

Economic Review



FEDERAL RESERVE BANK OF KANSAS CITY

April 1986

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In Nonresidential Construction Activity

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Affect Banking Market Concentration?

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By C. Alan Garner

Strong commercial construction and relatively weak industrial building reflect, to a large degree, basic economic and financial determinants. Concerns have developed, however, about overbuilding of commercial office space and the possible economic effects of weak industrial construction.

Do Multibank Holding Companies Affect Banking Market Concentration? 19

By Charles S. Morris and Katherine M. Hecht

Multibank holding companies have had no effect on the concentration of local banking markets in states of the Tenth District. Markets where multibank holding companies are allowed are less concentrated than markets where they are not allowed, due probably to the demand for banking services being greater in those markets.

Recent Developments In Nonresidential Construction Activity

By C. Alan Garner

Americans have watched in recent years as the skylines of their cities changed rapidly. A nationwide boom in office construction has transformed many downtown areas and, in the process, has raised office vacancy rates dramatically. Construction of office space has been robust in the suburbs as well, and new stores and shopping centers have been built in growing residential areas. In contrast, industrial construction has been lackluster in the last year and a half after a relatively normal recovery from the 1981-82 recession. No doubt, many observers have wondered what forces lie behind these differing construction patterns and whether existing patterns can be maintained.

Recent conditions in nonresidential real estate markets also pose important questions for makers and students of U.S. economic policy. The strength of commercial construction and the comparative weakness of industrial building partly reflect current fiscal and finan-

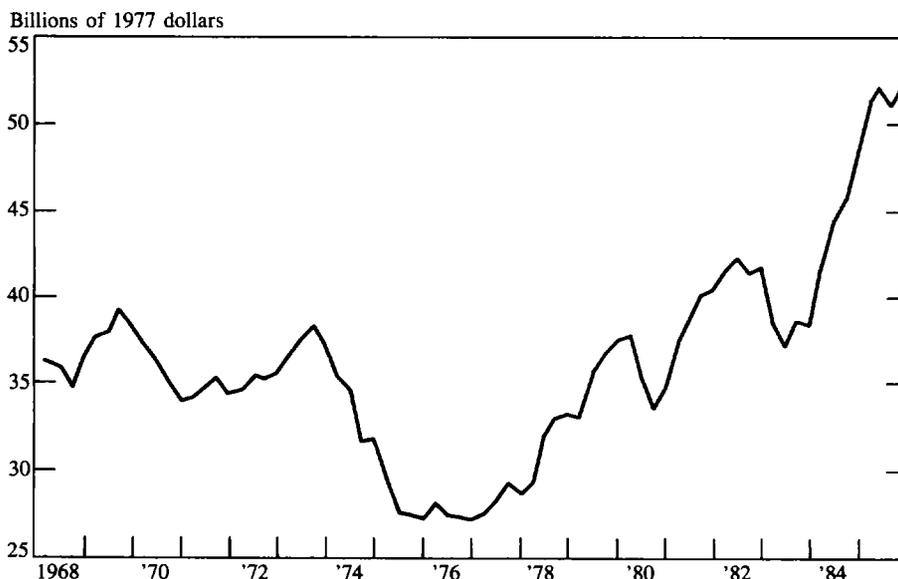
cial policies. Moreover, developments in the nonresidential real estate markets could affect U.S. financial institutions and economic performance in the years ahead. One Federal Reserve official has noted that "important areas of the nation's real estate market are currently experiencing serious difficulties and are creating problems of varying degrees of severity for our financial institutions."¹ As a result, future decisions about fiscal and financial policies should take into account the effects of these policies on U.S. real estate markets and the relation of these markets to broader economic and financial stability.

This article analyzes recent patterns of commercial and industrial construction and examines the economic policy issues raised by these developments. The first section describes trends in nonresidential construction and

C. Alan Garner is an economist at the Federal Reserve Bank of Kansas City. Richard Roberts, a research associate at the bank, assisted in the preparation of the article.

¹ Statement by William Taylor, Director, Division of Banking Supervision and Regulation, Board of Governors of the Federal Reserve System, before the Subcommittee on Commerce, Consumer, and Monetary Affairs of the Committee on Government Operations, U.S. House of Representatives, December 12, 1985.

CHART 1
Private nonresidential building



vacancy rates during the 1980s. The second section explains some of the factors that have contributed to the commercial building boom, and the third section analyzes the contrasting pattern of weak industrial construction. The last section discusses policy issues related to the nonresidential real estate markets.

Recent trends

Private nonresidential building has recovered substantially from the 1981-82 recession. Private nonresidential building includes industrial, office, other commercial, institutional, and miscellaneous construction.² Government,

² Industrial building includes factories and related structures but not durable equipment. Office building refers to office and professional structures not located at industrial sites. Other commercial construction encompasses stores, shopping centers, retail and wholesale warehouses, and banks. Institutional building includes hospitals, nursing homes, and educational structures

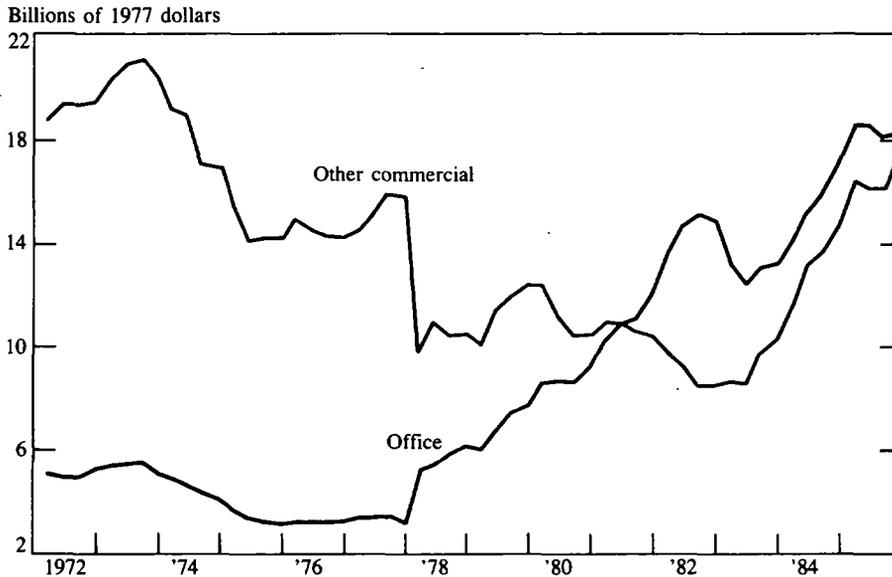
farm, and public utility construction are excluded. Chart 1 shows that nonresidential building fluctuated in the \$35 billion to \$40 billion range (measured in 1977 dollars) in the late 1960s and early 1970s before dropping sharply in 1974-76. Since then, nonresidential building has been on an upward trend, despite brief declines in 1980 and 1982-83.³

Activity in various categories of nonresidential construction has differed notably in recent

except housing. Miscellaneous building covers such nonresidential structures as radio and television stations, health clubs, airline terminals, and motion picture theaters. Institutional and miscellaneous construction are not discussed in this article but are part of the total figure in Chart 1. Further description of the construction data can be found in *Value of New Construction Put in Place*, Bureau of the Census, U.S. Department of Commerce, May 1985.

³ For further comparison of recent business investment with past cyclical patterns, see George A. Kahn, "Investment in Recession and Recovery: Lessons from the 1980s," *Economic Review*, Federal Reserve Bank of Kansas City, November 1985, pp. 25-39.

CHART 2
Commercial construction



years. Commercial construction boomed in 1984 and 1985, while industrial construction was comparatively weak. Chart 2 shows the two major categories of commercial construction, office and other commercial building. Office construction began increasing in 1978 from the slow pace of the mid-1970s and, after a brief downturn following the 1981-82 recession, soared to record levels in 1984-85. In contrast, other commercial construction far outpaced office construction in 1972-74 but then slowed through 1982. Other commercial construction started rising in 1983, however, and has contributed to the general boom of commercial building in 1984-85.

Industrial construction, on the other hand, has been relatively weak following the 1981-82 recession. Chart 3 shows that industrial construction declined substantially in the late 1960s and early 1970s and remained at comparatively low levels until 1977, when indus-

trial building rebounded sharply. Industrial construction reached the \$11 billion to \$12 billion range (1977 dollars) during the 1978-81 period, though with a decline in 1979-80. A more pronounced drop came in 1982-83, and the ensuing recovery has been too weak to return industrial building to its previous peak.

