilings.¹⁵

The supply of consumer credit was probably affected more by usury laws than deposit rate ceilings. When usury ceilings became effective, consumer lenders usually reacted by rationing credit through higher credit standards and diverting more of their funds into other assets. Another possible impact of effective usury ceilings is a change in the proportion of consumer credit originating from retailers. To

¹³ A breakdown of attitudes by age groups indicates that households headed by people under 35 had a more favorable view of credit but that more younger households (43 percent) had a favorable view in 1977 than in 1983 (36 percent). See Table 10-4 in Thomas Durkin and Gregory E. Elliehausen, *1977 Consumer Credit Survey*, Board of Governors of the Federal Reserve System, 1978, and Table 10-4 in Robert B. Avery, Gregory E. Elliehausen, Thomas A. Gustafson, and Glenn B. Canner, *1983 Survey of Consumer Finances*, Board of Governors of the Federal Reserve System, forthcoming.

¹⁴ See, for example, Andrew S. Carron, *The Plight of the Thrift Institutions*, The Brookings Institution, Washington, D.C., 1982.

¹⁵ Reasons for sluggish adjustment of lending rates are discussed in Ernst Baltensperger, "Credit Rationing: Issues and Questions," *Journal of Money, Credit, and Banking*, May 1978, pp. 170-183. For a review of empirical studies on the effects of usury ceilings on the supply of mortgage and consumer credit, see Donna Vanderbrink, "The Effects of Usury Ceilings," *Economic Perspectives*, Federal Reserve Bank of Chicago, Midyear 1982, pp. 44-55.

avoid usury restrictions, retailers can raise the prices of goods that are usually sold on credit. Domestic automakers operate "captive" finance companies that buyers can use in financing their automobile purchases. Through these companies auto dealers can make trade-offs between credit terms and auto prices.¹⁶

Financial deregulation and innovation. General deregulation of the financial sector and certain financial innovations have increased the supply of credit to households. The phasing out of deposit rate ceilings have combined with the acceptance of variable-rate home mortgages to allow thrifts to compete more effectively for funds. As a result, the annual growth rate in deposits at thrifts for 1983-84 was 12 percent, twice the rate for the 1979-82 period. Growth in the secondary market for mortgages also stimulated mortgage lending as thrifts originated loans and then sold them in this market. On the other hand, deregulation also allowed thrifts to hold more diversified portfolios of assets, including both consumer and commercial loans. Thus, while their deposits increased 12 percent a year for 1983-84, their mortgage loans increased only about 7 percent, even though usury ceilings on mortgages had been eliminated.¹⁷

The supply of consumer credit should have been raised by the elimination or substantial raising of usury ceilings on consumer loans in most states. As an indication of how these usury limits reduced the incentive to lend to consumers, Chart 4 plots the difference between the interest rate on auto loans and the prime rate. The difference became negative in

¹⁶ For evidence supporting this argument, see Richard L. Petersen, "Usury Laws and Consumer Credit: A Note," *Journal of Finance*, September 1983, pp. 1299-1304. Also see Donna Vanderbrink, "Did Usury Ceilings Hold Down Auto Sales," *Economic Perspectives*, Federal Reserve Bank of Chicago, September/October 1984, pp. 24-30.

¹⁷ The Depository Institutions Deregulation and Monetary Control Act of 1980 preempted state usury limits on mortgage loans.

1974 and in much of the 1980-82 period, as high market rates made the usury ceilings binding. As general interest rates declined and usury ceilings were relaxed, the difference returned to a more normal positive spread and consumer lending was encouraged.

The elimination of most usury and deposit ceilings has allowed lenders to adjust interest rates more readily as supply and demand conditions change and to rely less on the non-interest rate terms in loan contracts. As previous research has suggested, this should mean that increases in interest rates will have less effect on demand because they are less likely to be accompanied by increases in credit standards. This argument may partly explain the strong credit growth in 1983-84, despite the relatively high cost of credit.¹⁸

