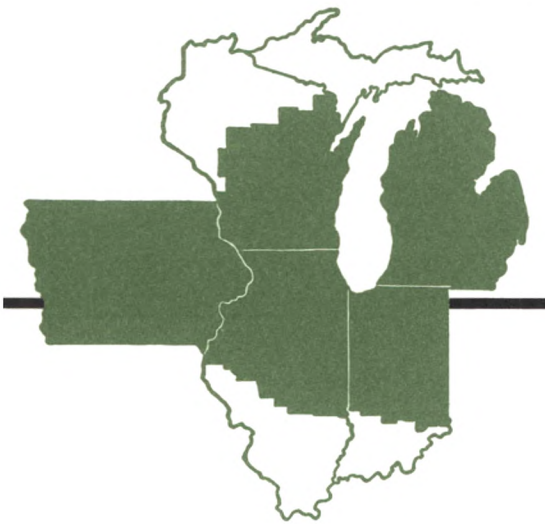
A review by the **Federal Reserve Bank of Chicago**

Business Conditions



1965 June

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Seventh District economic growth

The American economy has turned in a remarkable performance over the years. The quantity, variety and quality of production have enabled consumption to rise to levels that would have astounded the early settlers of this nation and even today are incomprehensible to much of the world. During the last 100 years, national income in constant dollars has doubled almost every 20 years. Population has increased as well but not so fast as production, hence the rising levels of living. Since 1929, for example, disposable income per capita (valued in 1954 dollars) has risen about $800, or 70 per cent.

Beginning about 1958 there was widespread discussion that economic growth was slowing, nevertheless, expansion has continued at an impressive rate. Total output in constant dollars between 1946 and 1957 increased at a compounded annual rate of 3.5 per cent and since 1957 at only a slightly lower rate of 3.4 per cent. Total employment rose about 9.8 million between 1946 and 1957 and has increased 5.3 million since 1957. Disposable income per capita in constant dollars has also continued to rise; during the 12 years 1946-57, the rise was $254 and in the 7 years 1957-64, $208.

For many years economic activity in the Seventh Federal Reserve District states—Illinois, Indiana, Iowa, Michigan and Wisconsin—was among the most rapidly growing in the nation. Since the mid-Fifties, however, the growth in these states, as measured by employment, has not matched that of the United States.

Data on total employment for most states are not available. However, a measure of total employment can be estimated from Bureau of Labor Statistics reports on employ-

Total employment*

	1957	1964	Increase Amount	Increase Per cent
	(thousands)			
Illinois	3,822	3,873	51	1.3
Indiana	1,645	1,717	72	4.4
Iowa	950	985	35	3.7
Michigan	2,677	2,666	—11	—0.4
Wisconsin	1,458	1,514	56	3.8
Total	10,552	10,755	203	2.0
United States	60,494	64,297	3,803	6.3

*Figures are estimated from Bureau of Labor Statistics data on employment in nonagricultural establishments and Department of Agriculture data on farm employment. United States total differs from the Department of Labor household survey estimate by about 4.5 million in 1957 and 6 million in 1964.

BUSINESS CONDITIONS is published monthly by the Federal Reserve Bank of Chicago, Charles L. Choguill and Karl A. Scheld were primarily responsible for the article "Seventh District Economic Growth."

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ment in nonagricultural establishments and Department of Agriculture data on farm employment. (National employment has been estimated on the same basis to permit comparison.)

Employment in the District states according to these estimates has grown only 2 per cent since 1957, while nationally it has increased 6.3 per cent. With the exception of Michigan, all of the District states experienced increases although none kept pace with the overall rise in national employment. The relatively small increase for the District states is primarily accounted for by the decline in Michigan employment and the small increase in Illinois.

While the District has had relatively slow growth on the basis of employment, in terms of per capita personal income the performance has been substantially better. Between 1957 and 1964 the increases in per capita personal income in Indiana, Iowa and Wisconsin exceeded that of the United States; Illinois and Michigan had smaller gains.

Per capita personal income

	1957	1964	Increase	
			Amount	Per cent
	(dollars)			
Illinois	2,505	3,003	498	20
Indiana	2,029	2,529	500	25
Iowa	1,864	2,370	506	27
Michigan	2,245	2,733	488	22
Wisconsin	1,969	2,492	523	27
United States	2,048	2,550	502	25

Measuring relative growth

Growth of the economy necessarily implies change: rapid expansion of some industries, occupations and areas, but slow growth or even decline of others. The forces at work are complex and interrelated in their effects. Technology, natural resource availability, population, size and skills of labor force, consumer demands and governmental policies all have important influences upon individual areas. Furthermore, a region is not isolated from other regions but is connected with them through flows of goods, services, financial resources and population. Forces affecting a region, therefore, originate from both within and without.

Shift-share analysis

All of these forces are affected by, and in turn have the effects upon, decisions of businessmen on location and production. Consequently, an analysis of regional industry changes can provide some insight into the economic growth of a region.

A technique known as *shift-share* analysis can be used for this purpose. It consists of comparing the direction, rates and types of change for individual areas with the direction, rates and types of change at the national level. The changes for the nation are used as a "norm," thereby providing a basis for assessing the relative magnitudes of regional changes and giving some indications of possible causes of the differences.