Further perspective is gained by comparing private nonresidential building and its major components with GNP. The apparent growth of nonresidential construction in recent years could be misleading because aggregate economic activity also has expanded. Table 1 shows nonresidential construction and two important components, commercial and industrial building, as percentages of GNP. Nonresidential building fell from 2.1 percent of GNP in 1970 to 1.7 percent in 1975 but then strengthened gradually to 1.9 percent of GNP in 1980 and 2.2 percent in 1985. Compared with GNP, therefore, nonresidential building

CHART 3
Industrial construction

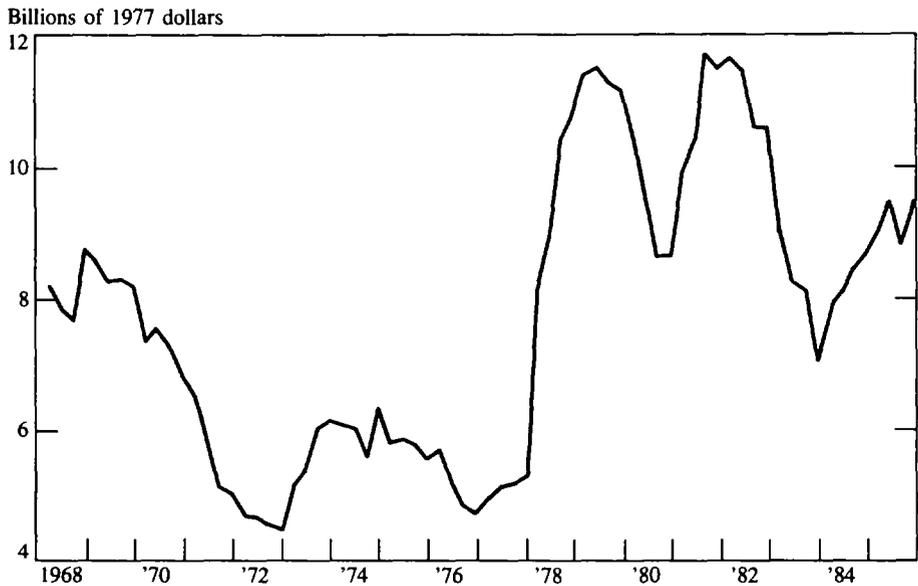


TABLE 1
Nonresidential building relative to GNP
(percent)

<u>Year</u>	<u>Nonresidential</u>	<u>Commercial</u>	<u>Industrial</u>
1970	2.1	1.0	0.6
1975	1.7	0.8	0.5
1980	1.9	1.1	0.5
1985	2.2	1.5	0.4

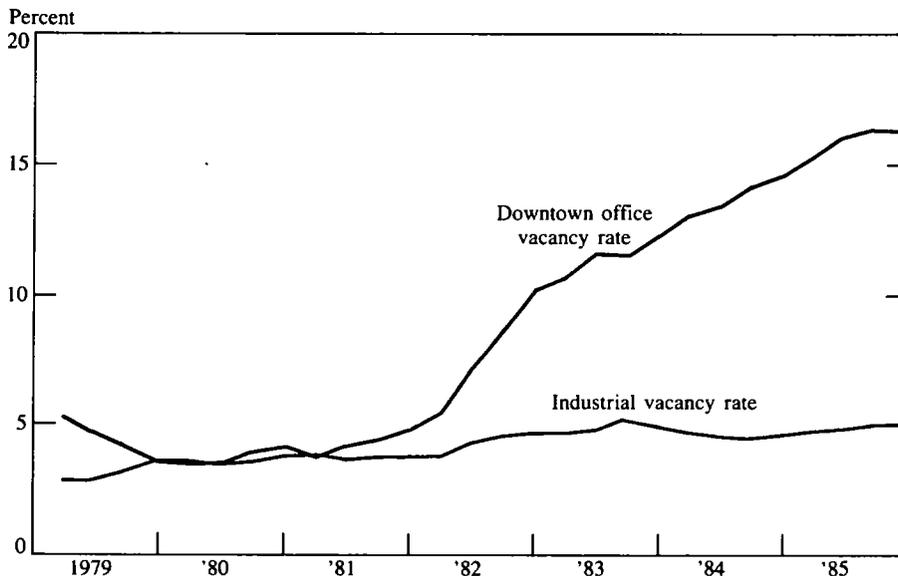
Source: U.S. Department of Commerce

was only a little stronger in 1985 than in 1970. The table confirms, however, the divergence of commercial and industrial construction in recent years. Together, office and other commercial construction equaled 1.0 percent of GNP in 1970. This fraction fell to 0.8 percent in 1975 but climbed to 1.1 percent in 1980 and 1.5 percent in 1985, considerably higher than in 1970. Industrial construction

has been weakening relative to total economic activity. Industrial building was equal to 0.6 percent of GNP in 1970 but only 0.5 percent in 1980 and 0.4 percent in 1985. Thus, while real industrial building was higher in 1985 than in 1970, it was lower relative to GNP.

The strength of office construction and the relative weakness of industrial construction are mirrored in the office and industrial vacancy

CHART 4
Office and industrial vacancy rates



rates shown in Chart 4.⁴ The supply of commercial office space has grown more rapidly than demand. As a result, office vacancy rates in downtown areas climbed from less than 4 percent in early 1980 to 16.5 percent at the end of 1985. The office vacancy rate in suburban areas (not shown) is even higher, 22.0 percent in December 1985. Industrial vacancy rates also have climbed but much less dramatically than office vacancy rates. Nationwide, the industrial vacancy rate was 5.0 percent in December 1985, up from 3.5 percent at the beginning of 1980.

Vacancy rates for office buildings are especially high in some cities. Downtown vacancy rates in December 1985 were 26.0 percent in Denver, 20.2 percent in Houston, 23.7 percent in Oklahoma City, and 23.4 percent in San

Diego. Suburban vacancy rates were 31.0 percent in Houston and 29.2 percent in Phoenix. Most Sunbelt cities had vacancy rates above the national average. On the other hand, vacancy rates were well below the national average in such cities as Boston, Chicago, and St. Louis, and in downtown and midtown Manhattan. Perhaps more than any other real estate market development, nearly vacant office towers in such towns as Denver and Houston have drawn national attention and expressions of concern.

Factors affecting commercial construction

The recent strength of office and retail construction has been due to a variety of economic, financial, and tax factors. The economic factors considered here are fundamental business determinants of demand for office and retail space. Financial factors include the

⁴ The vacancy rate data are from Coldwell Banker Commercial Real Estate Services, *Office Building Real Estate Data* and *Industrial Real Estate Data*, December 31, 1985.

TABLE 2
Selected economic factors
affecting commercial construction

Year	Percentage Growth of			Total Housing Starts (thousands)
	Nonagricultural Employment	FIRE Employment	Service Employment	
1980	0.6	3.7	4.5	1,313
1981	0.8	2.7	4.1	1,100
1982	-1.7	0.8	2.2	1,072
1983	0.7	2.4	3.5	1,713
1984	4.7	3.9	5.4	1,756
1985	3.4	4.3	5.6	1,736

Source: *Economic Report of the President, 1986*

cost of funds for financing real estate projects and the investment preferences and expectations of capital suppliers. Tax factors include depreciation schedules, investment tax credits, and other provisions of the tax code that affect the expected after-tax returns to real estate developers and investors. To some extent, all of these factors have encouraged greater commercial construction activity as the economy recovered from the 1981-82 recession.

Economic factors

The demand for commercial office and retail space depends ultimately on the purchases by consumers or other firms of the goods and services produced in that space. Demand for commercial office space is related most closely to the growth of employment in the finance, insurance, and real estate (FIRE) sector and the service sector of the economy.⁵

⁵ Hugh F. Kelly, "Forecasting Office Space Demand in Urban Areas," *Real Estate Review*, Fall 1983, pp. 87-95; Kenneth T. Rosen, "Toward a Model of the Office Building Sector," *AREUEA Journal*, Fall 1984, pp. 261-269; and William C. Wheaton and Raymond G. Torto, "The National Office Market, History and Future Prospects, III: Federal Taxes and the Supply

Employees of these industries usually work out of commercial office buildings, while many white-collar employees in other industries work in offices in factories or warehouses. Employment in the FIRE and service sectors has grown much more rapidly than total nonagricultural employment during the 1980s. For example, Table 2 shows that nonagricultural employment fell 1.7 percent from 1981 to 1982. Meanwhile, employment rose 0.8 percent in the FIRE sector and 2.2 percent in the service sector. Total nonagricultural employment expanded a respectable 3.4 percent from 1984 to 1985, but both FIRE and service employment outstripped this gain by growing 4.3 percent and 5.6 percent, respectively. Strong growth of FIRE and service employment has fueled the demand for office space. Nevertheless, office vacancy rates have climbed because the supply of commercial office space has increased even more rapidly.

Other commercial construction has been stimulated by the higher levels of office and residential building following the 1981-82

of Office Space," Center for Real Estate Development, Massachusetts Institute of Technology, January 1986.

recession. Retail projects usually are located near where people work or live. New construction of commercial office buildings, therefore, may generate some additional retail construction because of expected higher sales near the new office structures. However, new residential construction probably has been even more powerful in stimulating retail construction. After falling to about 1.1 million units annually in 1981 and 1982, total housing starts rose above 1.7 million units annually for the next three years (Table 2). More housing starts were the result of sharp declines in mortgage rates, rising incomes, and favorable demographic factors. Residential construction has a strong effect on the demand for retail space because large investments in shopping centers and other commercial structures are often needed when developers open new areas of suburban housing.

Differences in office vacancy rates between cities often reflect differing fortunes of the industries that influence office demand and employment growth in those areas. The most important example is the effect of oil prices on employment and construction in energy-producing regions of the country. Sharp increases in energy prices during the 1970s spurred a boom in energy exploration and related activities. Employment grew rapidly not only in the energy industries but also in the service and financial industries that support the energy sector. Demand for office space grew dramatically in such energy centers as Denver, Houston, Oklahoma City, and Tulsa. Developers responded by starting new nonresidential construction projects. Because of the long time lags involved in commercial construction, several years can elapse between the planning of a project and its completion. The demand for workers also led to migration into the energy states, creating new demands for housing and, therefore, retail space. When the energy boom

ended unexpectedly in the 1980s, demand for office and retail space dropped at the same time that many new construction projects were being completed. As a result, commercial vacancy rates skyrocketed and commercial rents were depressed.

