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The District Business Economy in 1987: The Expansion Continues

THE 1980s have been a decade of economic contrasts. In the first two years of the decade, both the Eighth Federal Reserve District and the nation struggled through the deepest recession in the postwar period. Since then, they have enjoyed steady growth. The District economy expanded moderately in 1987, the fifth successive year of regional as well as national growth, making the current recovery the longest peacetime expansion of the century.¹

Nationally, economic growth in 1987 was similar to that in 1986; real GNP increased 2.9 percent in both years, in year-over-year comparisons. Last year, the sources of growth shifted to the export sector and inventory accumulation from consumer spending, which was inhibited by slow real income growth. These shifts could be seen in the District economy as manufacturing employment increased in 1987 and real income slowed. In both the District and the nation, general employment growth in 1987 was moderate, as it was in 1986,

allowing unemployment rates to decline to their lowest levels of the decade.

This article focuses on developments of the Eighth District's business economy in 1987. For a broader perspective on last year's growth, it will be assessed in the context of District and U.S. growth in the 1980s.

RECENT ECONOMIC PERFORMANCE IN THE EIGHTH DISTRICT

The broadest available measures of regional economic activity — personal income and employment — show moderately slow growth in 1987. As table 1 shows, both income and nonagricultural employment advanced at near the national rate.

Real personal income grew 1.8 percent in the District during 1987, its lowest growth rate since

¹The Eighth Federal Reserve District includes Arkansas and parts of Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee. This article uses data for the entire states of Arkansas, Kentucky, Missouri and Tennessee to represent the District.

Table 1
Growth Rates of Income and Employment During the 1980s

	1986-87 ¹		1979-87 ²	
	Eighth District	United States	Eighth District	United States
Real personal income	1.8%	1.9%	1.4%	2.0%
Nonagricultural employment	2.5	2.5	1.1	1.6
Goods-producing sectors				
Mining	-4.1	-5.3	-4.1	-3.2
Manufacturing	0.8	0.6	-1.0	-1.2
Construction	5.5	2.7	0.2	1.5
Service-producing sectors				
Transportation and public utilities	2.7	2.5	0.7	0.6
Wholesale and retail trade	2.3	2.0	1.7	2.2
Finance	3.3	4.6	2.7	3.6
Services	4.6	4.5	3.9	4.4
Government	1.9	2.1	0.4	0.8

¹Percent change

²Compounded annual rate of change

the recession of 1982.² Last year's gain only slightly exceeded real income's 1.4 percent average annual growth rate over the 1980s, which began with three successive years of declining real income.

All three major components of District real personal income slowed in 1987 relative to 1986. Transfer payments rose 1.4 percent in 1987, one-third of the previous year's growth. Dividends, interest and rent fell 0.6 percent in 1987 after rising 3.3 percent in 1986. Real earnings, about two-thirds of income, grew 2.5 percent in 1987 after rising 3.9 percent during the previous year. The earnings slowdown stems from sluggish wage gains during the year. In the nation's businesses, real hourly compensation fell 0.7 percent in 1987 after a 2 percent gain in 1986.

District retail sales expanded 2.7 percent in 1987, after adjusting for price changes, somewhat faster than income growth. This represents a considerable acceleration over the 1 percent gain in retail sales in 1986. Many District retailers, fearing that last October's stock market crash would dampen Christmas sales, discounted prices heavily in December. Despite these markdowns, Dis-

trict retailers generally reported only slight gains in real sales from a year earlier. Many retailers of general merchandise, however, reported that year-end inventories were not substantially above desired levels.

For the third successive year, District nonagricultural employment grew moderately. The number of nonfarm workers on District payrolls rose to 6.3 million in 1987, a 2.5 percent gain. The District unemployment rate in 1987 fell to 7.2 percent from 7.8 percent a year earlier. Although total civilian employment rose only 1.8 percent during the year, the unemployment rate fell as the labor force grew even more slowly, rising by 1.2 percent.