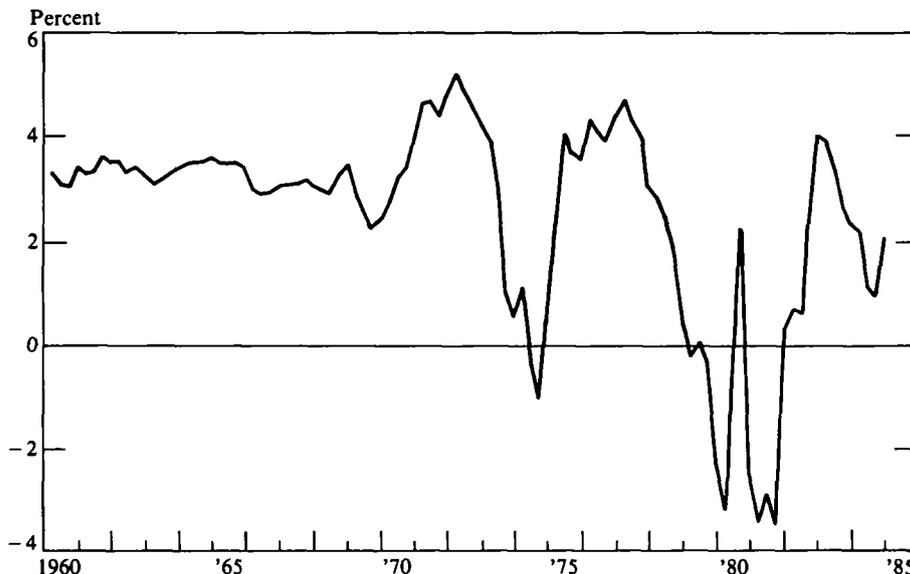
Changes in the sources of household credit

There have been substantial changes in the market shares of the suppliers of mortgage credit to households. The major change has been the declining importance of thrifts and the rising importance of federal government and related agencies. While thrifts had traditionally supplied about 60 percent of home mortgage credit, their share has fallen to about 40 percent. Federal government and related agencies now hold about 30 percent of all home mortgages, up from only 7 percent in 1970. This trend reflects the increased diversification in the asset portfolios of thrifts and the expansion of secondary mortgage markets and mortgage pools.¹⁹

¹⁸ For a detailed discussion of this argument and some supporting empirical evidence, see Raymond E. Lombra, "The Changing Role of Real and Nominal Interest Rates," *Economic Review*, Federal Reserve Bank of Kansas City, February 1984, pp. 12-25.

¹⁹ For a discussion of the rise in secondary mortgage markets and mortgage pools, see James E. McNulty, "Secondary Mort-

CHART 4
Difference between auto loan rate and prime rate



Source: Data Resources Inc.

The most important trend in the consumer credit market has been the decline in the market share of finance companies and the rise in the share of depository institutions. Finance companies held more than 34 percent of all consumer installment debt in 1960 but only 20 percent by 1978. Their market share rebounded to 23 percent by 1982, most likely reflecting gains made by captive automobile finance companies when usury laws discouraged other consumer lenders. The combined shares of commercial banks and credit unions grew from 50 percent in 1960 to 66 percent in 1978 and then fell back to about 61 percent in 1984.²⁰ While thrifts are now allowed to have

more of their assets in consumer loans, they remain relatively small lenders in this market. They held only 8 percent of all consumer loans in 1984.

Assessing the debt burden of households

Although the total debt of households has risen substantially in the past few years, the increase does not necessarily imply that households are overextended. In assessing the overall financial position of households, it is useful to examine the condition of household balance sheets, household debt to income ratios, and the extent of loan delinquencies.