Financial factors

Financial factors have contributed to the strong performance of commercial construction in recent years. Funds have flowed readily into commercial real estate investments from a variety of sources. Institutional investors, such as pension funds and insurance companies, have increased the fractions of their investment portfolios devoted to real estate in an effort to seek high returns and pro-

Financial factors have contributed to the strong performance of commercial construction in recent years.

vide a hedge against possible future inflation. Commercial banks have channeled funds into real estate development partly because of reduced opportunities to make large corporate loans. Some thrift institutions have taken advantage of liberalized financial regulations by expanding nonresidential real estate loans. Households in high tax brackets often have chosen real estate investments in hopes of achieving higher after-tax returns and protection against inflation.

Investors' beliefs about real estate returns have been formed in light of historical experience, particularly that of the 1970s and early 1980s. Historical evidence suggests that long-term real estate investments can be a valuable component of a balanced investment portfolio. Data show that returns from long-term real estate investments have been comparable to

the returns from common stocks. Furthermore, real estate returns have been greater over the long term than the inflation rate and returns on Treasury bills or bonds. One survey of real estate investment studies found that the pre-tax real return on unleveraged properties had averaged 5.7 percent during the postwar era.⁶ Assessing real estate returns is difficult, however, because of data limitations. Current market values of investment properties are hard to obtain because these properties are not traded often. Also, the most reliable evidence on real estate returns is from the 1970s and 1980s, periods when returns may not have been typical. Historical evidence suggests, in addition, that real estate investments involve substantial risks but may add valuable diversification to investment portfolios because real estate returns have had low or negative correlations with stock and bond returns.

Fear of inflation and the desire for more diversification have encouraged many private and institutional investors to increase the commercial real estate portions of their portfolios. The economic experience of the 1970s convinced many investors that real estate could provide high returns in an inflationary environment. Common stocks and other financial instruments yielded low, or even negative, real returns during much of the 1970s. Although the inflation rate has declined substantially compared with the late 1970s and early 1980s, it has remained relatively high by U.S. historical standards. Inflation expectations may have declined less than actual inflation because of the long period of high inflation, the continued large federal deficit, and the potential for depreciation of the dollar.

⁶ Many studies on real estate risk and return are surveyed in Robert H. Zerbst and Barbara R. Cambon, "Real Estate: Historical Returns and Risks," *Journal of Portfolio Management*, Spring 1984, pp. 5-20.

Concern that the United States would resume high inflation may have influenced some investors heavily in the first half of the 1980s.

Past investment results, of course, do not guarantee future investment results. The recent sharp decline in oil prices may reduce inflation to lower levels than investors had expected previously. In addition, some experts now warn that commercial real estate may not be an effective inflation hedge for the rest of the 1980s.⁷ High office vacancy rates might keep commercial rent increases below general inflation for the next few years. Moreover, real estate returns during the 1970s may have been buoyed by the maturing of the "baby boom" generation, which contributed to strong housing demand and employment growth. Demographic factors are not expected to provide as much support to real estate in the late 1980s and the 1990s. However, the belief that real estate furnishes protection against inflation surely has contributed to the flow of capital into the commercial real estate sector in recent years.

Some real estate analysts have argued that recent changes in financial regulations have accentuated the movement of funds into commercial real estate investments.⁸ The deregulation of deposit rates at commercial banks and thrift institutions has increased their average cost of funds. And, these depository institutions have responded by making riskier loans, including commercial real estate loans, to earn higher returns on their assets. Federal deposit insurance may have facilitated the process by making insured depositors unconcerned about lending risks as long as the federal govern-

⁷ For example, see Richard W. Kopcke and Peter C. Aldrich, "A Real Estate Crisis: Averted or Just Postponed?" *Journal of Portfolio Management*, Spring 1984, pp. 21-29.

⁸ See Anthony Downs, *The Revolution in Real Estate Finance*, Brookings Institution, Washington, 1985.

ment guarantees the insured deposits.⁹ Changes in state financial regulations, moreover, have given some state-chartered commercial banks and thrift institutions new opportunities to invest in commercial real estate. Also, the Garn-St Germain Depository Institutions Act of 1982 raised the limit for nonresidential real estate loans by federally chartered savings and loans and mutual savings banks from 20 percent of assets to 40 percent. Financial deregulation, therefore, may have joined with other financial factors to expand the flow of funds into commercial real estate investments.

Tax factors

Changes in the federal tax code, past and prospective, have helped boost commercial construction in recent years. The Economic Recovery Tax Act of 1981 (ERTA) increased the after-tax return to real estate investment by shortening the tax lifetime that could be assumed for nonresidential properties when computing depreciation allowances. The depreciation period for nonresidential property was reduced to 15 years, regardless of the type or age of the property. Previously, the tax lifetime for nonresidential structures had not been uniform but averaged about 35 years.¹⁰ Concentrating depreciation allowances

⁹ The effect of deposit insurance on bank risk-taking is analyzed in William R. Keeton, "Deposit Insurance and the Deregulation of Deposit Rates," *Economic Review*, Federal Reserve Bank of Kansas City, April 1984, pp. 28-46. The notion that higher deposit rates could induce a bank to invest in riskier assets remains controversial. Keeton has provided theoretical arguments showing why deposit rate deregulation could exacerbate the distortion of bank risk-taking behavior created by fixed-rate deposit insurance. However, empirical evidence suggesting that deposit rate deregulation might lower bank risk is presented by John J. Mingo, "The Effect of Deposit Rate Ceilings on Bank Risk," *Journal of Banking and Finance*, December 1978, pp. 367-378.

¹⁰ Barry P. Bosworth, "Taxes and the Investment Recovery," *Brookings Papers on Economic Activity*, 1985:1, pp. 36-37.

early in the economic life of an investment project makes that project more attractive by reducing the investor's tax liability. By one estimate, ERTA reduced the effective purchase price of a representative nonresidential structure by about 10 percent after taxes.¹¹ Subsequent legislation has raised the depreciation period for most nonresidential structures to 18 years, still less than the average tax lifetime before ERTA. Another provision of ERTA created an investment tax credit of up to 25 percent for the rehabilitation of historic structures. The passage of ERTA thus bolstered the incentives to invest in nonresidential structures at about the time that fundamental economic factors and financial factors were stimulating office and other commercial construction.

Recent tax reform proposals also may have encouraged strong commercial construction expenditures in 1985, even though tax reform ultimately may reduce nonresidential construc-

Changes in the federal tax code, past and prospective, have helped boost commercial construction.

tion incentives. Proponents of tax reform have sought to lengthen the depreciation period for nonresidential structures investments, thereby undoing the original effect of ERTA. Setting the tax lifetimes of investment projects approximately equal to their economic lifetimes, it is argued, would enhance economic growth by achieving a more efficient alloca-

¹¹ Kopcke and Aldrich, p. 24. For a representative nonresidential building, ERTA raised the present value of the depreciation allowances by more than 20 percent of the property's purchase price. The calculations assumed a 46 percent tax rate, straight-line depreciation, and a pre-ERTA tax lifetime of 30 years. All other factors affecting the project's return were assumed to be constant.

tion of capital. Proponents of tax reform also have sought to eliminate the investment tax credit for the rehabilitation of historic structures. Commercial construction may have been stimulated in 1985, however, as some developers accelerated their real estate projects in order to secure the more generous existing tax provisions.

Overall, then, several factors apparently have fostered the strong commercial building activity since the 1981-82 recession. Demand for office space has grown because employment has increased rapidly in the FIRE and service sectors of the U.S. economy. More residential construction has stimulated the demand for retail and other commercial buildings. Many suppliers of capital have chosen to invest in commercial real estate projects because of the high returns witnessed during the 1970s, a desire to diversify their investment portfolios, and changing financial regulations. Finally, enactment of ERTA in 1981 raised the after-tax returns to nonresidential real estate investment. Expectations that reform proposals would eliminate these tax incentives also may have helped sustain commercial construction spending in 1985.

Factors affecting industrial construction

Industrial construction, unlike commercial building, has been relatively sluggish lately after an initial recovery from the 1981-82 recession. Like commercial building, industrial construction has been affected by a variety of economic, financial, and tax factors. The main reason for the recent weakness of industrial construction has been the slower growth of industrial sales and output, partly as a result of the rising U.S. trade deficit. Industrial real estate generally has not attracted large capital inflows from institutional inves-

tors and households but has benefited from the tax law changes in the early 1980s.

Economic factors

Business investment in industrial structures is influenced heavily by expected sales and output in the goods-producing sectors of the economy. Economists have labeled this relationship the acceleration principle.¹² If firms try to keep their stocks of physical capital at a constant multiple of expected output, the level of investment spending depends on changes in

Industrial construction, unlike commercial building, has been relatively sluggish.

expected output. Therefore, production growth in the industrial sector is important for the demand for industrial structures. Investment spending responds only gradually to output growth because of adjustment costs and lags in the production of business equipment and structures.