DISTRICT GROWTH MATCHES THE NATION'S

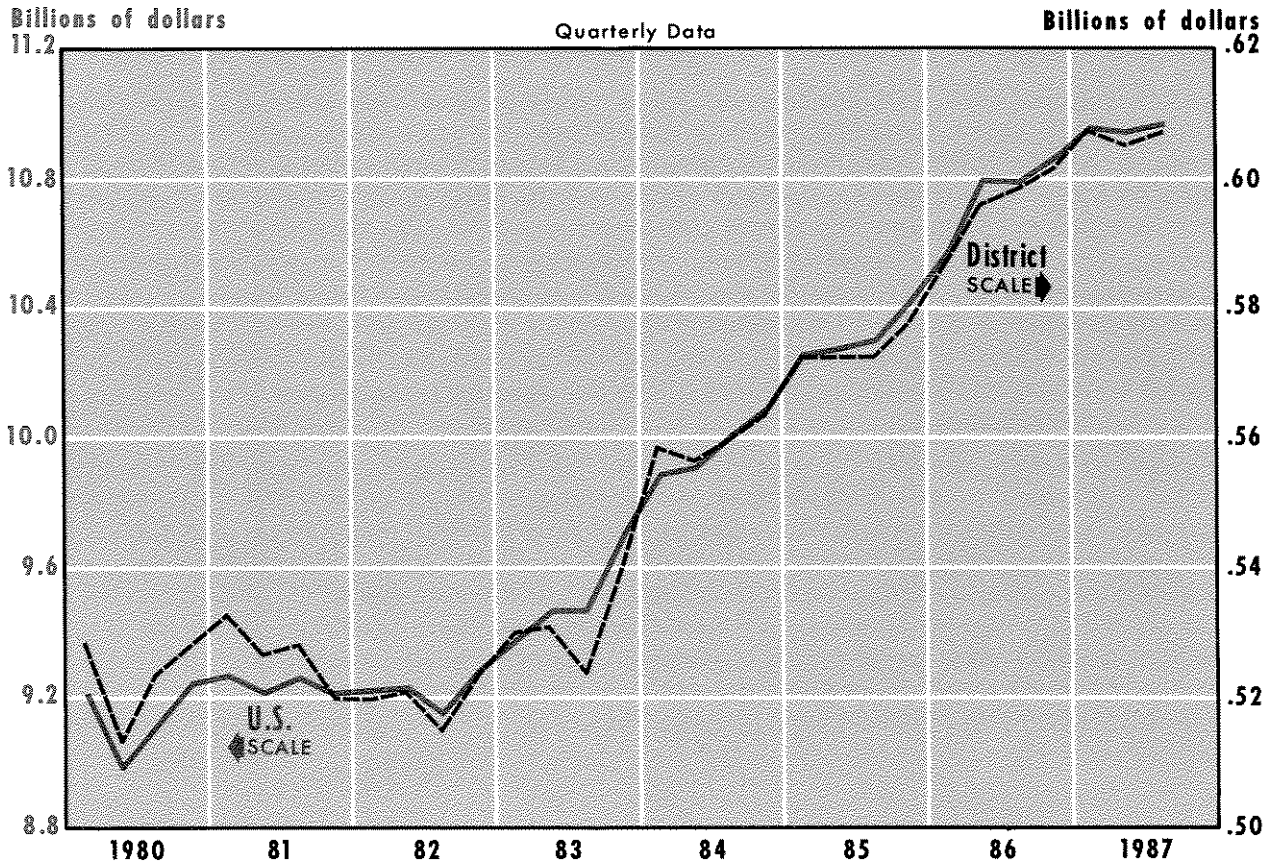
The similarity between income and nonagricultural employment growth in the District and the nation in 1987 is not unique. Rather, it is a continuation of parallel growth that has existed throughout the 1980s.³ As charts 1 and 2 show, District income and employment declined slightly more

²Income growth compares the average of the first three quarters of 1987 with previous years' averages. Growth rates of other indicators compare the 1987 average to the average of previous years.

³This close correspondence existed in the 1970s as well. Santoni (1983) found no statistically significant difference between Eighth District and U.S. growth rates of employment, income and several other economic indicators in the 1/1970-1/1983 period.

Chart 1

Real Personal Income



rapidly than the national average from the beginning of the decade through the trough of the recession in IV/1982; the subsequent correspondence between regional and national income and employment, however, has been striking. The similarity shown in the charts is more precisely expressed in the third and fourth columns of table 1. The compounded annual growth rates of District income and employment during the 1980s, 1.4 percent and 1.1 percent, were only slightly below the national figures. This similarity can be understood by considering two factors: the relative compositions of the regional and national economies and the growth of individual sectors.

The more similar its economic structure is to the nation's, the more likely a region's growth will parallel the nation's. The Eighth District and the nation have shared very similar employment

structures throughout the 1980s. Table 2 shows the 1987 distribution of employment among the eight major divisions of employment. Although manufacturing has accounted for a slightly larger, and services a slightly smaller share of the District economy than of the national economy, the resemblance is quite close. Although not shown in the table, this structural similarity in employment has existed throughout the decade.