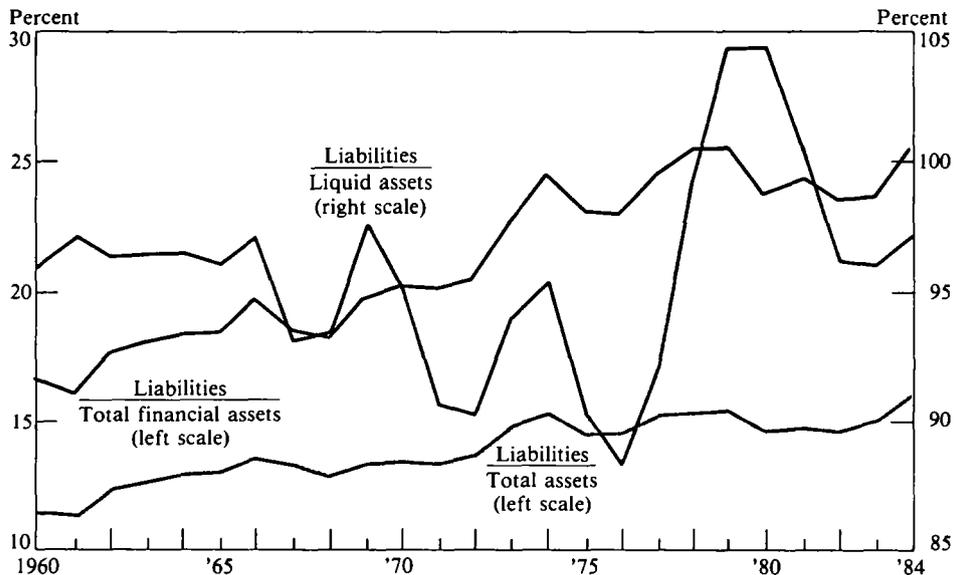
Balance sheet condition

Household balance sheets indicate that households have not increased their financial leverage substantially in recent years, nor have

gage Markets: Recent Trends and Research Results," *Federal Home Loan Bank Board Journal*, April 1984, pp. 10-14.

²⁰ Reasons for the declining market share of credit unions are examined in Douglas K. Pearce, "Recent Developments in the Credit Union Industry," *Economic Review*, Federal Reserve Bank of Kansas City, June 1984, pp. 3-19.

CHART 5
Household debt-asset ratios



Source: Flow of Funds, Federal Reserve Board

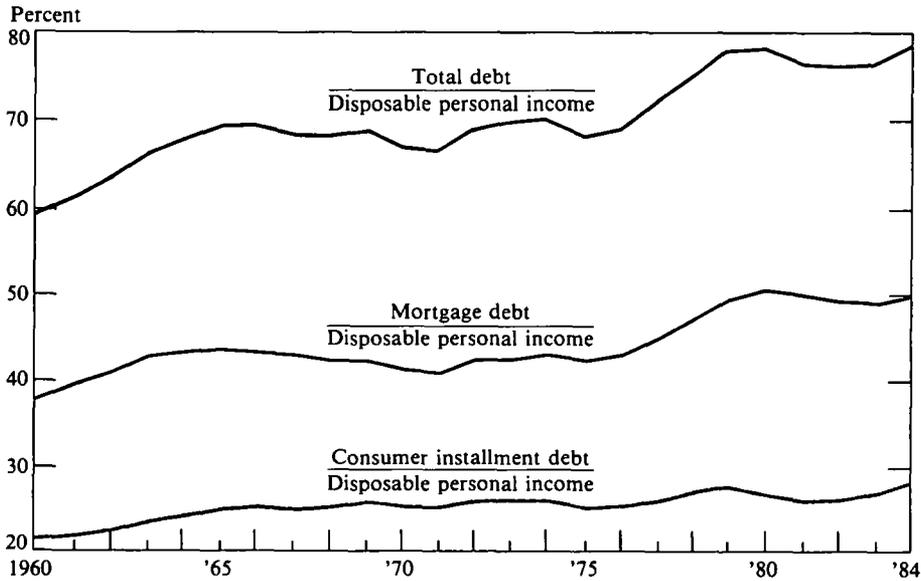
they become less liquid.²¹ Chart 5 plots the ratios of household debt to total household assets, to total household financial assets, and to total household liquid assets. The first ratio, which measures the overall financial leverage households are using, trended upward until 1975 and then stabilized at about 15 percent. It rose to 16 percent at the end of 1984, a little higher than its previous peak in 1978-79, an advance that reflected the slight procyclic nature of this ratio. The second ratio, total debt to financial assets, increased throughout most of the 1970s, a trend that reflected the attractiveness of acquiring houses and consumer durables during this period. It has remained at about 25 percent over the past few years and

is currently at the same level as it was in 1979. Since total debt has risen continuously over the past decade, the relative stability of these ratios implies that both the total net worth and the financial net worth of households rose during this period.