The sluggish performance of U.S. industrial sales and output is the main reason industrial construction has been weaker than commercial construction. Industrial output declined sharply in the recession year of 1982 (Table 3) but posted strong gains during the recovery period in 1983 and 1984. The growth rate of U.S. industrial production eased, however, from 11.5 percent in 1984 to only 2.2 percent in 1985. The capacity utilization rate for U.S. industry shows a similar cyclical pattern, falling from 81.2 percent in 1984 to 80.6 percent in 1985. Falling capacity utilization reflected the slow growth of U.S. output plus some installation of new industrial capacity. The

¹² For further explanation of the acceleration principle, see Kahn, pp. 31-32.

TABLE 3
Selected economic factors
affecting industrial construction

<u>Year</u>	<u>Industrial Production (percent change)</u>	<u>Industrial Capacity Utilization (percent)</u>	<u>Manufacturing Employment (millions)</u>	<u>Net Exports (billions of 1982 dollars)</u>
1980	- 1.9	80.9	20.3	57.0
1981	2.2	79.9	20.2	49.4
1982	- 7.1	72.1	18.8	26.3
1983	5.9	74.7	18.4	- 19.4
1984	11.5	81.2	19.4	- 85.0
1985	2.2	80.6	19.4	- 105.1

Source: *Economic Report of the President*, 1986

weakness of the U.S. industrial sector is illustrated further by the growth in manufacturing employment. Manufacturing employment did not begin to recover from the recession until 1984, and it showed virtually no growth from 1984 to 1985. Manufacturing employment in 1985 was about 19.4 million workers, well below the peak of 21.0 million reached in 1979.

The U.S. trade deficit has been a major cause of the sluggish industrial sector. As Table 3 shows, U.S. net exports declined from a surplus of \$57.0 billion (1982 dollars) in 1980 to a deficit of \$105.1 billion in 1985. The trade deficit rose sharply in 1984 and 1985 because the dramatic appreciation of the dollar made imported goods less expensive and severely eroded the competitiveness of U.S. exports. As a result, many purchases by U.S. households and firms did not represent sales by domestic manufacturers. Domestic producers, following the acceleration principle, had little incentive to add capacity by building new factories or warehouses. In contrast, the economic sectors driving commercial construction—finance, services, and homebuilding—were relatively free from import

competition. Moreover, the distribution of imported goods strengthened commercial construction rather than industrial construction because retail and wholesale warehouses are considered commercial structures.

Financial factors

Financial factors do not seem to be a major explanation for the contrasting behavior of commercial and industrial construction. Both sectors have been subject to the same basic trends in real interest rates. By one measure, real interest rates declined substantially in 1982 but rose to a new peak in mid-1984 before declining again in the second half of 1984 and in 1985.¹³ Average real interest rates in the 1980s were high by historical standards. High real interest rates are consistent with low levels of industrial construction but not with the boom in the office sector. Another factor suggesting that financial factors have not been the major explanation of weak industrial construction is that corporate cash flows have

¹³ Richard B. Hoey and Helen Hotchkiss, *Decision-Makers Poll*, Drexel Burnham Lambert Incorporated, January 14, 1986.

remained healthy in recent years. Liberalized depreciation allowances resulting from ERTA have helped to maintain the internally generated funds that corporations use for much of their investment spending. Therefore, financial constraints do not appear to be the primary cause of sluggish industrial construction.

One financial factor is consistent, however, with the contrasting levels of activity in the commercial and industrial real estate sectors. Commercial real estate has attracted investment funds from institutions and households to

Financial constraints do not appear to be the primary cause of sluggish industrial construction.

a much greater extent than industrial real estate has. Most of these investors are not in the real estate business as such but regard commercial real estate as a valuable component of a balanced portfolio. Industrial real estate generally has not attracted such investments because the resale market for most industrial properties is limited. Industrial structures often are highly specialized because factories and warehouses are tailored to the needs of a particular firm or industry. The difficulty of finding another buyer reduces the attractiveness of specialized industrial structures to such investors as pension funds and wealthy households. This difference in ability to attract capital may play some part in explaining the contrasting patterns of commercial and industrial construction.

Tax factors

Tax considerations do not seem to be a major reason for the contrasting behavior of commercial and industrial construction. The Economic Recovery Tax Act of 1981 reduced

the tax lifetime for industrial structures as well as for commercial buildings. Industrial structures, however, may have had a smaller effective tax reduction because of differences in the ways commercial and industrial projects typically are financed.¹⁴ Debt financing is obtained more readily for commercial projects because commercial properties are easier to resell. The higher degree of leverage for commercial real estate and the tax deductibility of interest payments may have combined to produce greater tax advantages for commercial structures investment. Greater tax benefits for commercial construction are consistent with the strong performance of this sector, but shorter tax lifetimes should have encouraged greater industrial construction as well. Therefore, tax factors do not adequately explain the recent weakness of industrial construction.

The principal reason for the relative weakness of industrial construction has been the sluggish growth of domestic goods production, which is partly a result of the large U.S. trade deficit. When U.S. industry invested to meet the challenge of foreign competition, the investment more often took the form of machinery and office equipment than of new factories and warehouses. Financial and tax factors apparently have not been major causes of weak industrial construction. However, recent financial and tax changes may have stimulated commercial building more than industrial construction because of the higher risk of industrial structures resulting from their limited resale potential.

Policy concerns

Policymakers, journalists, and business people have expressed concern about the future health of the nonresidential real estate mar-

¹⁴ See Bosworth, pp. 27-34.

kets. Particular attention has been paid to the record pace of construction and the rise in vacancy rates in many commercial office markets. What harm might be done by commercial overbuilding or by industrial underbuilding? Should the Federal Reserve play an active role in solving any emerging real estate problems? What other policy actions, legislative or regulatory, might be considered? This section provides an overview of these important policy-related issues.

Reasons for policy concern

One reason for concern about nonresidential construction is that a downturn in construction spending would affect real GNP and employment. Office construction seems most susceptible to a sharp downturn because of the high office vacancy rates and weakening rents. Tax reform also could reduce the incentive to invest in commercial real estate by lengthening depreciation schedules and removing investment tax credits for the rehabilitation of historic structures. Many real estate experts expect a correction in the commercial office market.¹⁵ Projections show a decline in office building, though analysts do not agree on the timing or magnitude of the prospective downturn. A lower level of commercial building would reduce the activity of construction companies, real estate developers, and firms supplying construction services and materials.

Another reason for concern about commercial real estate is that overbuilding could trigger bankruptcies among developers and higher loan losses for lenders. High vacancy rates for commercial property depress rental income

¹⁵ For example, see George A. Christie, "1986 Dodge/Sweet's Construction Outlook," *Data Resources U.S. Review*, November 1985, pp. 12-23; and "Commercial Building 'Is Bumping Against the Ceiling,'" *Business Week*, December 30, 1985, pp. 57-58.

and price appreciation. Although their investment returns would be lowered by an oversupply of commercial space, many real estate investors have the resources to ride out short-term market weaknesses with the expectation that their projects will be profitable over the long term. However, other developers with less capital or riskier projects might be forced into bankruptcy. Commercial banks and other lenders could find themselves holding commercial properties that could be sold only at depressed prices. Failures of some financial institutions cannot be ruled out, especially where institutions have plunged into risky real estate loans or where the local real estate market is severely depressed.

A third possible reason for concern about the nonresidential real estate market is the effect of weak industrial construction on U.S. capital formation and productivity. Many analysts expect little improvement in industrial construction spending during 1986.¹⁶ Surveys of business investment plans for 1986 support

What harm might be done by commercial overbuilding or by industrial underbuilding?

this view. The high average value of the dollar in 1983-85 may have temporarily reduced industrial production below levels that are consistent with the long-run competitive position of U.S. producers. Recent declines in the dollar should help to stimulate exports and raise domestic capacity utilization. Continuing sluggish industrial construction, therefore, could produce future capacity shortages that might intensify inflationary pressures in times of strong aggregate demand. Weak industrial

¹⁶ For example, see Christie, p. 15.

construction also might raise production costs and reduce the international competitiveness of U.S. firms by keeping them from using the most efficient production technologies.

The Federal Reserve's role

What should the role of the Federal Reserve be in addressing these concerns about commercial and industrial construction? It is generally maintained that monetary policy should focus on aggregate economic conditions rather than the health of any specific region or industry. Some people may recommend that the Federal Reserve ease monetary policy to encourage industrial construction and lessen any commercial real estate problems. However, monetary policy has broad effects on consumer and business spending, the exchange rate, and inflation expectations. Policy actions stimulative enough to help the most depressed sectors of the U.S. economy might be too stimulative for many other regions or industries. As a result, inflationary pressures could build with harmful effects on general economic welfare. The Federal Reserve, therefore, is generally advised to direct monetary policy toward the goals of aggregate economic growth and price stability.

If consistent with general price stability and sustainable growth, however, lower interest rates would tend to reduce problems developing in the nonresidential real estate markets. Some troubled real estate projects would be refinanced, while commercial banks and other real estate lenders would pay less for their funds. Lower rates also would increase the demand for commercial and industrial space by promoting general economic growth. The appropriateness of lower interest rates, however, would depend on a number of factors, including the current and prospective state of the economy, inflationary pressures and

expectations, and the foreign exchange value of the U.S. dollar.