The compositional similarity helps explain the parallel movements of District and U.S. employment, but does not guarantee similar total employment expansions. If the growth of employment in individual sectors at the regional and national levels is sufficiently different, dissimilar growth of overall employment would be likely as well. During the current decade, however, most of the District's major sectors grew at near the national

Chart 2

Nonagricultural Employment

Millions of persons

Quarterly Data

Millions of persons

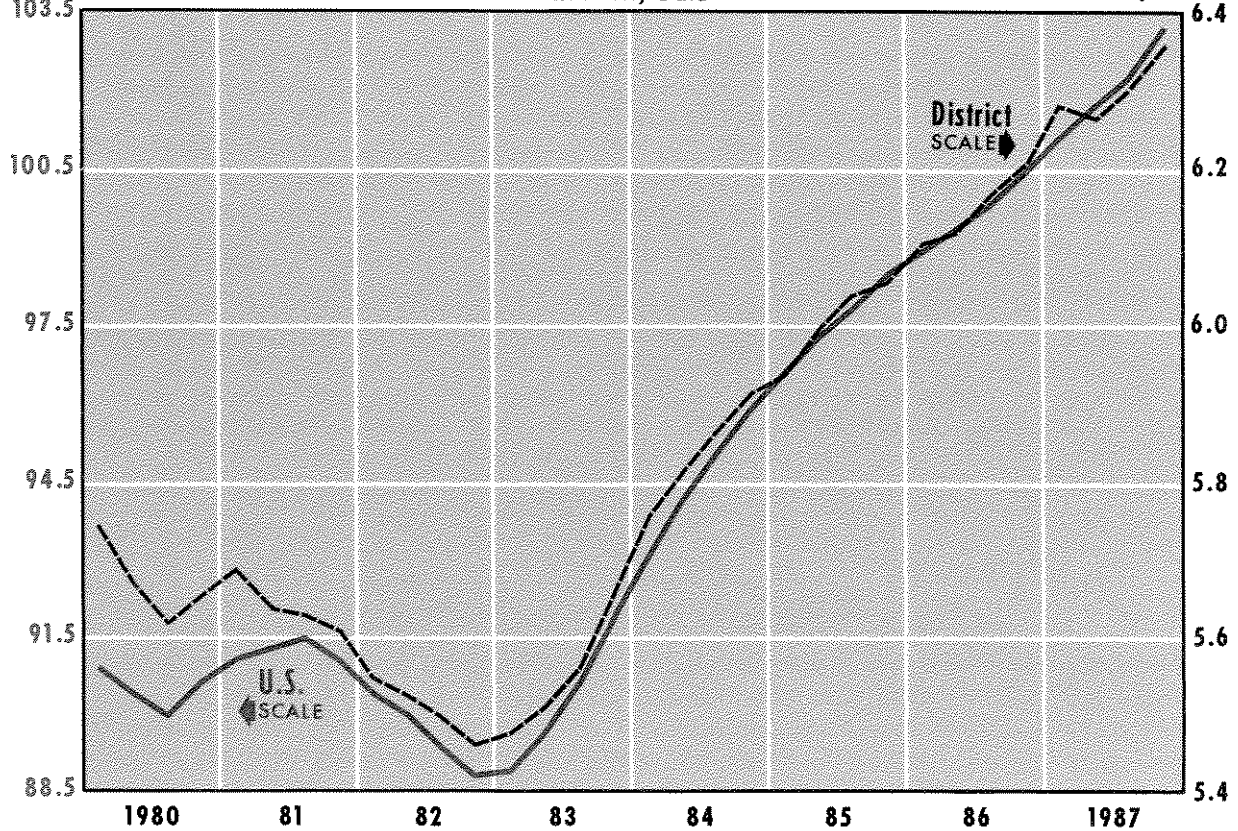


Table 2

A Comparison of Eighth District and U.S. Employment Composition in 1987 (percent of nonagricultural employment)

	Eighth District	United States
Mining	0.9%	0.7%
Manufacturing	22.0	18.7
Construction	4.7	4.9
Transportation and public utilities	5.7	5.3
Wholesale and retail trade	23.5	23.6
Finance	5.2	6.5
Services	21.2	23.6
Government	16.7	16.7

rates, as table 1 shows. Most important, the four largest sectors (manufacturing, wholesale and retail trade, services and government), which account for more than four-fifths of total District nonagricultural employment, each grew at near the national pace.

EIGHTH DISTRICT GROWTH BY SECTOR

In addition to pointing out the similarities between District and U.S. employment growth, table 1 shows the sharp variations in job growth last year among the various sectors of the District economy; these divergences range from mining's substantial employment decline to construction's sharp employment growth. This section highlights recent developments of the District's major industrial sectors.

Goods-Producing Sectors: Mixed Performance

The performance of goods-producing sectors was mixed: mining employment continued to decline, but construction employment expanded and manufacturing employment finally grew after falling for two years.

Mining. The fortunes of the nation's energy sector have been linked to energy prices in the 1980s. Since peaking in 1981, the price of energy fell steadily through 1985, then plummeted in 1986. As energy prices increased slightly in 1987, the mining industry continued to reduce its workforce but at a slower rate than in 1986.⁴ In 1987, employment in mining (including crude oil, natural gas and coal extraction) dropped by 4.1 percent and 5.3 percent in the District and the United States, respectively, less than half their declines in 1986.

