

Business

AN EIGHTH DISTRICT PERSPECTIVE

SPRING 1986

Growth and Instability of Eighth District Manufacturing Employment

The objective of many state and local economic development programs is to attract firms in fast-growing manufacturing industries. Incentives ranging from tax abatements to industrial revenue bonds have been used to entice firms to locate in one area rather than another. Recent interstate bidding wars for high-tech manufacturers, auto assembly plants and transportation hubs are widely publicized examples.

Although such industries may lead to rapid employment growth in the intermediate term, growth is not the only relevant criterion in evaluating the impacts of different industries on a region's economy. In particular, the instability of employment in an industry may have adverse effects that offset the benefits of employment growth. Employment instability refers to fluctuations in an industry's employment around its long-run growth path.

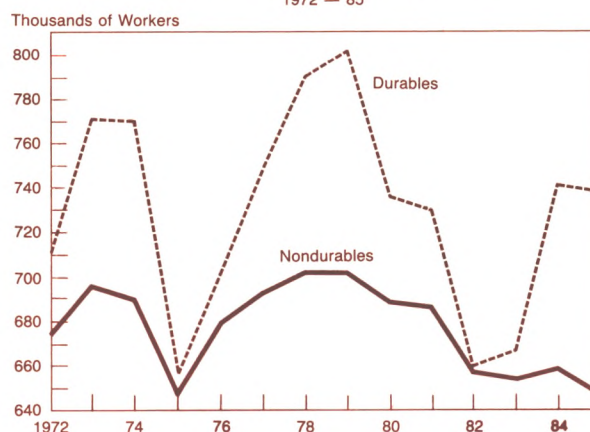
These costs of employment fluctuations are widespread. In times of economic downturn, unstable industries typically lay off a disproportionately high number of their workers. In addition to the costs imposed on state and local governments providing unemployment compensation, communities in which the unstable industries are located are forced to bear the social costs associated with increased joblessness. During recovery periods, the more rapid employment and population increases associated with unstable industries also may strain the community's capacity to meet the demands placed on its utilities and social services, especially in nonmetropolitan areas.

This article examines the growth and stability of Eighth District manufacturing industry groups and investigates whether there is a trade-off between these two indicators of industry performance.

Measures of Growth and Instability: An Overview

Measures of employment growth and instability for Eighth District manufacturing industry groups are shown in the table on the next page. For comparison, similar indicators

Eighth District Manufacturing Employment
1972 — 85



for national subsectors are provided. Employment growth is indicated by compounded annual growth rates from 1972 to 1985. The instability indexes measure the relative amount of employment variation around the long-run growth trend of employment for each industry. Since the value of this index increases with greater variation, larger values indicate greater instability. The numbers in parentheses indicate the ranks of the industries, with the fastest growing and most unstable subsectors ranked (1), and those exhibiting the least growth and least instability ranked (15).

Which Industries Grew the Fastest?

Total manufacturing employment in the Eighth District changed little between 1972 and 1985, decreasing from 1,384,200 to 1,382,720 persons. Throughout this period, durables manufacturing employed slightly more than half of all District manufacturing workers. The chart shows the growth path of District durables and nondurables manufacturing employment from 1972 through 1985. Employment in the durables sector increased at a 0.28 percent annual rate while nondurables employment declined at a 0.33 percent annual rate (see table). Nationally, similar rates for the durables and