Since individual regions in a highly developed economy—such as the United States—are effected strongly by forces originating throughout the nation, there is a strong tendency for the region, during any period of several years or more, to change at about the same rate as the nation. In the shift-share framework, this is known as the *national-change* effect. Usually, however, the actual

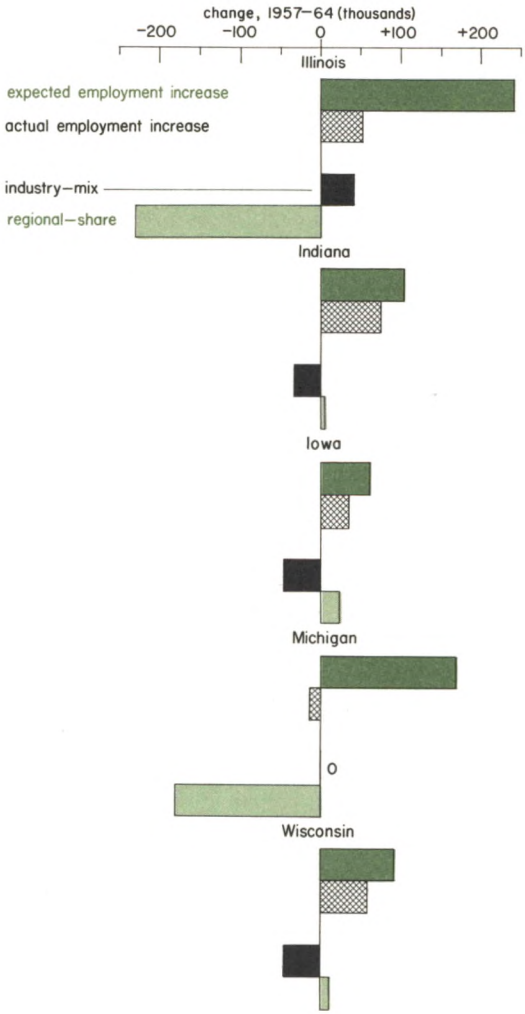
change in an area differs from the national change. What accounts for this difference?

Obviously, the differences between the regional and national rates of change arise from differences in the charactertistics of regions. The mix of industries varies and all industries do not grow at the same rate nationally; for example, finance and service industries have been growing more rapidly than agriculture, mining or transportation. Economic activity in a region with a large proportion of the more rapidly growing industries would be expected to expand at an above average rate and the region would be expected to increase its share of the national totals of employment, production and income. This *industry-mix* effect is a measure of *expected* change based on the difference between the individual industry growth rate and the average (all-industry) growth rate.

The regional growth rate may also differ from the nation because certain industries in the region are expanding more or less rapidly than the *same* industries nationally. This *regional-share* effect reflects the competitive position of industries in the region. If an industry is expanding faster in a region than in the nation, it adds to the region's relative growth even though, nationally, the industry may have a below-average growth rate.

The total change in a region's employment, production or income can be attributed to these three sources—national-change, industry-mix and regional-share effects. If employment in Illinois, as an example, had increased at the national rate between 1957 and 1964, there would have been a gain of 240,000. Because a large proportion of Illinois employment in 1957 was in the more rapidly growing industries, the industry-mix effects would have raised this number by 41,000, for a total *expected* increase of 281,000. The actual increase of employment in Illinois between 1957 and 1964 was only 51,000. The difference between the actual and the expected increase (230,000) represents the regional-share effect; that is, Illinois indus-

Employment increases
in the District states
did not match "expected" gains



tries did not increase employment as fast as the same industries nationally. The decline in the state's share of total national employment, thus, is due to the relatively weak performance of industries in the state and not to the types of industries located there.

Using the shift-share technique, changes in employment and personal income for recent years are analyzed in the following pages for each of the states in the Seventh District.

Employment and personal income

Employment shifts

In the District states employment increased less between 1957 and 1964 than in the nation; that is, each of the District states experienced a decline in its share of total national employment. In order to maintain the same share of national employment, Illinois would have had to increase employment by an *additional* 189,000 workers, Indiana by 29,000, Iowa by 25,000, Michigan by 181,000 and Wisconsin by 34,000.

Illinois was the only District state to experience an increase in the relative share of expected employment as a result of industry-mix. Larger proportions of employment in the more rapidly growing industries—trade, finance, services and government—resulted in positive industry-mix effects (larger *expected* employment). Michigan had no net industry-mix effects; its 1957 employment distribution was such that expected increases in the slower growing industries offset those in the more rapidly growing industries.

The reason for the decline in relative position in total employment in Illinois and Michigan was the failure of industries in these states to expand as rapidly as the same industries nationally. On the basis of regional share effects, Illinois and Michigan had 230,000 and 181,000 fewer employes, respectively, than if their industries had grown at the national rates. Only agriculture and mining in Illinois and agriculture and services in Michigan performed favorably compared with the national industry changes. While employment in agriculture and mining declined both in the United States and in Illinois and Michigan, the declines were less rapid in these two District states than in the nation.

In contrast, regional-share effects were positive for Indiana, Iowa and Wisconsin. In Indiana, employment grew more rapidly in mining, manufacturing, finance, services and government than in the same industries nationally. Employment in Iowa advanced at a higher rate in manufacturing and finance and declined less rapidly in agriculture and mining than in the United States. Manufacturing, finance and government employment in Wisconsin also had a greater rise than in the nation.

The regional-share effects in these states were not, however, large enough to offset the negative effects of the industry-mix. These states had relatively larger proportions of slower growing industries than the nation as a whole. The major negative industry-mix effect came from agriculture in which employment nationally had declined almost 20 per cent between 1957 and 1964. Since agriculture is more important in Indiana, Iowa and Wisconsin than it is nationally, slower growth would have been expected in these states.