The Federal Reserve also has a role in dealing with nonresidential real estate problems as a regulator of commercial banks. Diligent regulatory efforts are necessary to limit the problems that bad real estate loans could pose for the financial system. Federal bank regulators already are devoting special attention to real estate loans.¹⁷ The banking agencies have issued new guidelines to examiners regarding the classification of troubled real estate loans. Surveys have been conducted to identify real estate risks and to target some institutions for special examinations. The Federal Reserve has

Overbuilding could trigger bankruptcies among developers and higher loan losses for lenders.

undertaken a program to enhance its general supervisory activities, partly by increasing the frequency of bank holding company inspections and examinations at state member banks. Finally, to the extent that real estate loan problems affect financial institutions, federal safeguards exist to prevent a widespread banking crisis. Federal deposit insurance and the Federal Reserve's powers as lender of last resort help guarantee that real estate loan problems will be restricted to specific institutions instead of threatening the entire banking system.

Structural issues

Recent nonresidential construction patterns also raise a variety of structural policy issues

¹⁷ Nina Easton. "Survey Finds Riskier Credits in Real Estate." *American Banker*, January 3, 1986; and Taylor, p. 127.

relating to the tax laws and financial institutions. Tax law changes and financial deregulation may have contributed to the boom in office construction. Other factors have been important, however, and the exact contribution of structural changes is hard to assess. Some analysts argue that these structural factors along with changes in investor expectations have produced chronic biases in the real estate markets that need to be corrected.¹⁸ Although a detailed analysis is beyond the scope of this article, some of these structural policy issues deserve a brief mention.

Tax reform proposals have raised a number of policy issues that could affect the strength of nonresidential construction activity. Proponents of tax reform want to provide a "level playing field" where the tax laws do not distort investment decisions regarding the kind of capital good or business structure. Recent proposals have sought to abolish the investment tax credit and to depreciate nonresidential structures over periods close to their useful economic lives. Critics of these proposals have argued, however, that the incentive to invest in productive plant and equipment would be harmed. Martin Feldstein, a former chairman of the Council of Economic Advisors, wrote that recent proposals "would divert a larger share of our nation's scarce capital into shopping centers, office buildings, vacation homes and larger houses for upper-income taxpayers."¹⁹ Regardless of the outcome of current reform efforts, tax provisions affecting nonresidential construction activity

¹⁸ Downs has been a leading exponent of this view. In addition to the book cited previously, see Anthony Downs, "This Building Boom Shows Something's Busted," *The Wall Street Journal*, October 29, 1985.

¹⁹ Martin Feldstein, "Tax Reform: Harmful If Passed," *The Wall Street Journal*, February 14, 1986. The Reagan administration's tax reform proposals are contained in *The President's Tax Proposals to the Congress for Fairness, Growth, and Simplicity*. U.S. Government Printing Office, May 1985.

are likely to remain prominent in future policy debates.

Financial structure issues center on the ability of depository institutions to lend to risky real estate ventures or take equity stakes in them. Many economists have argued that federal deposit insurance induces commercial banks and thrift institutions to make riskier loans than they would if deposits were not insured. The removal of deposit interest ceilings in the 1980s may have increased this distortion of bank behavior and encouraged further risky loans to commercial real estate ventures. Regulators have begun to explore ways of reducing the deposit insurance distortion by making insurance premiums vary with an institution's risk level, by relating capital requirements to risk, or by tightening regulatory oversight. Another financial structure issue concerns whether commercial banks and thrift institutions should be allowed to invest directly in commercial real estate. Proponents argue that equity investments could provide valuable earnings and portfolio diversification,

Federal bank regulators already are devoting special attention to real estate loans.

while critics contend that direct investment would exacerbate existing risk problems and increase the bias in real estate finance.

If problems develop in the commercial real estate market, as some observers fear, structural reforms may be examined in an effort to prevent future excesses. Macroeconomic policies such as the size of the federal deficit and the degree of monetary restraint have broad economic impacts and should not be varied in response to specific sectoral problems. For that reason, the tax structure and financial regulation may become primary targets for reform because these policies can be directed more

accurately at nonresidential construction and real estate finance. Both the costs and the benefits of structural reforms should be weighed carefully, however, as policies that limit financial risks also might have undesirable side effects.

Conclusion

The contrasting patterns of commercial and industrial construction largely reflect the influence of fundamental economic determinants. Strong commercial construction has been fueled by rapid employment growth in the service and financial sectors and by higher levels of homebuilding. Weak industrial construction has resulted primarily from the sluggish expansion of industrial output, produced partly by the large U.S. trade deficit and the strong dollar. Tax and financial factors generally have reinforced the boom in commercial construction, while industrial property has benefited less from these factors. Industrial real estate, being relatively illiquid, is often not suitable for high levels of debt finance and has not attracted substantial investments by institutions and wealthy households.

Recent commercial and industrial construction patterns have suggested potential problems to some observers. Most obvious is the danger that overbuilding of commercial offices will lead to bankruptcies by developers and failures of financial institutions. Moreover, continuing weak industrial construction and possible reductions in commercial building could cause softer aggregate demand and, therefore, less production and employment. Weak industrial construction also might harm U.S. productivity and industrial capacity.

Evolving real estate developments require ongoing monitoring by the Federal Reserve and the other bank regulatory agencies. It is generally believed, however, that monetary policy should focus on aggregate economic conditions rather than sectoral problems because the instruments of monetary policy have broad economic impacts. Nevertheless, federal regulators already have intensified their efforts to identify troubled real estate loans and to enhance general bank supervision. Over the longer run, real estate problems may influence state and federal legislators to consider changes in the tax laws and financial structure affecting nonresidential building.

Do Multibank Holding Companies Affect Banking Market Concentration?

By Charles S. Morris and Katherine M. Hecht

With the recent surge in interstate bank mergers, the competitive effects of interstate banking have become an issue of increasing importance to policymakers. Some people argue that interstate banking will reduce the competitiveness of banking markets by increasing banking market concentration. At a theoretical level, however, it is not at all clear that an increase in concentration would reduce the competitiveness of banking markets. Banks could behave competitively even in highly concentrated markets, especially if entry into those markets was unrestricted.

But what if interstate banking was not expected to raise banking market concentration in the first place? Then, regardless of which theory was correct about the relationship between concentration and competition, interstate banking would not be expected to result in less competitive banking markets. Because interstate banking is most likely to

occur through bank holding companies acquiring banks in more than one state, one way to infer the likely effect of interstate banking on local banking market concentration is to see what effect intrastate expansion of multibank holding companies has had on local market concentration.

Using data from local banking markets in states of the Tenth Federal Reserve District and controlling for other factors that affect banking market concentration, this article finds no relationship between multibank holding company presence and local banking market concentration. Thus, to the extent that local banking markets in Tenth District states are similar to other banking markets and interstate holding company expansion is similar to intrastate expansion, interstate banking in the form of interstate bank holding company acquisitions would not be expected to increase local banking market concentration.

The first section of the article presents background information on multibank holding companies in Tenth District states and on the concentration of local banking markets in

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these states between 1973 and 1983. The second section discusses the effect of multibank holding companies on banking market concentration within the context of a simple competitive model of the determinants of market structure. The third section uses a single regression equation to obtain estimates of the effect of multibank holding companies on concentration.

Multibank holding companies and market concentration: overview

Local banking markets in Tenth District states exhibit significant differences in both the presence of multibank holding companies (MBHC's) and the degree of concentration. Because of these differences, Tenth District banking markets can provide useful information about the effect of MBHC's on concentration. This section provides an overview of MBHC's in district states using a sample of 406 local banking markets that had two or more banking organizations over the period from 1973 to 1983. It then presents an overview of the concentration of these markets.¹

Multibank holding companies

State laws governing the formation of MBHC's differed across the seven states of the district over the 1973-83 period. MBHC's were allowed in Colorado, Missouri, New Mexico, and Wyoming, while they were not

allowed in Kansas, Nebraska, and Oklahoma. Colorado, New Mexico, and Wyoming had no restrictions on the formation or expansion of bank holding companies. Missouri had no restrictions on bank holding company acquisitions until 1975, when acquisitions were allowed only if the acquiring company's share of state banking deposits after the acquisition was less than 13 percent. Nebraska prohibited MBHC's entirely until March 31, 1983, when banks and bank holding companies were allowed to acquire financial institutions that were failing. MBHC's were prohibited in Kansas and Oklahoma throughout the sample period.²

In the four states that allowed MBHC's, there was a dramatic increase in the presence of MBHC's between 1973 and 1983 (Table 1). There were 34 MBHC's in district states in 1973. Of these, 32 had more than one bank in at least one market. By 1983, the number of MBHC's had increased to 80, with 58 owning more than one bank in at least one market. The number of MBHC-affiliated banks increased from 213 in 1973 to 566 in 1983, while the percentage of banks affiliated with MBHC's in markets where MBHC's were allowed more than doubled—increasing from 19 percent in 1973 to 40 percent in 1983. The percent of commercial bank deposits at MBHC-affiliated banks also rose sharply, from 46 percent in 1973 to 61 percent in 1983.