The third ratio, debt to liquid assets, has followed a different time path. Chart 5 shows that it trended downward from 1961 to 1976 as households built up the liquidity of their portfolios. It rose sharply from 1976 to 1980, reflecting both the economic expansion that led to rising debt and the increase in inflation and interest rates that made liquid assets unattractive because of effective interest rate ceilings. Since its peak at 104 percent in 1980, this ratio has fallen to about 97 percent. The decline was likely caused by the two recessions, which discouraged borrowing, and the general deregulation of interest rates at depository institutions, which raised relative returns

²¹ Since the evidence discussed here is based on aggregate data, the distribution of assets and liabilities across households is ignored. Some households may have increased their financial leverage substantially while others may have reduced their leverage.

CHART 6
Household debt-income ratios



Source: Flow of Funds (Debt), Department of Commerce (Disposable Personal Income)

on liquid assets. In any event, the increase in household borrowing in the last two years was not accompanied by any significant increase in illiquidity, which suggests that households are not currently liquidity constrained if they want to borrow more.

Debt-income ratios

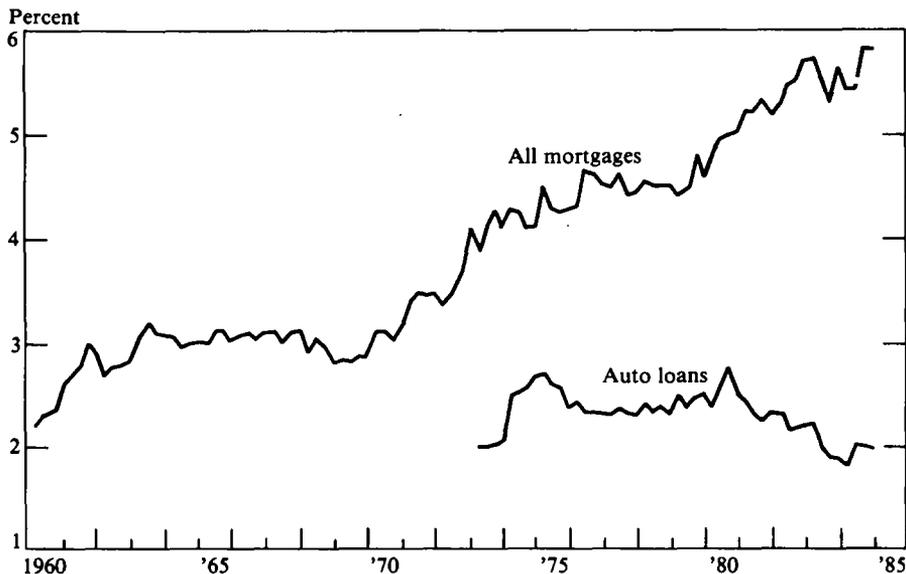
Although the ratio of debt to income, an often-used measure of the debt burden on households, has risen to an historic high, there are reasons for thinking this exaggerates the strain of debt payments on household budgets. Chart 6 gives the ratio of total debt to disposable personal income and the ratios of mortgage debt and consumer installment debt to disposable personal income. All three ratios have trended upward since 1960.

Some increase in the debt-income ratios would be expected from the life-cycle model,

at least since 1970, as the younger age groups increased in size. Also, the upward trend in the ratio of installment debt to income partly reflects two other factors.²² One is the increase in the average maturity of consumer loans. For example, new car loans had an average maturity of three years in 1974 and four years in 1984. If households consider the monthly payment relative to their income as the critical variable when they decide how much to borrow, longer maturities will encourage higher levels of debt since they result in lower monthly payments. The other factor is the rising convenience use of credit cards which inflates debt levels because the outstanding balance is included as debt even though it may be paid in full every month. If households are simply substituting credit card use for checks,

²² See Charles A. Lockett and James D. August, "The Growth of Consumer Debt," *Federal Reserve Bulletin*, June 1985, pp. 389-402.