On the basis of the shift-share analysis, the District states that were closest to matching

the national change in employment—Indiana, Iowa and Wisconsin—had higher rates of increase in employment on balance in their major industry sectors than the corresponding national rates. Because of location or other relative advantages, or possibly, the specific plants or firms within the broad industry groups, these states were able to compete effectively with other regions in the nation. This advantage was offset, however, by the drag resulting from an industrial composition weighted more heavily by the slower growing industries—primarily agriculture. Illinois, on the other hand, where employment increased only slightly, had a favorable combination of rapid and slow growing industries relative to the United States. Industry-mix effects in Illinois were offset, however, because the state did not compete as effectively as a location for employment increases as had other areas of the nation.

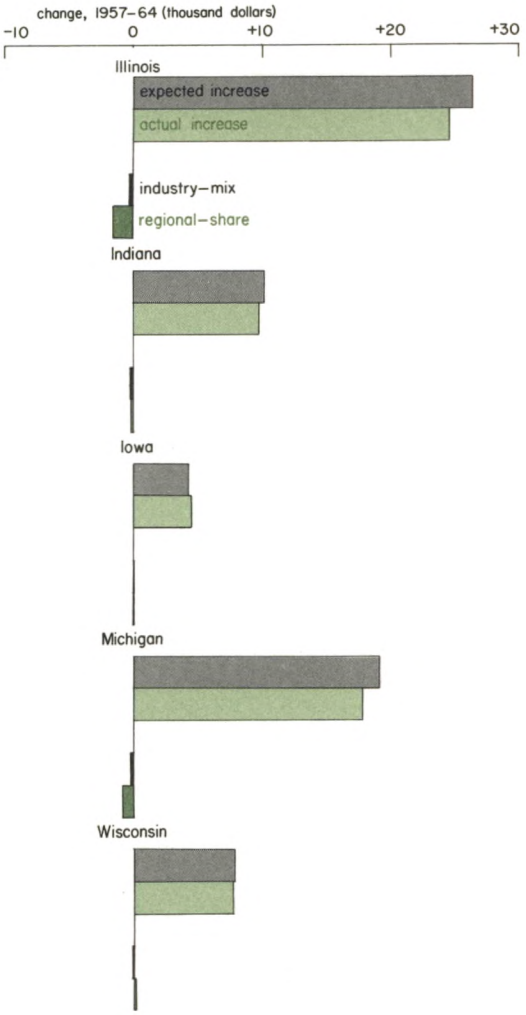
Personal income shifts

Another aspect of recent economic growth in the Seventh District is evident in the personal income statistics. In addition to wages and salaries, personal income includes other labor income, proprietors income, income from property and transfer payments (the latter consists of payments not associated with current productive effort, such as unemployment compensation and social security benefits). Personal income is commonly used as a measure of consumer income and purchasing power.

For an analysis of structural changes within and among regions, personal income is deficient since it includes two items—property income and transfer payments—that are not necessarily the result of participation in the current production of the region. For purposes of analyzing industry changes using shift-share analysis, *participation income*—wages and salaries, other labor income and proprietors income—is a better measure.

Participation income by industry for 1964 is available only for the nonagricultural sector. Consequently, the results of the shift-

Only Iowa exceeded "expected" growth in nonagricultural participation income



share analysis are somewhat different than they would be if agricultural income were included. Income in agriculture has been declining and because of this a negative industry-mix effect would be expected for the District states. Even with agriculture excluded, useful indications of the nature of relative changes of income in the District states can be obtained.

Nonagricultural participation income

	1957	1964	Increase	
			Amount	Per cent
	(million dollars)			
Illinois	19,123	24,524	5,401	28
Indiana	7,398	9,835	2,437	33
Iowa	3,109	4,330	1,221	39
Michigan	13,920	17,871	3,951	28
Wisconsin	5,684	7,768	2,084	37
Total	49,234	64,328	15,094	31
United States	265,962	365,219	99,257	37

Nonagricultural participation income (NPI) increased more than 37 per cent between 1957 and 1964 for the United States. In Illinois, Indiana and Michigan the rate of increase was less than that nationally. NPI in Iowa, in contrast, expanded more rapidly than it did in the nation and the gain in Wisconsin almost matched the national rate. The larger increase in NPI than in total personal income for Iowa reflects the drag on income created by the agricultural sector as well as the slower expansion of income from transfer payments and property income.

Only Iowa among the District states experienced positive income effects from both industry-mix and regional-share influences. The large proportion of more rapidly growing industries—finance, services and government—resulted in an expected increase in NPI from industry-mix. The favorable regional-share effect was primarily in manufacturing income which increased 40 per cent in Iowa compared with 28 per cent nationally.

Wisconsin increased its share of NPI in construction, manufacturing, transportation, communications and public utilities and government. These increases more than offset losses in other sectors. The positive regional-share effect, nevertheless, was not sufficient to overcome negative influence on income growth from industry-mix.

The declining share of NPI in Illinois, Indiana and Michigan was associated with both an industrial composition heavily weighted by industries that are growing more slowly nationally—a negative industry-mix effect—and slower rates of income expansion in the local industries than in the nation—a negative regional-share effect. In Illinois and Michigan the regional-share effects were more important than the industry-mix effects in accounting for the relative decline in the total share of the states NPI; the reverse was true in Indiana where the unfavorable industry-mix effect was an important factor accounting for the decline.