The presence of MBHC's varied significantly among the markets where they were allowed. In 1983, for example, there were no MBHC-affiliated banks in 25 percent of the markets where they were allowed. MBHC-

¹ The construction of the data set and the reasons for only using the 406 markets that had two or more banking organizations over the sample period are discussed in the Appendix. For reasons to be discussed below, local banking markets are defined as Metropolitan Statistical Areas (MSA's) or non-MSA counties. For a more complete discussion of banking market concentration in Tenth District states, see Charles S. Morris, "Banking Market Structure in Tenth District States, 1973-83," *Economic Review*, Federal Reserve Bank of Kansas City, July/August 1985, pp. 18-31.

² MBHC's are currently allowed in all Tenth District states. MBHC's have been allowed in Kansas since July 1985, in Nebraska since September 1983, and in Oklahoma since October 1983.

TABLE 1
Multibank holding companies
in Tenth District states

	<u>1973</u>	<u>1983</u>	<u>Percent Change</u>
Number of MBHC's	34	80	135.3
Number of MBHC's owning more than one bank in a market	32	58	81.3
Number of banks affiliated with MBHC's	213	566	165.7
Percent of commercial banks affiliated with MBHC's	19	40	—
Percent of commercial bank deposits at banks affiliated with MBHC's	46	61	—

affiliated banks accounted for less than a third of the deposits in 22 percent of the markets, between a third and two-thirds of the deposits in 32 percent of the markets, and more than two-thirds of the deposits in 21 percent of the markets.

Banking market concentration

To present an overview of market concentration, a measure of concentration must be chosen. The concentration of a market is the extent to which most of the market's output is produced by only a few firms. Thus, the concentration of a market will be greater the fewer the firms or the more unequal their size. A commonly used measure of concentration that captures both of these effects is the Herfindahl Index.

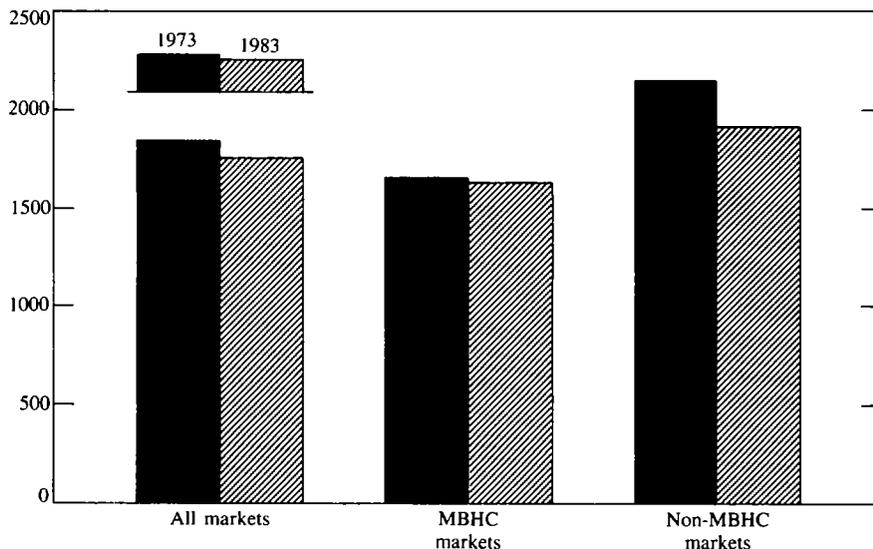
The Herfindahl Index is defined as the sum of the squared market shares of industry output of every firm in the market. For example, in a four-firm industry where the firms have market shares of 40, 30, 20, and 10 percent, the Herfindahl Index would be $40^2 + 30^2 + 20^2 + 10^2 = 3,000$. When the number of firms in a market increases or the size distri-

bution of firms becomes more equal, market concentration measured by the Herfindahl Index will fall. The most concentrated market would be a single-firm market, and it would have a Herfindahl Index of 100^2 , or 10,000. If the number of firms increased to n with all firms remaining the same size, the Herfindahl Index would decrease to $10,000/n$. Finally, if the n firms were not all the same size, the Herfindahl Index would still fall below 10,000, but it would be greater than $10,000/n$.

Commercial bank output, the commercial banking firm, and the banking market must be defined before the Herfindahl Index can be calculated. Total deposits are used to measure bank output because deposit data are available by individual office. The definition of the banking firm used here is the bank holding company or the unaffiliated bank.³ Because most consumers of banking services purchase banking services from local institutions, local geographic areas are used to define the bank-

³ Although savings and loan associations have become a major alternative supplier of many banking services, they are not included in this study because data were not available for some of the variables used later in the analysis.

CHART 1
Aggregate Herfindahl Index



ing market. The local market areas used to measure the banking market are Metropolitan Statistical Areas (MSA's) or non-MSA counties.⁴ Therefore, the banking firm's market share is calculated as the bank holding company's or unaffiliated bank's share of MSA or non-MSA county total deposits.⁵

Chart 1 shows aggregate Herfindahl Indexes for 1973 and 1983 for 406 local markets in Tenth District states. The indexes also are shown for the subset of markets where

MBHC's were allowed (MBHC markets) and the subset of markets where MBHC's were not allowed (non-MBHC markets).⁶ The aggregate Herfindahl Indexes are weighted averages of the local market indexes, where the weights are the local market's share of group deposits. The aggregate Herfindahl Index for all markets was 1,883 in 1973 and 1,788 in 1983. MBHC markets were less concentrated than non-MBHC markets in both years. The MBHC Herfindahl Index was 1,680 in 1973, which was 494 points less than the non-MBHC Herfindahl Index of 2,174. In 1983 the MBHC index was 1,667, which was 274 points less than the non-MBHC index of 1,941.

⁴ As of June 30, 1983, Standard Metropolitan Statistical Areas (SMSA's) were reclassified as either 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 banking market concentration, the MSA category includes SMSA's before June 30, 1983, and SMSA's that were reclassified as CMSA's after June 29, 1983.

⁵ For a more complete discussion of these issues, see Morris, "Banking Market Structure."

⁶ Metropolitan Statistical Areas that crossed state lines were included with the MBHC markets if 50 percent or more of the MSA's deposits were in banks in a state where MBHC's were allowed. Otherwise, they were included with the non-MBHC markets.

Although MBHC markets were less concentrated than non-MBHC markets, it does not follow that MBHC's cause banking market concentration to decline. Because the MBHC classification of a market is only one of the many factors that affect the concentration of banking markets, MBHC markets may be less concentrated than non-MBHC markets for some other reason. In other words, the difference in concentration between MBHC and non-MBHC markets is consistent with MBHC's causing banking market concentration to increase, decrease, or remain the same. Therefore, to isolate the effect of MBHC's on concentration and determine its direction, the MBHC effect must be examined within the context of a general theory of the determinants of market structure.

The effect of MBHC's on market concentration: theory

A competitive model of the determinants of banking market structure is used here to analyze the effect of MBHC's on concentration.⁷ In the simplest of the competitive models, competition among banks and the ability of banks to enter or leave a market ensure that the long-run equilibrium level of concentration will be that which satisfies market demand at the lowest possible cost.⁸ Within the context

⁷ For a discussion of why a competitive model can be used to model banking markets, see Charles S. Morris, "The Competitive Effects of Interstate Banking," *Economic Review*, Federal Reserve Bank of Kansas City, November 1984, pp. 3-16.

⁸ A more detailed analysis of how firm cost conditions and market demand affect market structure can be found in most beginning economics textbooks. For example, see Armen A. Alchian and William R. Allen, *Exchange and Production: Competition, Coordination, and Control*, Wadsworth, Belmont, Calif., 1977. For an analysis that does not rely on the traditional assumptions of perfect competition, see William J. Baumol, John C. Panzar, and Robert D. Willig, *Contestable Markets and the Theory of Industry Structure*, Harcourt Brace Jovanovich, Inc., New York, 1982.

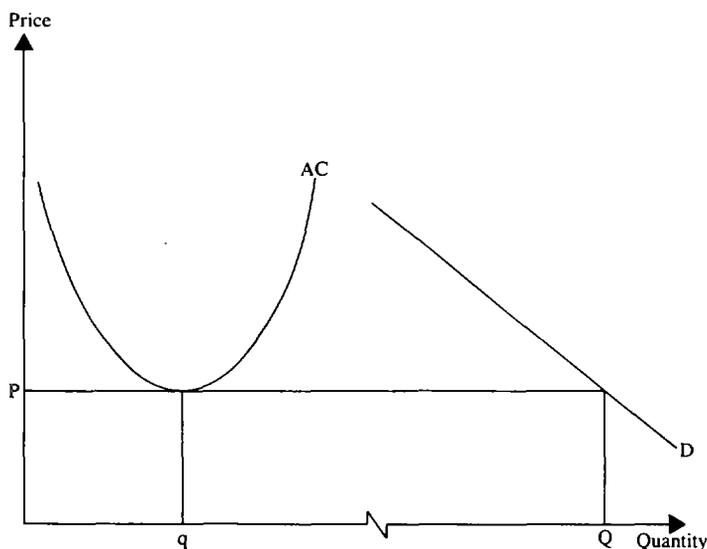
of this model, the effect of MBHC's on the long-run equilibrium level of concentration depends on how MBHC's affect bank cost conditions.

A bank's cost conditions can be summarized by its average cost of producing banking services. The average cost of producing a given level of output is defined as the total cost of producing that level of output divided by the amount of output. Figure 1 shows a typical average cost curve as the curve AC. As output rises, average costs first decline and then rise. One reason for the decline is that some of the bank's costs, such as overhead costs, are fixed. Because these costs do not vary with output, their average level declines as output rises. Also, as output rises from relatively low levels, increased specialization within the bank allows output to rise faster than total costs. At some point, however, the bank's average costs of production stop declining and begin to rise. The reason is that it becomes increasingly difficult for the bank's managers to obtain the information required to make decisions and to coordinate the bank's various activities.