Manufacturing. The long-awaited effect of the declining exchange value of the dollar helped stimulate manufacturing activity in 1987. The growth of the nation's manufacturing sector during 1987 was spurred by the swift growth of exports, which rose 12.8 percent in 1987 (1982 dollars). Although no recent data on District exports are available, manufactured exports produced in the District between 1971 and 1984 grew at or near the national pace. This parallel growth allowed the District to produce approximately 6 percent of the nation's manufactured exports throughout the period.⁵ To the extent that these historical relationships have persisted, District exports also accelerated in 1987, contributing to the growth of the District manufacturing sector.

District manufacturing employment grew 0.8 percent in 1987, compared with a 0.6 percent increase nationally. These increases represent the first growth since 1984. Despite last year's gain, manufacturing employment has yet to return to its 1979 peak in either the District or the nation. Unlike manufacturing employment, however, manufacturing output has continued to grow since the current recovery began. By 1984, both District and U.S. manufacturers were producing a greater vol-

ume of goods than in 1979.⁶ Productivity gains allowed fewer workers to produce a greater volume of output.

Last year's advances in regional manufacturing employment were not widespread among industries. Of the District's major industrial sectors, only employment in the food and kindred products and textile and apparel industries grew last year. Following several years of stagnation, employment in the region's food processing firms grew approximately 4 percent in 1986 and 1987. Much of the District growth was due to a rapid increase in Arkansas, where poultry processors and canneries have expanded their operations.

The textile and apparel industry raised its workforce by 2.7 percent last year. This import-sensitive industry enjoyed a strong demand for its products in 1987 as the falling value of the dollar in foreign exchange markets raised import prices and made its products more competitive overseas. In addition, the industry has invested heavily throughout the decade to make their operations more competitive. By the end of 1987, the nation's textile mill industry was using 94.1 percent of its capacity, its highest utilization rate of the decade.

The District's transportation equipment industry experienced the steepest employment decline of the major manufacturing industries, dropping 5.5 percent in 1987. Employment levels in District plants making aircraft and aircraft parts were stable, but auto assembly jobs dropped sharply throughout the District. One aging truck assembly plant in St. Louis was closed in August, eliminating more than 2,000 jobs. Moreover, slower-than-expected auto sales forced frequent layoffs of auto-assembly workers throughout the year.

The number of autos assembled in District plants in model year 1987 fell to just over 919,000, 14.1 percent fewer than in the previous year. District plants assembled 12.5 percent of the nation's 1987 model cars, down slightly from 13.6 percent a year earlier. Auto assembly should continue as a major contributor to the District's economy, however. In recent years, only Michigan has assembled more cars than Missouri. Auto makers are currently building new plants in central Kentucky and central Tennessee, and plan a major expan-

⁴The producer price index for fuels, related products and electric power fell at a 2.3 percent rate between 1981 and 1985, dropped 23.7 percent in 1986, then rose 0.7 percent last year.

⁵See Mandelbaum (1987/88).

⁶For a comparison of employment and output trends of Eighth District manufacturing, see Mandelbaum (1987).

sion of light truck production in the Louisville area. What's more, despite last year's decline, the District's share of the nation's car assembly has risen in the decade, from 8.8 percent in 1980 to last year's 12.5 percent. The number of trucks assembled in District states has also risen in the decade.

Construction. After a strong recovery in 1983, construction growth has slowed in both the region and the nation. In 1987, the real value of construction contracts was virtually flat in both the District and the nation. Although District construction employment grew 5.5 percent last year, this growth was concentrated in Tennessee, where construction contracts grew moderately, and Kentucky, where additional workers were needed to complete projects contracted in 1986.

A decline in the residential building sector contributed to the stagnation of District construction contracts in 1987. Residential contracts and non-building contracts (for such projects as roads, bridges and utilities) declined approximately 5 percent in 1987. These declines were offset by an 11.2 percent gain in nonresidential building construction. The region's nonresidential building growth originated in Kentucky and Tennessee, and was particularly strong in Louisville and Memphis.

The weakness of the residential building sector during 1987, revealed in the contract data, is also evident in preliminary housing permit data. Housing permits issued in District states declined 9.2 percent in 1987 and 13 percent nationally. In the District, fewer housing permits were issued in 1987 than in any year since 1983, largely because of a sharp decline in multifamily housing. Nationally, permits for multifamily structures also dropped rapidly. Industry analysts blame years of overbuilding for the weakness in this sector. As mortgage rates increased through most of the year, the expansion in the number of District permits for single-family homes slowed in 1987 from the double-digit gains of 1985 and 1986. District permits for single-family homes grew 5.6 percent last year, while dropping 3.8 percent nationally.

Service-Producing Sectors

Three of the service-producing sectors — finance, services and wholesale/retail trade —

accounted for about half of the District workforce and were responsible for the majority of District job growth during the 1980s. Consumers have spent an increasing proportion of their rising incomes on services in recent decades. Slower labor productivity growth in service-producing than in goods-producing industries also has contributed to the relatively rapid job growth in services.⁷

Services. The miscellaneous services category, including personal, business, auto repair, health and legal services, was the fastest growing of the District service-producing sectors both in 1987 and in the current decade. Employment rose 4.6 percent in 1987, slowing slightly from its pace over the previous three years. Health and business services dominate this category and were among the most rapidly expanding industries. Employment in services grew particularly rapidly in Tennessee, rising by more than 6 percent in both 1986 and 1987.