Growth and Instability of Manufacturing Employment by Sector, 1972-85

	EIGHTH DISTRICT		UNITED STATES	
	Compounded Annual Growth Rate	Instability Index	Compounded Annual Growth Rate	Instability Index
Total Manufacturing	-0.01%	4.38	0.11%	4.01
Durable goods	0.28	6.51	0.35	5.16
Lumber and wood products	-0.61 (11)	7.50 (2)	-0.29 (9)	7.26 (1)
Furniture and fixtures	-0.48 (10)	7.39 (4)	0.26 (6)	5.81 (4)
Stone, clay and glass products	-1.23 (13)	6.36 (6)	-0.96 (12)	5.25 (8)
Primary metals	0.58 (6)	6.79 (5)	-2.74 (14)	6.32 (2)
Fabricated metals	0.02 (8)	6.35 (7)	-0.40 (10)	5.56 (6)
Machinery, except electrical	1.32 (2)	6.23 (8)	1.11 (4)	5.81 (5)
Electrical equipment	-0.15 (9)	7.48 (3)	1.54 (2)	5.37 (7)
Transportation equipment	1.01 (3)	9.25 (1)	0.82 (5)	5.88 (3)
Instruments and miscellaneous	0.99 (4)	3.79 (9)	1.11 (3)	3.43 (10)
Nondurable goods	-0.33	2.27	-0.23	2.44
Food and kindred products	0.21 (7)	1.27 (15)	-0.51 (11)	1.67 (15)
Textiles and apparel	-1.66 (14)	3.33 (12)	-1.83 (13)	3.25 (11)
Paper and allied products	0.91 (5)	3.54 (11)	-0.08 (8)	2.90 (12)
Printing and publishing	2.22 (1)	1.65 (14)	2.06 (1)	2.02 (14)
Chemicals and allied products	-0.80 (12)	2.87 (13)	0.24 (7)	2.20 (13)
Leather and leather products	-4.12 (15)	3.69 (10)	-4.06 (15)	4.08 (9)

Note: Rank among the industry subsectors is shown in parentheses. Due to data limitations, data from Arkansas, Kentucky, Missouri and Tennessee are used to represent the Eighth District.

nondurables sectors were observed.

The lack of growth of total manufacturing employment in the District, however, hides the diversity of performance of the individual manufacturing industries. By far, the printing and publishing subsector expanded the fastest over the study period, growing at a 2.22 percent annual rate. Other relatively fast-growing subsectors include nonelectrical machinery and transportation equipment. At the national level, these subsectors also were among the faster-growing subsectors.

Instability of Subsectors

Total manufacturing employment between 1972 and 1985 showed slightly greater instability in the Eighth District than in the nation. At both levels, durables manufacturing exhibited greater volatility of the durables employment in the District as can be seen in the chart. The instability index for durables manufacturing of 6.51 was substantially more than that of the nondurables manufacturers. Of the 15 subsectors, each of the nine durables industry groups exhibited greater instability, as indicated by the index, than the five nondurables subsectors.

This pattern is not surprising as the demand for durable goods—especially autos, large appliances and industrial machinery—is typically quite sensitive to stages of the business cycle.

Transportation and equipment employment exhibited the

most instability with an index value of 9.25. In contrast, employment in the District food and kindred industries showed few fluctuations between 1972 and 1985. This stability was reflected in an index value of 1.27.

Are Fast-Growing Subsectors Unstable?

If there is a positive relationship between the growth and instability of an industry, a trade-off may exist between the benefits associated with its growth and the costs due to its instability. This relationship can be investigated by comparing the growth and instability rankings of the subsectors. At both the District and national levels, however, the wide variety of relationships between growth and instability of the subsectors suggests no regular relationship exists between the two indicators. This conclusion is supported by near zero coefficients of correlation between the District subsectors' ranks in growth and instability and between employment growth rates and instability indexes. A similar lack of association was found at the national level.

Although a general relationship was not observed between growth and instability, several subsectors ranked among the highest or lowest subsectors in both categories. These include the transportation equipment industry group, which was the third-fastest growing and most unstable of the subsectors. Printing and publishing, however, which grew the fastest, was among the most stable subsectors.

—Thomas B. Mandelbaum

Business—An Eighth District Perspective is a quarterly summary of business conditions in the area served by the Federal Reserve Bank of St. Louis. Single subscriptions are available free of charge by writing: Research and Public Information Department, Federal Reserve Bank of St. Louis, P.O. Box 442, St. Louis, Missouri 63166. Views expressed are not necessarily official positions of the Federal Reserve System.