The long-run equilibrium level of market concentration is the one that allows banks to meet market demand in the least costly way. In Figure 1, market demand is represented by the curve D. If all banks have the average cost curve shown in Figure 1, then in the long run the equilibrium market price will be P and the equilibrium market output will be Q. The cheapest way to meet market demand is for every bank to operate at the lowest point on its average cost curve and produce q units of output. Thus, in equilibrium all the banks will be the same size and the number of banks, n, will equal the total size of the market divided by the size of each bank, Q/q.⁹ Because all the

⁹ For simplicity of exposition, it is assumed that Q is an integer

FIGURE 1
Banking market cost and demand conditions



banks are the same size in this example, the equilibrium level of concentration as measured by the Herfindahl Index is $10,000/n$, or $10,000q/Q$. For instance, if market output was 200 and the bank's minimum average cost size was ten, then the equilibrium number of banks would be 20 and the equilibrium level of concentration would be a Herfindahl Index of 500.

The example above demonstrates that the long-run equilibrium level of market concentration depends on the minimum average cost size of banks, q . As was discussed in the previous section, the concentration of a banking market varies inversely with the number of banks. For a given level of market demand, it takes fewer banks to meet that demand when the minimum average cost size of banks is

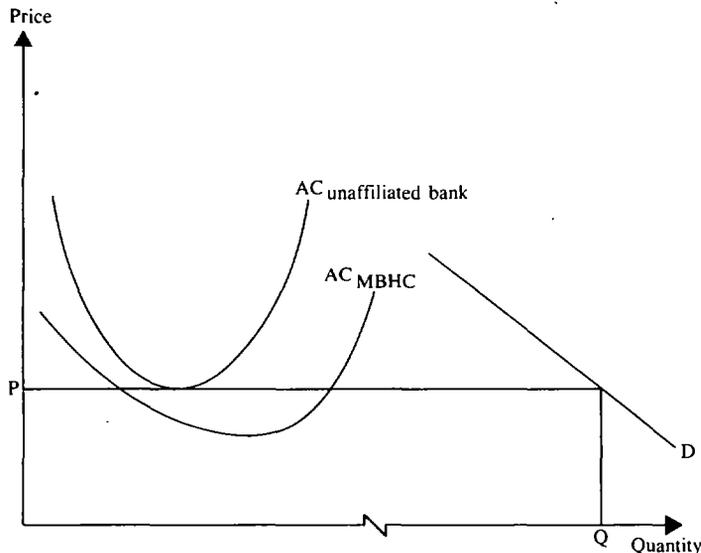
large than when the minimum average cost size is small. Thus, an increase in the minimum average cost size of banks causes the number of banks to fall and the level of concentration to rise. Conversely, a decrease in the minimum average cost size of banks causes the number of banks to rise and the level of concentration to fall.

The effect of MBHC's on the long-run equilibrium level of concentration depends on how affiliation with a MBHC affects a bank's minimum average cost size. Affiliation with a MBHC could cause the minimum average cost size of a bank to increase, decrease, or remain the same. As a result, the theoretical effect of MBHC's on concentration is ambiguous.

A situation where MBHC markets would be more concentrated than non-MBHC markets is illustrated in Figure 2. In this figure, the minimum average cost size of a MBHC-affiliated bank or a group of affiliated banks in the same

multiple of the level of output at which the firm's average cost curve reaches a minimum, q .

FIGURE 2
Banking market cost and demand conditions:
unaffiliated bank versus MBHC



market (multibank organization) is larger than that of an unaffiliated bank.¹⁰ This could be the case if MBHC managers were better at coordinating large-scale bank production than unaffiliated bank managers in the sense that they could operate a large single bank or group of affiliated banks at a lower cost than unaffiliated bank managers.¹¹

¹⁰ Because the banking firm is defined as the banking organization, the average cost curve of a group of affiliated banks is the relevant curve when a MBHC has more than one bank in the same market. If a MBHC has only one bank in a market or a bank is not affiliated with a MBHC, the relevant average cost curve is the individual bank's average cost curve. In Figure 2, the AC_{MBHC} curve is also lower than the unaffiliated bank's average cost curve because banks would not affiliate with a MBHC unless there was a cost advantage in doing so.

¹¹ In the short run, the multibank organization or MBHC-affiliated bank would produce to the right of the minimum of its average cost curve where marginal cost equals price, P , and thereby earn rents on the talent of its management team. In the long run, the price of managerial services would be bid up until AC_{MBHC} was at the same level as and to the right of the unaffiliated bank's average cost curve.

But instead of being more concentrated than non-MBHC markets, MBHC markets could be less concentrated or just as concentrated. The minimum average cost size of a multibank organization or MBHC-affiliated bank could be smaller than that of an unaffiliated bank, causing MBHC markets to be less concentrated than non-MBHC markets. For example, MBHC-affiliated banks might be able to share fixed costs, such as advertising costs, with their affiliates in other markets. Because a MBHC-affiliated bank would have fewer fixed costs to spread over output, the costs of coordinating production would cause its average cost curve to turn upward at a lower level of output than that of an unaffiliated bank. Finally, a multibank organization or MBHC-affiliated bank could have the same minimum average cost size as an unaffiliated bank, in which case MBHC's would have no effect on the level of concentration.

A simple model of the determinants of market structure has been used here to discuss the effect of MBHC's on concentration. In more complicated models, MBHC's could affect concentration in other ways. For example, MBHC markets could be more concentrated than non-MBHC markets if the management of banks affiliated with a MBHC behaved more aggressively than the management of banks that were not affiliated with a MBHC. However, if the more aggressive behavior of banks affiliated with MBHC's caused an increase in the aggressiveness of all banks in a market, MBHC markets could be less concentrated than non-MBHC markets. So even in a more complicated model, the effect of MBHC's on banking market concentration is theoretically ambiguous—MBHC's could cause banking market concentration to increase, decrease, or remain the same. Therefore, empirical evidence must be examined to determine the effect of MBHC's on market concentration.

The effect of MBHC's on market concentration: evidence

To isolate the effect of MBHC's on market concentration empirically, other factors that affect market concentration must be taken into account. A single regression equation that controls for these other factors is used to estimate the effect of MBHC's on concentration.¹² The estimated equation is then used to explain why MBHC markets are less concentrated than non-MBHC markets.

¹² A fixed effects model was used to estimate the equation. The model was also estimated by simply pooling the data and by using a variance components model, both of which also included dummy variables for markets in limited branching states, for MBHC markets, and for MSA markets. These dummy variables are not identified in the fixed effects model because each market has its own constant term. Specification tests were then used to choose the appropriate model.

The empirical equation

The empirical equation used to explain market concentration is summarized in Table 2. The Herfindahl Index is used on the left-hand side of the equation to measure concentration. The first variable on the right-hand side of the equation is a constant term. Each market is allowed to have its own constant term to account for the unique characteristics of a market that remain constant over time.¹³ The second variable, the percentage of market deposits at banks affiliated with a MBHC, is the variable used to determine the effect of MBHC's on market concentration. The other variables on the right-hand side of the equation are included to account for the other factors that affect market concentration.

Some of the variables on the right-hand side of the equation represent factors that affect the long-run equilibrium level of concentration. Market population is included to represent the level of market demand. Increases in market population should cause concentration to decrease. A time trend is included to account for the effect of technological advances, such as improvements in communication and transportation technologies, on the minimum average cost size of a bank. To the extent that these advances have enabled banks to operate at a larger size, concentration should tend to rise over time.

Because market demand and cost conditions are always changing, the empirical equation also includes variables to account for changes in the observed level of concentration during

¹³ A separate constant term can be estimated for each market only because data are available for several markets over time. One advantage of accounting for the uniqueness of individual markets is that MSA's that cross state lines, which are excluded from most studies, can be included here. One disadvantage is that the influence on concentration of market characteristics that are common to a subset of markets but do not change over time cannot be identified.

TABLE 2
The empirical equation

$$HI_{it} = a_i + b_1 MBHCDEP_{it} + b_2 POP_{it} + b_3 T + b_4 TROE70_i + b_5 PCRDEP_{it} + b_6 THI70_i + e_{it}$$

Definitions:

- HI_{it} = the Herfindahl Index in market i at time t
- a_i = the constant term for market i
- $MBHCDEP_{it}$ = percentage of market deposits at banks affiliated with MBHC's in market i at time t
- POP_{it} = population (thousands) in market i at time t
- T = linear time trend that begins in 1973
- $TROE70_i$ = time trend times the return on equity in 1970 in market i
- $PCRDEP_{it}$ = the percentage change in market real deposits (1972 dollars) in market i at time t
- $THI70_i$ = time trend times the Herfindahl Index in 1970 in market i
- e_{it} = zero mean, finite variance error term

the transition of a market from one long-run equilibrium to another. One of those factors is the attractiveness of the market to potential entrants. For example, markets where there are excess profits or where relatively large increases in demand are expected would be more attractive to potential entrants and should, therefore, experience greater decreases in concentration. In the empirical equation, market profits are represented by the product of a time trend and the market's return on equity in 1970, while expected increases in demand are represented by the percentage change in the market's real deposits.¹⁴ The final variable is the product of a time trend and the Herfindahl Index in 1970. This variable is included because the Herfindahl Index

is likely to decline faster in growing markets where concentration is initially high than in growing markets where concentration is initially low.¹⁵

The estimated coefficients of the empirical equation are reported in Table 3. The estimated equation fits fairly well, and all of the coefficients have the expected sign. The standard error of the regression is 220, which is small compared with the unweighted average Herfindahl Index of 3,337. Except for the coefficients on the MBHC and percentage change in real deposits variables, all the coefficients are statistically significant at the 0.01 percent level.