Trades. Employment in the District's wholesale and retail trade businesses rose 2.3 percent in 1987, similar to the nation's gain. The pattern of growth in 1987 exemplified that in the 1980s: District trade employment grew at a 1.7 percent annual rate during the 1980s, similar to the nation's 2.2 percent pace, with sluggish growth in Missouri and Kentucky contrasting the faster growth in Arkansas and Tennessee.

Finance. The finance sector includes finance, insurance and real estate. Employment in the District finance sector has grown more slowly than its national counterpart for most years of the decade. In 1987, employment in the sector grew 3.3 percent in the District compared with 4.6 percent nationally. This sector expanded slower than the national average in each of the District states.

Government. Government employment has grown at less than a 1 percent rate in the current decade in both the nation and the District. Last year, the sector grew slightly more rapidly than it averaged over the decade, with a 1.9 percent growth regionally and a 2.1 percent increase nationally.

Federal government spending in District states continued to contribute to regional economic growth in 1987. Federal expenditures in District states during fiscal year 1987 totaled \$54 billion, 7.7 percent less than in the previous year, after

⁷See Ott (1987), pp. 8-13, for an explanation of services' rapid employment growth.

adjusting for inflation. Defense contractors in District states received \$8.2 billion in procurement contracts during the fiscal year, a real gain of 0.4 percent over the previous fiscal year. Defense contracts fell 2 percent nationally. The value of contracts awarded in Missouri, recipient of three-fourths of the District defense contracts, increased 8.1 percent in 1987, following a sharp drop in 1986.

Transportation, Communication and Public Utilities. After falling the first four years of the decade, employment in the District's transportation, communication and public utilities sector has grown steadily. In 1987, this sector's employment rose 2.7 percent regionally and 2.5 percent nationally.

INTERSTATE COMPARISONS

Despite the overall similarity of economic growth in the District and the nation, all District states did not grow at the national rate during either 1987 or the current decade. While employment growth in Arkansas and Tennessee approached the national rate, Kentucky's and Missouri's expansions were substantially slower.

Two factors that earlier explained the parallel growth of District and U.S. employment — industrial mix and relative growth of individual sectors — are also helpful in understanding why employment in Arkansas and Tennessee grew at near the national rate and why employment in Kentucky and Missouri expanded more slowly. A discussion of the general influences of these factors follows; a more detailed accounting of the effects of industrial mix and relative industry growth can be found in the appendix.

Arkansas

Arkansas has a relatively high job concentration in slow-growing manufacturing and a smaller-than-national proportion in services, the most rapidly growing employment sector nationally. Despite this difference, Arkansas' employment growth was nearly as large as that in the nation in the 1980s because individual industries in the state grew faster than their national counterparts. An important factor was a relatively strong manufacturing sector; factory employment rose 0.5 percent in Arkansas while falling 9.2 percent nationally.

As chart 3 shows, the state's unemployment rate has fallen slowly since 1984. Arkansas enjoyed a moderate job expansion in 1987; as a result, the

civilian unemployment rate dropped to 8.1 percent from 8.8 percent in 1986. Nonagricultural employment rose a moderate 2.8 percent (see table 3). Real personal income, however, grew only 0.9 percent during the year, in part because wage hikes were minimal and employment gains were concentrated in lower-wage sectors, such as services and trade. Manufacturing employment grew at a healthy 3.2 percent pace, but these gains were concentrated in food processing, a relatively low-wage industry.

For the third successive year, the real value of construction contracts awarded in Arkansas declined in 1987, dropping 5.6 percent. This drop showed up in both residential and nonresidential categories.