Industry and area trends

Economic growth in the United States, as in most nations, has been based largely upon the utilization of natural resources. In the language of the regional economist, the natural resource industries—agriculture, forestry, mining and fishing—are considered "primary" industries. The "secondary" industries—manufacturing—developed initially to

serve the needs of the primary industries and to process the products of these industries. Trade, finance, service and government —"tertiary" industries — accompanied in some form the development of the natural resource and processing industries and expanded in variety and complexity as the economy grew and incomes rose.

Primary industries - natural resources

Of the many factors contributing to the economic growth of the Seventh District states, none has been as important throughout the years as the natural resource advantage.[1] The current industrial structure of these states still reflects this influence in its agricultural production, wholesaling and processing of foodstuffs, furniture manufacturing, transportation networks and other related processing, trade and service activities.

Agriculture is the most important "primary" industry in the District. Although employment in this sector has been declining both in the United States and the District, it still accounts for 27 per cent of Iowa's total work force, 16 per cent of Wisconsin's and almost 11 per cent of Indiana's. More than 18 per cent of the nation's agricultural workers were in the District states in 1964.

With abundant land suitable for cultivation, the District was an obvious location for agricultural development. Prior to the mid-1800s the District already had a sizable share of total agricultural activity. With the development of transportation, regional economic interdependence and the growth of foreign and domestic markets, activity developed even more rapidly in the District than in the nation. By 1870 almost 21 per cent of all agricultural workers were in the District.

The share of agricultural employment in the District began to decline after 1870 as activity expanded faster in other regions. Wheat had been an important crop in the District up to this time. Illinois, Indiana, Iowa and Wisconsin, in 1870, accounted for almost 40 per cent of all wheat threshed. Poor yields, price fluctuations, an increased demand for livestock products and increased competition from the West—arising from improved railroad transportation—resulted in a shift to livestock and milk production in the following years.

The decline in agricultural employment both absolutely since early 1900 and as a share of total employment since about 1870 is explained by several factors. With increased specialization, activities previously carried on in the agricultural sector have been taken over by the manufacturing, trade and service industries. As a result of technological change, the productivity of agricultural employes has increased and there has been strong competition from synthetic fibers. Finally, demand for farm products is relatively unresponsive to income changes and consequently, as incomes rise, agriculture's share of total demand declines.

Trends in mining employment among the District states tend to be much more erratic than those in agriculture. Mining develops rapidly as new deposits are found or when changes in market sites or the structure of demand make it profitable to exploit lower grade deposits. But mining can also decline precipitously as deposits are depleted.

Coal and copper have been the major mineral deposits exploited in the five Seventh District states. Prior to the mid-1800s, this area of the Midwest had only a small amount

[1]Material for the discussion on primary, secondary and tertiary industries was largely drawn from Harvey S. Perloff and Others, *Regions, Resources and Economic Growth* (Baltimore, Johns Hopkins Press, 1960).

of mining activity. From the 1870s to 1910, mining employment rose steadily as industry's need for materials and fuels increased. In Michigan, extraction of iron and copper ores between the 1870s and 1880s resulted in employment increases at a more rapid rate than the national growth in mining employment. Coal production also expanded markedly, especially in Illinois but also in Indiana and Iowa.

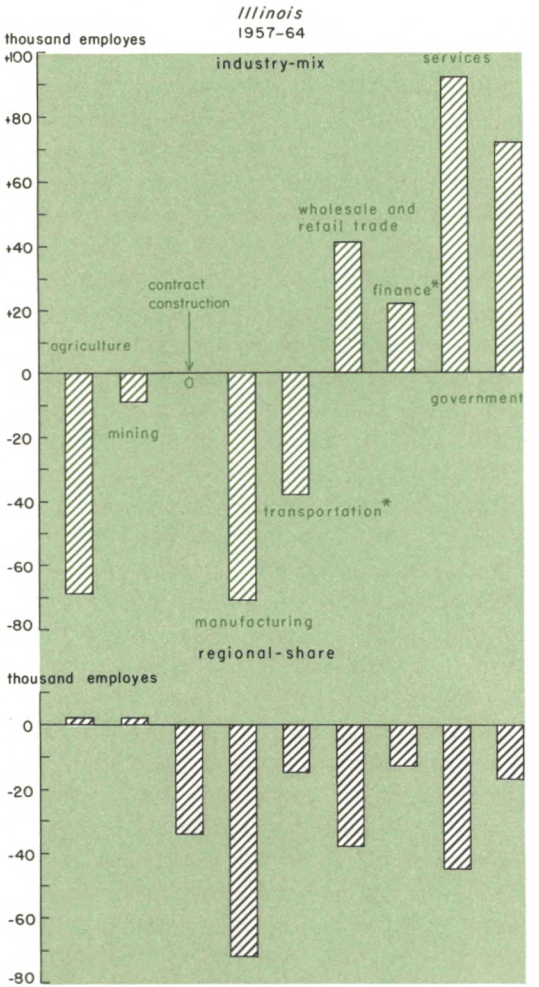
The increases were not sustained, however. By the end of the nineteenth century, copper mining in Michigan had declined sharply. As industry consumed more oil as a fuel, coal mining in Illinois, Indiana and Iowa declined compared with the nation. Mining employment had begun to decline absolutely in Iowa and Michigan by 1910 and in Illinois and Indiana by 1920.

As in agriculture, gains in productivity resulting from changes in technology contributed to the relative and absolute decline of mining employment nationally. The increasing use of substitutes such as plastic and rubber was also a factor accounting for the decline in mining employment. The growth in mining that has occurred has been largely in oil and gas. Since these sectors contribute relatively less employment than other mining for the same output, both absolute employment and the share of total employment in mining have declined.