The regression results suggest that MBHC's have no effect on banking market concentra-

¹⁴ Because some theories also suggest that concentration may affect profits, the effect of profits on concentration is specified as the product of market return on equity in 1970 times a time trend to avoid the possibility of simultaneous equations bias. There are some drawbacks to this specification, however. One drawback is that a linear adjustment mechanism is assumed rather than the more common partial adjustment mechanism. Another is that the specification does not account for differences in excess returns after 1970. These drawbacks, however, should not bias the results.

¹⁵ This is most easily seen by looking at a market where the number of firms changes from n equal-sized firms to $n+1$ equal-sized firms. Because the Herfindahl Index equals $10,000$ divided by the number of firms when all the firms in a market are the same size, the Herfindahl Index is a convex function of the number of firms. Therefore, the Herfindahl Index will decline faster in markets where the initial Herfindahl Index is relatively high. The initial index is the Herfindahl Index in 1970 and not the Herfindahl Index in 1973 because lagged dependent variables cannot be used on the right-hand side in a fixed effects model.

TABLE 3
The estimated coefficients*

Coefficients on:					
<u>MBHCDEP</u>	<u>POP</u>	<u>T</u>	<u>TROE70</u>	<u>PCRDEP</u>	<u>THI70</u>
-0.001	-1.793†	55.392†	-1.387†	-0.490	-0.016†
(0.002)	(5.860)	(12.354)	(4.282)	(0.887)	(24.541)

Standard Error: 220

*Absolute value of t-statistics are in parentheses.

†Marginal significance level is less than or equal to 0.01 percent.

Note: The equation was estimated using annual data from 406 local banking markets over the period from 1973 to 1983. The simple average of the constant terms for the MBHC markets is 3,885 and for the non-MBHC markets it is 3,254. In markets where MBHCDEP was positive, the simple average of the constant terms was 3,590. In the remaining markets, the simple average of the constant terms was 3,513.

tion. Although the coefficient on the percentage of market deposits at banks affiliated with MBHC's is negative, the coefficient is small and insignificantly different from zero. Moreover, in markets that have MBHC-affiliated banks (markets where MBHC's are not only allowed but present) the average constant term over all years is 3,590, which is only slightly greater than the average constant term of 3,513 in markets that do not have MBHC-affiliated banks. Thus, these results suggest that the difference in concentration between MBHC and non-MBHC markets must be due to something other than the presence or absence of MBHC's.¹⁶

Why are MBHC markets less concentrated than non-MBHC markets?

It was shown in Chart 1 that, on average, markets where MBHC's were allowed were less concentrated than markets where MBHC's

were not allowed. Table 4 shows that this difference was due largely to a greater demand for banking services in MBHC markets.

In Table 4, the difference between the MBHC market and non-MBHC market Herfindahl Indexes is predicted for 1973 and 1983. The predictions are based on the estimated coefficients from the regression equation and the difference between each explanatory variable in the two types of markets. The first row shows the difference between the actual weighted average Herfindahl Indexes for the two types of markets in 1973 and 1983, while the second row shows the difference between the predicted weighted average Herfindahl Indexes. The remaining rows show the contribution of the explanatory variables to the predicted difference. For each variable, this contribution was calculated by multiplying the difference between the weighted average value of the variable in each type of market by the

¹⁶ It is interesting to note that in the MBHC markets (markets where MBHC's are allowed) the average constant term is 3,885, which is much greater than the average constant term of 3,254 in the non-MBHC markets. This difference in average constant

terms must be due to factors unique to each type of market other than the presence or absence of banks affiliated with MBHC's because the average constant term is about the same in markets with MBHC-affiliated banks as in markets without MBHC-affiliated banks.

TABLE 4
Predicted difference in concentration
between non-MBHC markets and MBHC markets
(non-MBHC markets minus MBHC markets)

<u>Difference in:</u>	<u>1973</u>	<u>1983</u>
(1) Actual Herfindahl Index	494	274
(2) Predicted Herfindahl Index	449	292
<u>Contribution of:</u>		
(3) Constant terms	- 1,042	- 996
(4) Population	1,502*	1,339†
(5) MBHC's	0	0
(6) All other variables	-10	-52

*The weighted average population was 268,000 in non-MBHC markets and 1,106,000 in MBHC markets.

†The weighted average population was 328,000 in non-MBHC markets and 1,075,000 in MBHC markets.

estimated coefficient on the variable.

In 1973 and 1983, markets where MBHC's were allowed were less concentrated, on average, than markets where MBHC's were not allowed largely because the demand for banking services was greater in MBHC markets than in non-MBHC markets. As the second row of Table 4 shows, the predicted weighted average Herfindahl Index for the MBHC markets was less than the predicted value for the non-MBHC markets by 449 points in 1973 and by 292 points in 1983. The third row shows that if all factors other than the factors that are unique to each market were the same in MBHC and non-MBHC markets, MBHC markets would have been more concentrated, on average, than non-MBHC markets by 1,042 points in 1973 and 996 points in 1983.¹⁷ However, the fourth row shows that the effect of the unique factors on concentration is com-

pletely offset by the population variable. Thus, to the extent that the estimated equation accurately accounts for the factors that affect banking market concentration, MBHC markets are less concentrated than non-MBHC markets because the demand for banking services is much larger in MBHC markets than in non-MBHC markets.

Conclusion

Because interstate banking is most likely to occur through bank holding companies acquiring banks in more than one state, one way to infer the likely effect of interstate banking on banking market concentration is to see what effect MBHC's have on concentration. This article finds that MBHC's have no effect on local banking market concentration in states of the Tenth Federal Reserve District. Although markets where MBHC's are allowed were found to be less concentrated than markets where they are not allowed, the results suggest that this difference has not been due to the

¹⁷ These differences are not due, however, to the presence of MBHC's because the average constant term in markets with MBHC-affiliated banks is approximately equal to the average constant term in markets without MBHC-affiliated banks.

MBHC classification of a market. Instead, MBHC markets appear to be less concentrated than non-MBHC markets because the demand for banking services is greater in MBHC markets than in non-MBHC markets. To the extent that local banking markets in Tenth

District states are similar to other banking markets, the results of this study suggest that even if concentrated markets are less competitive than unconcentrated markets, banking policymakers should be less concerned about the competitive effects of interstate banking.

Appendix

Data sources: The bank data are from two sources. The bank office deposit data are as of June 30 of each year and are from the Federal Deposit Insurance Corporation (FDIC) Summary of Deposits report. The net income and equity data are from the Combined Call and Income report. The population data are as of April 1984 and are from the Regional Economic Measurement System Division of the Bureau of Economic Analysis. The series was updated for 1981 through 1983 from the U.S. Department of Commerce, Bureau of the Census, Series P-26.

Data sample: The data consist of 406 MSA's and non-MSA counties located in states of the Tenth Federal Reserve District that had two or more banking organizations over the period from 1973 to 1983. Markets that did not exist over the entire sample period were excluded from the sample because a constant panel was needed to estimate the empirical equation. Markets that did not exist over the entire sample period were non-MSA counties that either became part of an existing MSA, were dropped from an existing MSA, or had no banks for a period of time. The only complication was that Jasper and Newton counties in Missouri became the Joplin MSA in 1981, so that one of the counties had to be excluded from the sample between 1973 and 1980. Because the economic activity was so much greater in Jasper county than in Newton county, Newton county was excluded from the sample over the period of time before 1981.

Markets that had only one bank, and therefore a Herfindahl Index of 10,000, between 1973 and

1983 were also dropped from the sample. This was done for two reasons. First, the sample distribution of the dependent variable in the empirical equation, the Herfindahl Index, had a spike at a value of 10,000, which violates the normality assumption of least squares. Second, the empirical equation breaks down when the Herfindahl Index is 10,000. For example, if a variable, say, x , has an estimated coefficient of 200, then a one unit increase in x should cause the Herfindahl Index to rise by 200 points. But if the Herfindahl Index is already at its maximum value of 10,000, it cannot increase at all.

Data adjustments: (1) Market variables were calculated using only FDIC insured banks that had deposits and that existed during the entire calendar year. (2) All of the data were adjusted for mergers. (3) Because equity data were reported for the beginning, middle, and end of the year, they had to be averaged to compute the return on equity. In computing the annual average of return on equity, the beginning and end of year values each received a weight of one-quarter, and the middle of year value received a weight of one-half. (4) Because the net income and equity data are not broken down by office, these variables had to be distributed among a bank's offices when a bank had offices in more than one local market. The variables were distributed according to each office's share of bank total deposits. For example, if an office had 30 percent of a bank's total deposits, it would be allocated 30 percent of the bank's net income and equity.

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