Kentucky

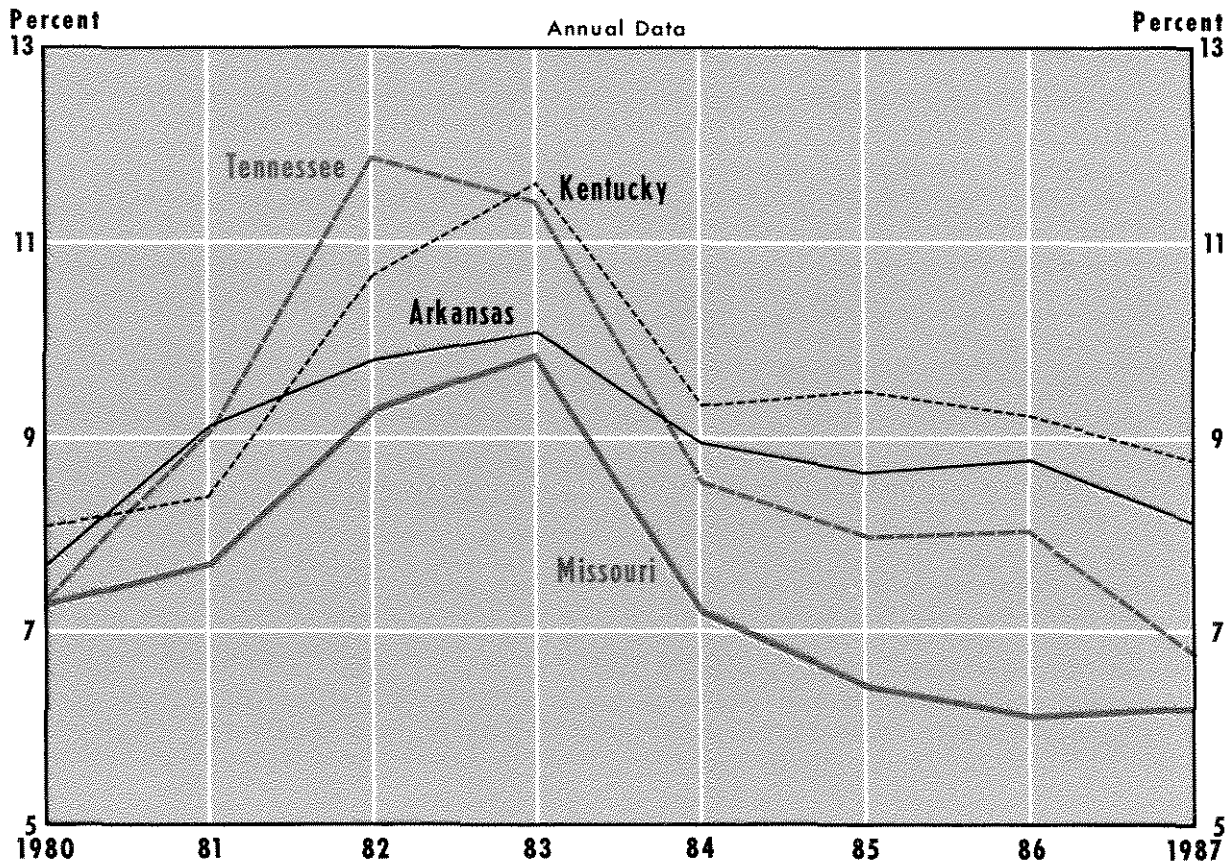
Kentucky's workforce has been more concentrated than the national average in the sluggish mining, manufacturing and government sectors and less concentrated in the faster-growing services and finance sectors. This employment structure, combined with slower-than-national job growth in each of its eight major sectors, resulted in Kentucky's slow employment expansion in the 1980s. Two sectors that were responsible for much of the nation's growth in the current recovery — trades and services — grew substantially slower in Kentucky.

Kentucky's economy grew slightly slower than the nation's in 1987 (see table 3). While Louisville and Lexington enjoyed moderate growth, economic growth in non-metropolitan areas more dependent on agriculture and mining was generally weaker. Real personal income growth in 1987 was influenced by weakness in the non-earnings income segment; real earnings rose a moderate 2.7 percent. Kentucky's unemployment rate dropped to 8.8 percent in 1987 after hovering around 9.3 percent for three years. The decrease from 1986 was largely the result of a declining labor force. The expansion of the state's nonagricultural workforce of 2.2 percent was similar to that of 1986. Unlike the previous year, however, manufacturing employment increased in 1987, rising by 2.1 percent. One of the state's larger manufacturing industries, textile and apparel production, increased its workforce by 5.2 percent.

Kentucky continued to lead the nation in coal production in 1987; mining employment, on the other hand, dropped during the year. Construction and services employment in Kentucky grew

Chart 3

Unemployment Rates in the Eighth District States



rapidly, with gains concentrated in Louisville and the central part of the state, where activity related to auto plant construction is stimulating regional development.

Missouri

In contrast to other District states, Missouri's economic structure has been quite similar to the nation's throughout the decade. Its comparatively slow employment growth in the 1980s cut across all major sectors, with particularly slow employment growth in the trades and services sectors.

The sluggish expansion of Missouri's economy continued in 1987. Real personal income grew only 1.4 percent in 1987, while nonagricultural employment rose 1.1 percent. This sluggishness resulted in a slight increase in the unemployment

rate from 6.1 in 1986 to 6.2 in 1987. Despite this increase, Missouri's unemployment rate remained below that in other District states and has been lower throughout the 1980s, a reflection of its diversified economy and slow labor force growth.

Except for mining, employment in all sectors of the state's economy grew slower than their national counterparts in 1987. Missouri factories employed 1.8 percent fewer workers, a contrast to the manufacturing employment gains elsewhere. Except for 1984, manufacturing employment in Missouri declined in each year of the decade. The state's economy has shifted away from some manufacturing industries like primary metals and footwear production, and these jobs have not been replaced in the faster-growing manufacturing industries. As discussed earlier, layoffs in state's auto assembly plants during the year contributed

substantially to the reduction in manufacturing employment.