Forestry is now only a minor activity in the Seventh District.[2] Current statistics are not readily available but the proportion of the District states' employment in forestry and logging is probably even below the national proportion of less than 1 per cent of total employment. Although presently unimportant, the forestry and logging industry was sizable in the 1800s and spawned a number of related manufacturing activities.

Most of the forestry activity was centered in Michigan and Wisconsin. Although lum-

Illinois experienced positive industry-mix effects in tertiary industries



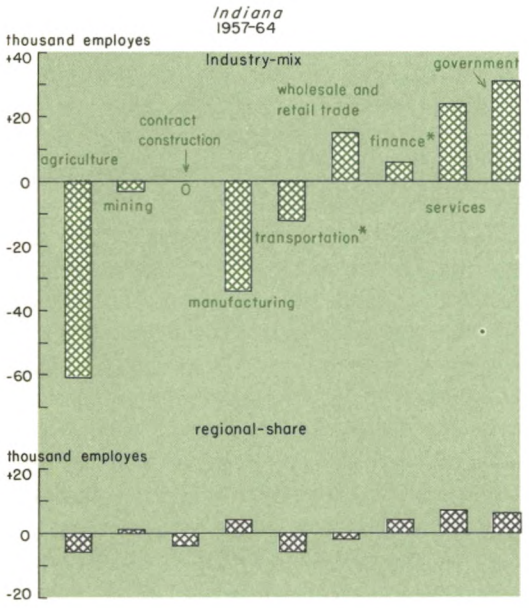
*Transportation includes transportation, communications and public utilities. Finance includes finance, insurance and real estate.

[2]For a further discussion of forestry in the Midwest see "Depressed Areas—Some Lessons from the Past," *Business Conditions*, June 1961.

bering operations had their start prior to the mid-1800s, it was not until after the Civil War that activity spurted. The region's employment growth in forestry surpassed the national rate by the mid-1870s and continued to do so until the 1890s when the peak was reached. By that time Michigan had one of the largest proportions of forestry workers to total employment of any state in the nation and Wisconsin also ranked very high.

In Wisconsin, employment in forestry declined between 1890 and 1910 and then increased to a new high between 1910 and 1920 as hardwood production offset the exhaustion of the white pine forests. But the increase was short-lived and by 1930 employment had declined significantly. Michigan forestry employment also spurted in the early 1900s but did not reach the highs of the 1890s. Exhaustion of forests, improvements in transportation and the expansion of domestic pulpwood requirements all led to the decline.

Industry-mix effects in Indiana generally outweigh regional-share effects in employment



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Secondary industries—manufacturing

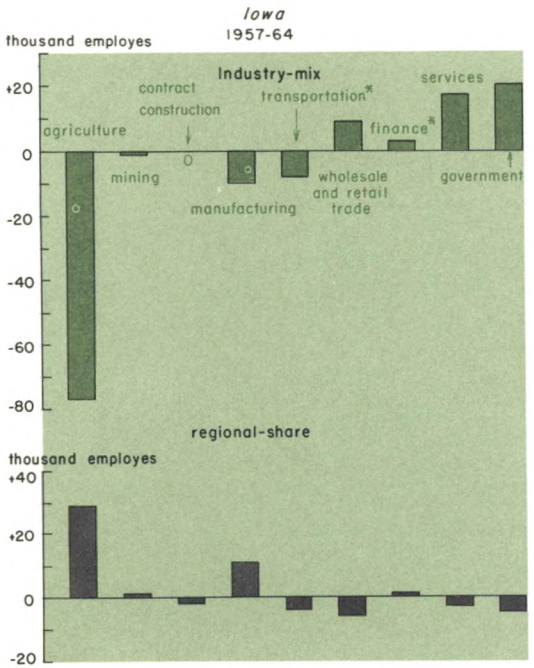
Manufacturing activity in the Seventh District in the mid-1800s was oriented to the primary industries—agriculture, mining and forestry. Machine shops arose to serve the lumber camps and saw mills. Wagons, tools and other farm machinery were produced for the agricultural sector and processing industries such as flour milling, meat packing and dairy and lumber products began operations, usually at junctions in natural transportation routes and close to raw materials.

In Illinois and Wisconsin, meat packing and dairy product processing contributed substantially to manufacturing employment growth, and these states were among the leaders in paper products manufacturing and printing and publishing. Furniture manufacturing based on the lumber industry was on its way to a boom in Illinois and Michigan. Iron and steel manufacturing and, in turn, steel-using industries began developing in Illinois, Indiana and Wisconsin.

Manufacturing workers in the United States increased more than 4.5 million or 172 per cent from 1870 to 1900. Among the District states, only Iowa with a 161 per cent increase failed to exceed the national rate. Illinois and Wisconsin led the District with increases in manufacturing employment of 272 and 263 per cent, respectively, while Indiana (175 per cent) and Michigan (181 per cent) were closer to the national rate.

Employment growth in manufacturing

Performance in Iowa
agricultural sector affected state employment growth



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prior to the twentieth century was facilitated by the availability of resources indigenous to the region but the expansion of demand set the pace of that growth. By the early 1900s manufacturers were serving a national market. Shipping costs had been reduced, levels of income had risen sharply and technology and management techniques had advanced. Production for a readily accessible mass market contributed to the further rapid expansion of District manufacturing.