CHART 7
Delinquency rates



Sources: Mortgage Delinquencies (Mortgage Bankers Association)
Consumer Delinquencies (Business Conditions Digest)

the effective debt burden is less than the data suggest. Surveys on the use of bank credit cards indicate that about 40 percent of households used these cards in 1983, compared with 35 percent in 1977 and 16 percent in 1970. About half the users paid off their bills every month in both 1983 and 1977.²³ While accurate data are not available on the volume of credit card use for convenience, it has been estimated that rising convenience use has increased the debt-income ratio about one percentage point since 1977.²⁴

²³ Tables 17-4 and 17-9 of Avery, Elliehausen, Gustafson, and Canner, *1983 Survey of Consumer Finances*.

²⁴ See Luckett and August, "The Growth of Consumer Debt," pp. 397-398. For an analysis of how credit cards affect the demand for checkable deposits, see Kenneth J. White, "The Effect of Bank Credit Cards on the Households Transactions Demand for Money," *Journal of Money, Credit, and Banking*, February 1976, pp. 50-61, and J. Daniel Hammond, "Credit Card Credit and Demand for Bank Deposits," *Southern Economic Journal*, April 1982, pp. 1031-1035.

A further indication that households are not overextended comes from survey data on the ratio of monthly installment payments to monthly income. Survey data from 1977 and 1983 indicate that households have not increased the percentage of their income going to consumer debt payments. In 1977, 47 percent of the households surveyed had no monthly installment payments, compared with 59 percent in 1983. Moreover, 7 percent of the households in the 1977 survey needed more than a fifth of their income to meet installment payments, compared with 5 percent in 1983.²⁵

²⁵ See Table 19-4 in Durkin and Elliehausen, *1977 Consumer Credit Survey*, and Table 4 in Robert B. Avery, Gregory E. Elliehausen, and Glenn B. Canner, "Survey of Consumer Finances, 1983: A Second Report," *Federal Reserve Bulletin*, December 1984, pp. 857-868. The survey evidence does not reflect the spurt in borrowing since 1983, of course, but this increase is partially offset, in terms of its impact on monthly payments, by longer maturities and lower nominal interest rates.

Loan delinquency rates

If households have become financially overextended, the rates of delinquency on mortgage and consumer installment loans should rise. Chart 7 plots estimates of loan delinquency rates for both types of loans. These rates are the percentage of outstanding loans for which payments are more than 30 days overdue. As the chart indicates, the delinquency rate on mortgage loans has trended upward over the past decade or so. The rate is currently at an historic high. One reason for the upward trend is the rising percentage of mortgages financed under government-sponsored programs. These loans have traditionally had higher delinquency rates because credit standards for these loans tend to be lower than for conventional loans. The recent increase in delinquency rates could be due to the inexperience of households and lenders with variable-rate mortgages and to the slow growth in house prices—negative in some regions—that increases the incentive of borrowers to default. The delinquency rate on consumer installment loans, on the other hand, has declined over the past five years although it did turn up slightly in 1984. This general decline implies that fewer households are having problems meeting their consumer loan payments. On balance, the evidence on delinquency rates is mixed but does not strongly indicate that households have become overextended by the recent increase in debt.

Conclusions

The recent rise in household debt is due largely to the typical increase in the demand for mortgage and consumer credit that comes during a business-cycle expansion and the greater availability of such credit that has come with financial deregulation. Demographic changes also may have stimulated demand, but this effect appears to have been minor. While low costs of credit encouraged households to increase their debt in the second half of the 1970s, the recent increase in debt has occurred despite relatively high costs of credit. This result is consistent with the argument that without deposit and loan rate ceilings, increases in interest rates have less effect on credit flows because they are not accompanied by tighter credit standards.

Even with the recent increase in debt, households do not appear to be in a weak financial position. Ratios of debt to total assets and financial assets have not risen significantly, and households have substantial liquid assets. Although the ratio of debt to income is high, evidence suggests that this ratio overstates the debt burden of households. And while the mortgage delinquency rate has risen somewhat, the consumer loan delinquency rate is at a relatively low level. Therefore, assuming there is no general economic downturn, the overall financial condition of households should not be an impediment to future consumer spending.

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.

Charles S. Morris is an economist at the Federal Reserve Bank of Kansas City. Katherine Hecht, a research assistant at the bank, assisted in preparation of the article.