The trade and construction sectors, which have provided many new jobs in Missouri in recent years, stagnated in 1987. The real value of construction contracts awarded in the state declined by 3.4 percent in 1987; in the previous four years of the recovery, contracts had expanded at a 10.5 percent annual rate. Contracts for both nonresidential and residential building sectors dropped in 1987. Weakness in the multifamily sector was largely responsible for the residential sector decline.

Tennessee

The economic structure of the Volunteer State is similar to that of Arkansas and Kentucky, with a relatively large manufacturing sector and a small services sector. As in Arkansas, Tennessee's moderate growth during the decade stemmed from faster-than-national growth in most industries. Growth in manufacturing, trade and services was particularly strong relative to national trends.

The Tennessee economy outpaced other District states in 1987 as it has throughout the decade. As table 3 shows, both income and employment growth were strong. As chart 3 shows, the state's unemployment rate fell in 1987 to 6.8 percent after remaining at 8 percent for two years.

The trade and services sectors, sources of much of the decade's job growth, continued to expand rapidly in 1987. Growth of the manufacturing sector also contributed to the state's expansion. Employment growth in one of the state's largest manufacturing industries, textile and apparel production, increased 1.4 percent last year, aided by the rising costs of imported goods. Meanwhile, the number of workers producing transportation equipment grew slightly and employment by suppliers of auto parts for the region's assembly plants grew steadily.

A boom in nonresidential building activity pushed the total real value of construction contracts up 8.8 percent in 1987. Much of this activity is located in Memphis and the central part of the state. Contracts for residential structures declined

Table 3
Growth of Real Income and Nonagricultural Employment in 1987

	Real personal income	Nonagricultural employment
United States	1.9%	2.5%
Eighth District	1.8	2.5
Arkansas	0.9	2.8
Kentucky	1.8	2.2
Missouri	1.4	1.1
Tennessee	2.8	4.2

slightly, constrained by weakness in the multifamily segment.

CONCLUSION

For the fifth successive year, the District economy expanded in 1987. Last year, as in most previous years of the current decade, the growth of the District economy was similar in strength to the national expansion. This parallel was a result of similar industrial diversification combined with similar growth in individual industries. Although the growth of District income slowed and the value of construction contracts was virtually unchanged in 1987, District employment growth remained moderate, allowing unemployment rates to fall in most District states.

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Appendix

Identifying Sources of Regional Growth

This article uses a technique, called shift-share analysis, to determine why a state's employment grew at a different rate than that of the nation.¹ A region's differential employment growth during a given period is called its net relative change; it indicates the difference between the state's actual employment at the end of the period and what employment would have been if it had grown at the national rate. The state's net relative change is due to differences in industrial mix and relative growth rates of individual sectors between the state and the nation.

A region's employment expansion partially depends on whether it specializes in industries that are growing rapidly nationally. The industry mix component estimates this influence on overall employment growth by assuming that each of the region's sectors grew at the national rate. Under this assumption, if the District's or state's employment composition were exactly like the nation's, then the industry mix component would equal zero. A positive industry mix component indicates the number of additional workers that would be expected because of the region's favorable industrial mix, while a negative number indicates that the region's workforce is more heavily concentrated in industries that are growing slowly nationally.

Local conditions also will cause some of a region's industries to grow at different rates than their national counterparts. These conditions might include differences in infrastructure, human or natural resources, or energy and labor costs. The relative industry growth component compares the growth of each major sector of the District and state economy with its national counterpart's growth. If each regional sector grew at the national rate, the component would equal zero. A positive number reflects the additional District employees working in 1987 compared with the level that would have existed if each sector grew at the national rate, while a negative number indicates overall slower industry growth in the District than in the nation.

Mathematically, these components can be notated as follows:

NRC_i	= net relative change, sector i
IM_i	= industry mix, sector i
RIG_i	= relative industry growth, sector i
R_i	= base year employment, sector i , in region
R	= base year total employment in region
U_i	= base year employment, sector i , in United States
U	= base year total employment in United States
r_i	= percentage change in employment in sector i , in region, during the period
r	= percentage change in total employment in region during the period
u_i	= percentage change in sector i employment, in United States during the period
u	= percentage change in total employment in United States during the period

$$1) NRC_i = IM_i + RIG_i$$

$$2) NRC_i = r_i R_i - u R_i$$

$$3) IM_i = u_i R_i - u R_i$$

$$4) RIG_i = r_i R_i - u_i R_i$$

Total NRC, IM and RIG are the sums over all sectors. Decimal forms of percent changes are used in calculations (e.g., .05 is used for 5 percent).