United States manufacturing employment between 1910 and 1950 increased 35 per cent. Michigan led the nation with an increase of nearly 170 per cent. Illinois, Indiana and Wisconsin manufacturing employment increased 50, 70 and 47 per cent, respectively, while in Iowa there was a small decline.

The rate of increase in manufacturing employment has slowed in more recent years. Technological advances and managerial efficiencies have led to increased productivity. Consequently, manufacturing output has increased without a corresponding increase (and in some industries a decline) in the number of workers required. Consumers have been spending a growing proportion of their income on services—travel, recreation, medical care and education.

In the last several decades the growth rates of industries within the manufacturing sector have shifted. Employment expansion in firms that produce nondurable goods (for example, food and apparel) and that require large inputs of raw materials has declined compared with firms that produce durable goods (automobiles and appliances).

Until the early Fifties the District states with sizable durable goods producing facilities were able to capitalize on the shift in demand. After the Korean war, however, competition from other areas of the nation became stronger. With a shift in defense demand to missiles and electronic hardware, the lure of climate in the South and Far West and the resulting expansion of these markets, District manufacturing employment expansion declined relative to the nation. Nevertheless, the Seventh District still retains a dominant position in manufacturing —more than 20 per cent of national manufacturing employment in 1964.

Tertiary industries

Agriculture, mining, forestry and manu-

facturing (primary and secondary industries) account for only about 37 per cent of total employment in the nation. The remainder (more than 40 million workers) are engaged in a variety of activities including construction, transportation, communications and public utilities, wholesale and retail trade, finance and insurance, services and government.

Analysis of this broad sector is complicated by the variety of activities. Trends of the components differ and are influenced by many factors; historical data on many of the subgroups are not available.

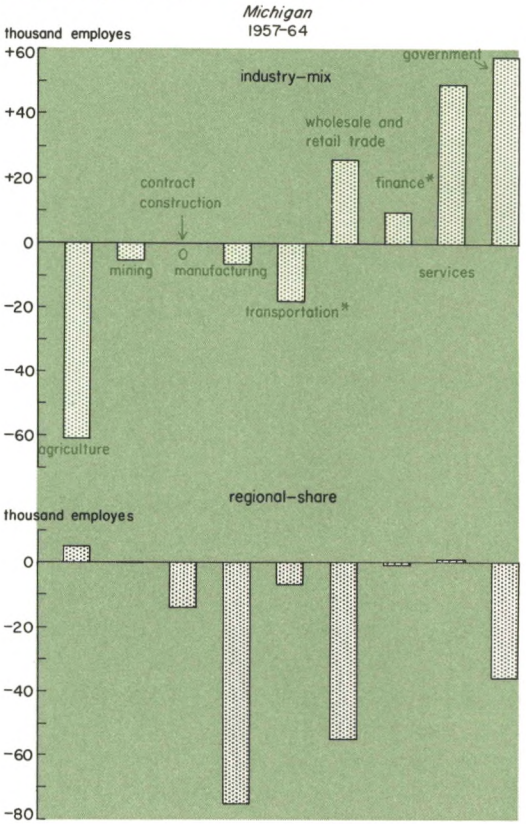
Employment in the transportation, communications and public utilities trade and finance categories during the last half of the 1800s and the early part of the 1900s was growing more rapidly than total employment. By 1910, transportation and communications employment in the United States was six times its 1870 level and trade and finance employment had increased more than four and a half times.

In the early twentieth century, however, with major transportation facilities already completed, the growth of transportation employment began to decline relative to other categories. Total tertiary sector employment, however, continued to advance. Employment in this sector between 1910 and 1950 increased 170 per cent.

Employment in the tertiary sector of the Seventh District states has not had the same importance nor the same rate of growth as it has nationally. In the late 1800s construction, transportation, wholesale and retail trade and financial employment expanded rapidly. By 1900, 35 per cent of District employment was in this sector—a slightly higher proportion than in the nation (33 per cent). Such employment in the District continued to increase between 1900 and 1950 rising to 57 per cent of total employment; 63 per cent of national employment was in these activities. United States tertiary employment grew more rapidly than in the District while the rate of increase in total national employment was slower. There was no change in either the District or United States proportion between 1950 and 1964.

In the recent period, 1957-64, the most rapidly growing employment components of

Negative regional-share effects account for Michigan's less rapid rate of growth



*Transportation includes transportation, communications and public utilities. Finance includes finance, insurance and real estate.

this broad sector were services, government, finance, insurance and real estate and wholesale and retail trade. The less rapidly growing industries included contract construction, transportation, communications and public utilities. A large part of this growth is explained by higher incomes and population expansion. However, the increased demand for specialized business services—advertising, public relations and management consultants—increasing urbanization and changing views on the use of leisure time, the role of credit, insurance and savings have all contributed significantly to the growth of these activities.

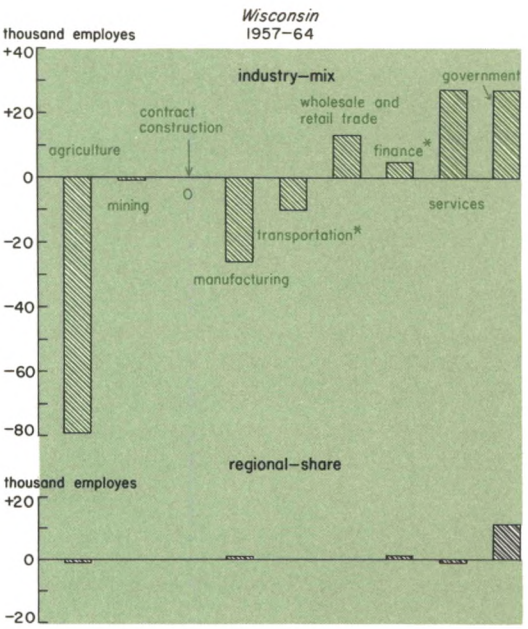
Trends in Illinois

Of the District states, Illinois has the largest number of employes. Manufacturing and wholesale and retail trade employment account for more than half of the total. With what might be termed a rapid growth industry-mix, Illinois could have been expected to increase its employment faster than the nation.