EIGHTH DISTRICT BUSINESS DATA

	Growth Rates ¹			
	Current Period	Year-to-Date 1986	1985	
	Nov-Jan			
General Business Indexes²				
Arkansas	0.6%	0.6%	0.1%	
Kentucky	1.2	2.8	2.0	
Missouri	-3.9	-5.0	-0.6	
Tennessee	2.7	1.7	2.6	
Payroll Employment				
Nov-Jan				
United States	3.6%	3.9%	3.1%	
District	6.8	12.1	2.3	
Arkansas	7.5	12.9	1.3	
Little Rock	9.9	11.3	1.3	
Kentucky	-0.2	4.5	3.1	
Louisville	8.8	10.9	3.1	
Missouri	13.1	20.9	1.6	
St. Louis	6.0	9.6	1.1	
Tennessee	4.7	7.8	3.1	
Memphis	0.1	-0.6	2.5	
Average Hourly Earnings-Mfg.				
Nov-Jan				
United States	5.0%	6.0%	3.6%	
Arkansas	1.9	1.6	4.0	
Little Rock	4.1	5.8	2.8	
Kentucky	1.4	0.0	2.4	
Louisville	-1.1	-2.0	1.4	
Missouri	14.2	17.5	0.9	
St. Louis	7.3	5.7	2.8	
Tennessee	5.6	4.0	3.6	
Memphis	-1.8	-1.6	3.2	
Retail Sales³				
Oct-Dec				
United States	-3.7%	5.6%	7.6%	
Arkansas	-8.4	2.3	2.3	
Kentucky	23.8	19.2	0.1	
Missouri	-5.4	2.9	9.1	
Tennessee	0.5	7.8	10.9	
Personal Income				
3rd quarter '85				
United States	2.6%	4.3%	9.9%	
District	3.5	4.0	10.7	
Arkansas	2.0	2.0	12.2	
Kentucky	3.2	2.7	11.2	
Missouri	2.3	4.2	10.2	
Tennessee	6.0	5.6	10.1	
Key Industries				
	Employment ¹ (current period Nov-Jan)		Prices ¹ (current period Nov-Jan)	
	Year-to-Date 1986	Same Period 1985	Year-to-Date 1986	Same Period 1985
Fabricated Metal Products	-1.6%	-2.8%	-0.5%	-0.4%
Electrical and Electronic Equipment	-11.5	-10.7	2.1	3.6
Nonelectrical Machinery	5.0	3.7	1.5	4.3
Transportation Equipment	15.9	-2.2	-2.6	2.7
Food and Kindred Products	-6.6	-8.2	8.1	2.8
Textile and Apparel	-8.7	-6.7	0.8	-0.2
Printing and Publishing	17.7	8.6	8.2	10.8
Chemicals and Allied Products	2.8	-2.6	2.8	0.4
Construction	-6.7	-46.7	-2.8	1.7

EIGHTH DISTRICT BUSINESS DATA

	<u>Current Period¹</u>	<u>Previous 3 Months</u>	<u>Average Year- to-Date 1986</u>	<u>Average 1985</u>
Unemployment Rate	Nov-Jan			
United States	6.9%	7.1%	6.7%	7.2%
District	7.9	8.1	7.6	7.9
Arkansas	8.8	9.4	8.2	8.6
Little Rock	6.5	7.1	6.4	6.5
Kentucky	10.1	9.7	10.3	9.0
Louisville (December)	8.1	8.5	N.A.	8.0
Missouri	6.2	6.4	5.8	6.7
St. Louis	6.5	7.6	5.7	7.6
Tennessee	7.5	8.2	7.5	8.0
Memphis	6.6	6.7	6.6	6.5
 Construction Contracts⁴ (millions of dollars)	Nov-Jan			
District	\$680.5	\$939.7	\$759.8	\$833.0
Arkansas	92.3	118.3	89.0	101.9
Kentucky	144.6	203.3	131.4	180.5
Missouri	204.6	274.5	275.7	251.6
Tennessee	239.0	343.5	263.7	299.1

NOTE: With the exception of construction contracts and employment and prices in key industries, all data are seasonally adjusted.

¹Data are presented as three-month averages to minimize distortions due to the large variability of monthly data. The current period growth rate is a comparison of the average of the current three months to the average of the previous three months. The year-to-date growth rate is from the average of the three months ended in December 1985. All growth rates are compounded annual rates of change.

²Sources: Arkansas and Missouri from Southwestern Bell, Kentucky and Tennessee from South Central Bell.

³Sources: Arkansas from Southwestern Bell, Kentucky from Kentucky Revenue Department, and Missouri/Tennessee from U.S. Department of Commerce.

⁴Source: F.W. Dodge, Construction Potentials, McGraw-Hill Information Systems Company, proprietary data provided by special permission.