Shift-Share Results

In the present analysis, eight sectors of total nonagricultural employment were used: mining, manufacturing, construction, transportation/communication/utilities, services, finance, trade and government.

Table A1 presents the 1979 employment compositions and the 1979–87 percent changes in nonagricultural employment for the United States, Eighth District and four District states. The results of a shift-share analysis based on this data are presented in table A2.

During the 1979–87 period, District nonagricultural employment grew by 9 percent compared with a 13.7 percent national gain. The District's slower growth resulted in the net relative change of -265 as shown in table A2, which indicates that the District's 1987 employment level is 265,000 less

¹Shift-share analysis was originated by Creamer (1942).

Table A1
Composition and Growth of Nonagricultural Employment¹

	U.S.		Eighth District		Arkansas		Kentucky		Missouri		Tennessee	
	Composition	Growth	Composition	Growth	Composition	Growth	Composition	Growth	Composition	Growth	Composition	Growth
Mining	1.1%	-22.6%	1.4%	-28.7%	0.6%	-16.8%	4.4%	-27.9%	0.4%	-33.6%	0.6%	-34.1%
Manufacturing	23.4	-9.2	26.0	-7.6	29.1	0.5	23.9	-13.1	23.1	-10.7	29.5	-5.1
Construction	5.0	12.9	5.1	1.6	5.6	-15.1	5.6	-8.8	4.6	7.8	5.0	11.0
TCU	5.7	4.7	5.9	5.6	5.8	15.8	5.6	0.1	7.1	0.3	4.9	13.3
Trade	22.5	19.1	22.4	14.4	21.6	17.9	21.5	13.3	23.6	7.2	21.9	22.4
Services	19.1	41.0	17.0	36.2	14.6	40.5	16.4	31.5	19.1	32.1	16.1	43.5
Fire	5.5	32.4	4.6	23.6	4.1	23.1	4.1	21.4	5.4	24.8	4.4	23.7
Government	17.8	7.0	17.7	3.3	18.6	4.6	18.5	4.1	16.8	1.7	17.7	3.7
Total Nonagricultural		13.7		9.0		11.6		4.7		7.2		13.1

¹Composition refers to the percent of 1979 nonagricultural employment; growth is the percent change in employment 1979-87.

Table A2
Employment Effects of Industry Mix and Relative Industry Growth (in thousands of jobs)

	Total relative change	Total industrial mix	Total relative industry growth
District	-265	-84	-181
Arkansas	-15	-21	6
Kentucky	-110	-30	-80
Missouri	-130	6	-136
Tennessee	-10	-39	29

(or 4.2 percent of the actual 1987 level) than if the District workforce had grown at the national pace. The sum of the net relative changes for the four states equals the District total. It clearly can be seen that slower-than-national job growth in Kentucky and Missouri accounted for most of the District's net relative loss. Combined, the two states net relative change was -240,000, or more than 90 percent of the District total.

The data in table A2 confirm that the District industrial mix was not very different than the nation's; the District's 84,000 employment loss due to its industrial mix represents only 1.3 percent of the District's 1987 nonagricultural employment level of 6.3 million. The similarity of industrial compositions in the District and the United States can also be seen in table A1.

Arkansas, Kentucky and Tennessee had employment compositions that were not as conducive to growth as the national average, with relatively high employment concentrations in slow-growing industries (particularly manufacturing) and smaller-than-national proportion in services, the most rapidly growing sector nationally. Missouri's industrial structure resembled the nation's more closely than any of the other three states, a fact reflected in its small industry mix component. This similarity can be seen in table A1, particularly in the four largest sectors — manufacturing, trades, services and government — which account for most of the change in the past seven years.

In Arkansas and Tennessee, in which total non-agricultural employment grew at near the national rate during the 1980s, individual industries also tended to grow more rapidly than nationally. This faster industry growth, reflected in the positive relative industry growth measures, partially offset industrial structures that were not conducive to

growth, allowing the states to expand at near the national rate.

These results emphasize the fact that a state can grow moderately, not only by specializing in industries that are rapidly expanding nationally, but also by capturing an increasing share of a slowly-growing or contracting national market. For example, both Arkansas and Tennessee have large concentrations of their workforce in manufacturing, an industry with moderate job losses between 1979 and 1987 in the nation. The states' heavy reliance on manufacturing did not cause as great a decline as nationally, however, because of the relative strength of the manufacturing sectors in those states. Manufacturing employment rose by

0.5 percent in Arkansas and declined by 5.1 percent in Tennessee, while the nation lost 9.2 percent of its manufacturing workers.

In Kentucky and Missouri, whose overall employment growth trailed the nation's average, each individual industry grew slower than its national counterpart, resulting in negative relative industry growth components. In Kentucky, this slower industry growth, combined with its industrial mix, resulted in the weakest employment performance of the four states. While Missouri's structure was quite similar to the nation's, the slower growth of individual sectors (particularly services and trades) led to overall slower employment growth.