Only agriculture and mining employment have increased in Illinois relative to the nation. In both industries, employment declined absolutely between 1957 and 1964 but less in the District than in the nation. Relative strength in employment in the state would be expected in these sectors because of the high productivity of Illinois land and the continued use of local coal by the state's industries.

The decline in Illinois manufacturing, in part, is accounted for by the changing demand conditions of the last few years both in types of manufactured goods and market locations. Expansion of Illinois steel manufacturing as currently contemplated and continued demand for investment goods may result in an improved competitive position for Illinois manufacturing in the future.

Regional-share effect in Wisconsin closely matches national rate of employment growth



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More rapid population growth outside the Seventh District also tends to explain the relative declines in trade, services and government. Areas of more rapid population growth may have a deficiency in these activities and, therefore, a higher rate of increase.

Growth in Indiana

Indiana had the highest rate of employment growth in the District between 1957 and 1964, but the overall rate of increase (4.4 per cent) did not match the national gain (6.3 per cent). Rates of increase compared with the nation were especially large

for services, government, finance, insurance and real estate, although manufacturing employment also increased more rapidly than in the nation and mining declined less in Indiana.

Because of the different rates of growth in Indiana industries, the industrial structure shifted between 1957 and 1964. Consistent with the national trends, the proportions of total employment in the resource and manufacturing industries declined. Service employment increased from 7.4 to 9.3 per cent of Indiana employment, trade from 16.4 to 17.4 per cent and transportation, communications and public utilities, finance, insurance and real estate and government increased at a slower rate.

Because of Indiana's industry-mix, it had a net loss in the national share of employment. More than 62 per cent of employment in 1957 was in the slower growing industries —agriculture, mining, manufacturing and transportation, communications and public utilities.

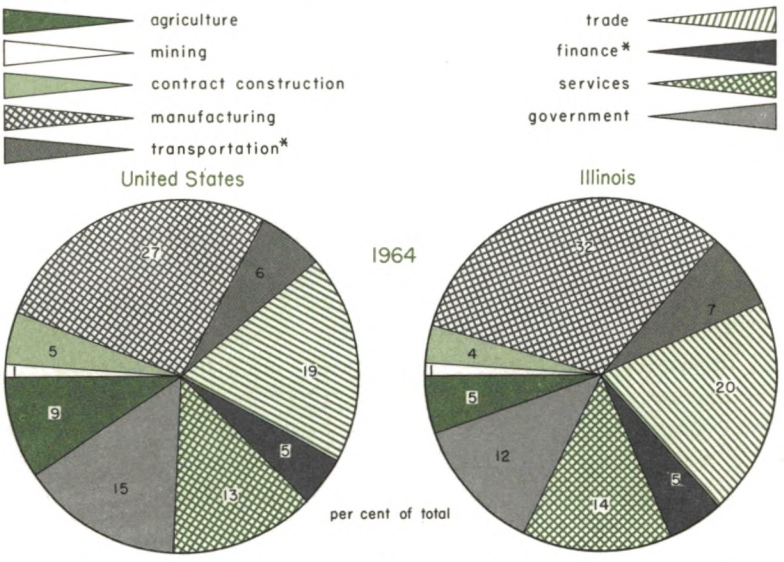
During the 1957-64 period, then, Indiana experienced significant growth given an industrial structure heavily weighted by slower growing industries nationally. Manufacturing firms have competed effectively in the national and local markets and employment in a number of industries have more than kept pace with national employment gains.

Agriculture—manufacturing in Iowa

The two largest sectors of the Iowa economy are agriculture and manufacturing with 27 and 18 per cent, respectively, of total employment. The importance of agriculture to the Iowa economy is greater than that represented by farm workers alone. Nearly one-third of Iowa's manufacturing workers are in food processing and about 10 per cent are employed in farm machinery firms.

The agriculture-manufacturing combination in Iowa results in an industrial structure oriented to what are slow growth industries nationally. The negative industry-mix effect in Iowa between 1957 and 1964 was larger and more important in comparison to total employment than in any of the other District states. During the 1957-64 period, Iowa experi-

Tertiary employment in Illinois matches United States



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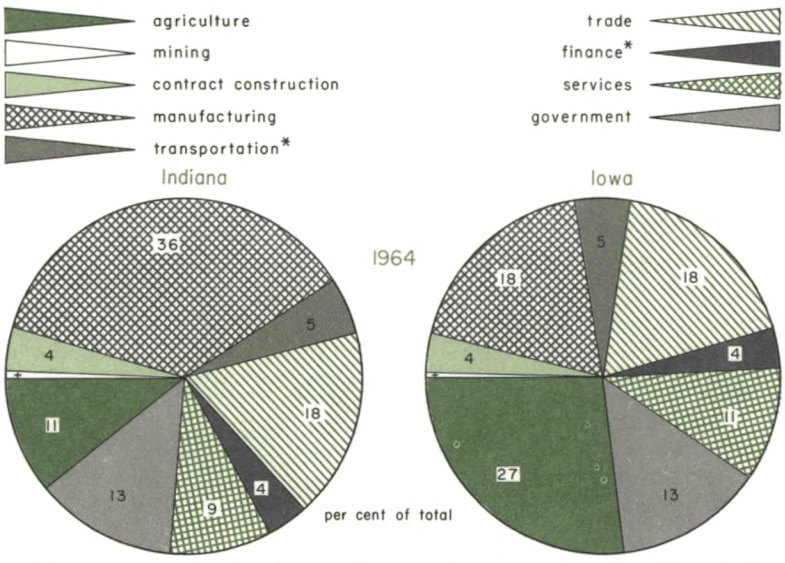
Manufacturing and agriculture account for nearly half of employment in Indiana and Iowa