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

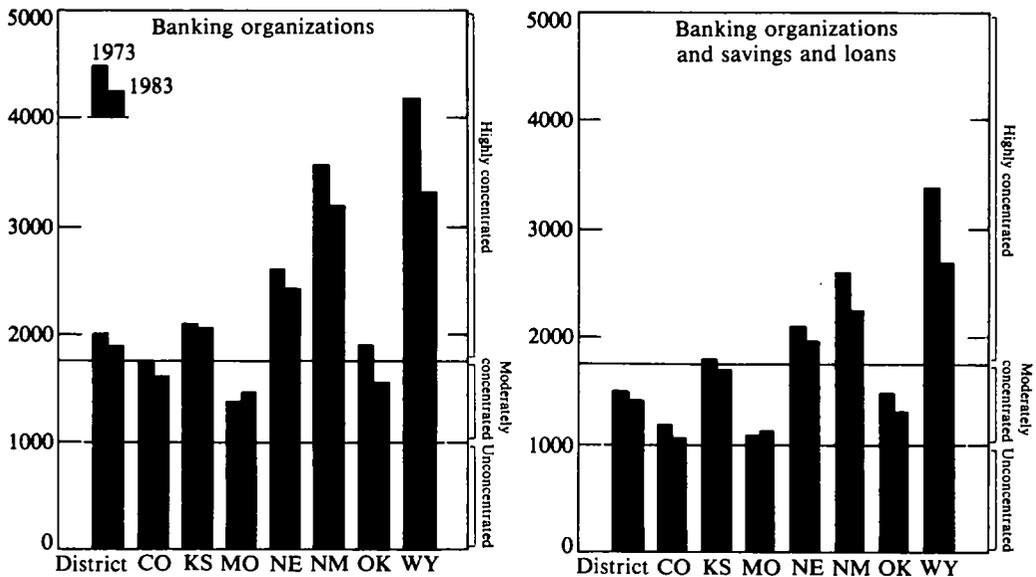
Trends in banking market structure

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.

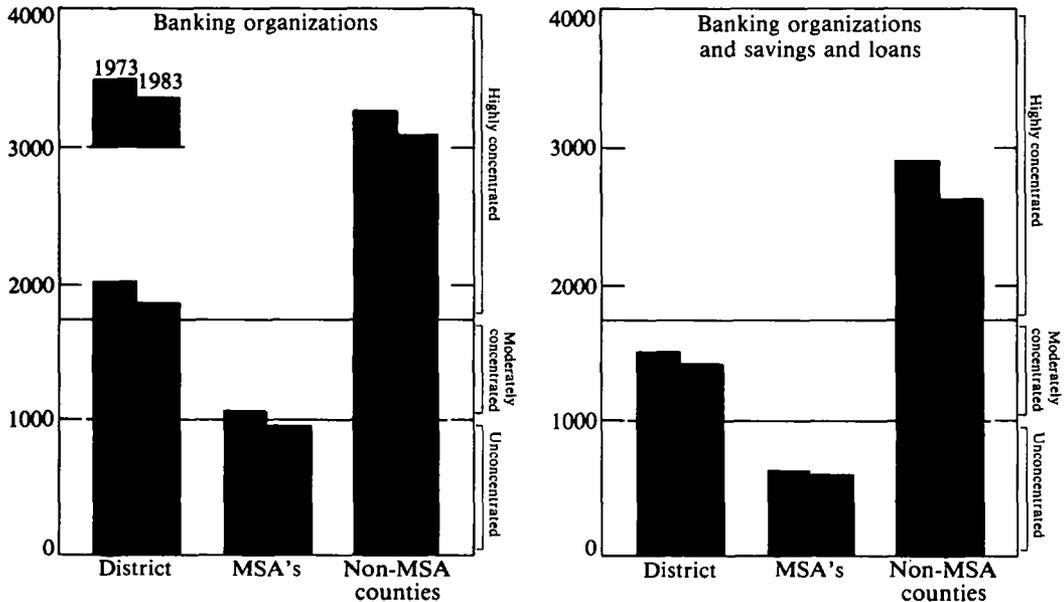
The left panel of Chart 1 also shows a downward trend in local market concentration between 1973 and 1983.¹⁴ The weighted average Herfindahl Index for the district states as a whole (hereafter the aggregate Herfindahl Index) fell just over 5 percent, from 2,016 in 1973 to 1,911 in 1983. However, local 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

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