*Transportation includes transportation, communications and public utilities. Finance includes finance, insurance and real estate.
+Less than 0.5 per cent.

enced significant employment expansion but the increase was not sufficient to offset the industry-mix influence, therefore, the share of total employment declined.

The largest increase in share of national employment occurred in agriculture even though actual employment declined. As in Illinois, the rate of decline in Iowa was less than in the nation because of the relatively favorable agricultural conditions.

Iowa also had a substantial gain in manufacturing employment. The bulk of the increase was in the fabricated metals, nonelectrical and electrical machinery and miscellaneous manufacturing (pens, pencils, advertising signs and displays) firms. The increases in fabricated metals and nonelectrical machinery employment are indicative of Iowa's competitive strength for some types of manufacturing since both are among the slow growth industries in the nation.

Finance, insurance and real estate was the only major rapid growth industry group in which Iowa employment growth exceeded that in the United States.

The lower rates of growth as compared with the nation in wholesale and retail trade, services and government, in part, can be explained by the slower growth in Iowa population. In addition, the transition in Iowa from a rural to a more urbanized society has led to the consolidation of activities—school districts, medical and trade facilities—which, in turn, might have provided for the increased demands of businesses and individuals in Iowa with a smaller increase in employment.

Activity in Michigan

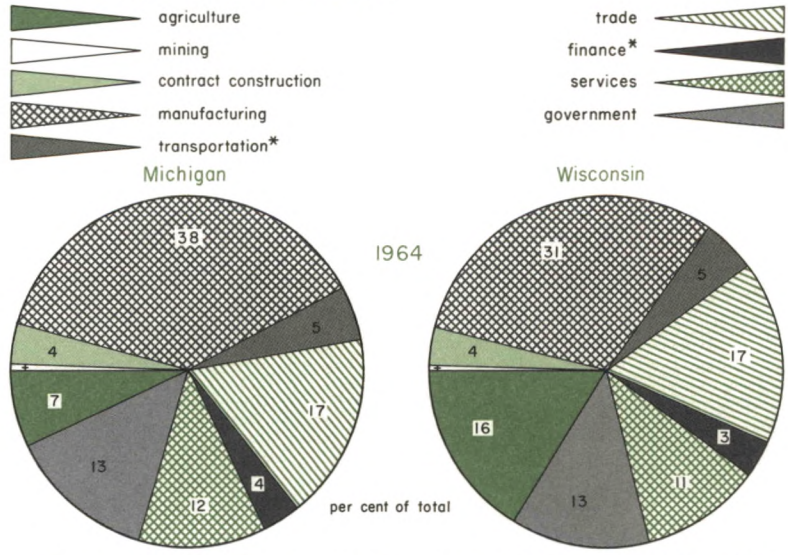
Employment in Michigan between 1957 and 1964 decreased both absolutely and as a share of total national employment. With a combination of fast and slow growing industries such that the industry-mix effects were zero, the state's declining share of total national employment was entirely accounted for by the regional-share effects.

Agricultural employment in Michigan declined less rapidly than in the nation and service employment increased only slightly faster; in all other industries the share of national employment declined from 1957 to

1964. The largest relative declines occurred in manufacturing, wholesale and retail trade and government.

The major proportion of manufacturing activity in Michigan is oriented to automobile and truck production. In addition to the transportation equipment firms, the fabricated metals and nonelectrical and electrical machinery firms also produce parts for motor vehicles. Even though automobile production has increased significantly in the last few years, employment in Michigan manufacturing has not regained the 1957 level.

Manufacturing employment is predominant in Michigan and Wisconsin



*Transportation includes transportation, communications and public utilities. Finance includes finance, insurance and real estate.
+Less than 0.5 per cent.

Population has not increased as rapidly in Michigan as it has elsewhere in the nation and this, in part, accounts for the slower expansion in government and trade employment. In addition, trade employment increases also may have been influenced by the slower rate of growth of income in Michigan.

Wisconsin comparisons

The most interesting result of the shift-share analysis in the District was the rather unique regional-share effect in Wisconsin. With the exception of the government sector, the rates of employment increase approximated the rates of increase in the same industries nationally. This regional-share effect may be viewed as an indication of the competitive position of the Wisconsin economy.

The primary reason for Wisconsin's decline in share of total employment between 1957 and 1964 was the state's industrial composition. More than 62 per cent of Wisconsin's 1957 employment was in the slower growing industries and the industry-mix effect, consequently, was negative.

In the 1957-64 period the industrial composition of Wisconsin employment has changed. The proportion of Wisconsin employment in agriculture, mining, manufacturing and transportation, communications and public utilities has declined while other industries have increased. If industries nationally retain their same positions as slow and fast growing, the industry-mix effect should have less influence on the Wisconsin economy in the coming years.