

# ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

## What's Happened to Ohio's Manufacturing Jobs?

by Randall W. Eberts

Ohio's manufacturing sector has experienced a healthy expansion during the last five years. According to the Federal Reserve Bank of Cleveland's Ohio Manufacturing Index, output has increased at an average annual rate of 7.7 percent.<sup>1</sup> This pace is even faster than the national annual rate of 5.6 percent, which in recent years has grown at a faster pace than it has averaged over the last two decades.

Despite this surge in Ohio production, manufacturing employment has remained relatively flat (see figure 1). Since the lowest point of the 1982 recession, the gain in factory jobs has averaged only 0.3 percent annually. Most of this gain occurred within the first six quarters of the current expansion. Since peaking in 1984 third quarter, manufacturing employment has been slowly falling, registering a total net loss of 3.0 percent (as of June 1988).

Employment gains in the current expansion pale in comparison to the number of factory jobs added during the previous expansion. Between 1975

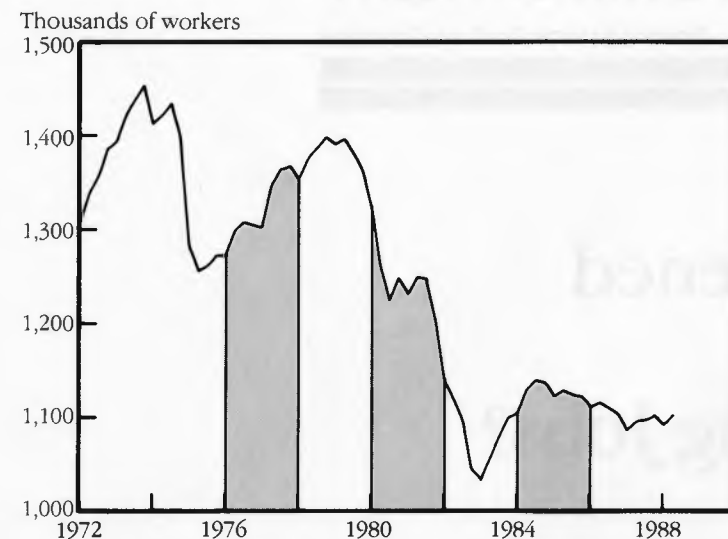
second quarter and 1979 fourth quarter, Ohio's manufacturing sector created 107,500 jobs—35,300 more than were created between 1983 first quarter and June 1988. Furthermore, employment increased throughout most of the previous expansion, swelling by 142,000, or 11.3 percent, before it began trending downward during the last three quarters of that expansion.

What has happened to all the manufacturing jobs during a period that has been heralded as the "return of manufacturing" by recent newspaper and journal articles? Obviously, significant labor productivity gains are part of the answer.

One article attributes the resurrection of Midwest manufacturing to an ardent pursuit of the fundamentals: closing older, less efficient plants, trimming the work force, improving management and labor relations, capitalizing on neglected product niches, and improving product quality.<sup>2</sup> Whatever the reasons for productivity gains, the fact remains that fewer factory jobs are being created during this expansion than in the previous one.

Although the current business expansion has spawned a resurgence in Ohio manufacturing, fewer factory jobs are being created than in previous growth periods. In examining components of Ohio's net manufacturing employment change through three recent periods, the author finds that while job losses from plant closings have remained constant, a lower percentage of jobs have been created from business openings. The slowdown in new job creation has come primarily from large firms.

FIGURE 1 OHIO MANUFACTURING EMPLOYMENT



NOTE: Shaded areas indicate 1976-78 expansion, 1980-82 recession, and 1984-86 expansion.  
SOURCE: Employment and Earnings, Bureau of Labor Statistics.

This *Economic Commentary* explores the sources of Ohio's slow manufacturing employment growth by examining the differences, if any, between the dynamics of employment change during the current expansion, during the 1980-82 recession, and during the 1975-79 expansion. Have new jobs come primarily from small businesses or large? Have they come more from the opening of new establishments or from the expansion of existing ones? Has the closing of existing plants been inordinately high during the last recession? These questions are important not only for understanding where jobs will come from in the future, but also for understanding how this region may be positioned for future economic development.

#### ■ Employment Dynamics

Manufacturing employment dynamics can be examined by dividing net employment change into four components: job gains from the openings of new businesses, gains from the expansion of existing businesses, job losses from the closing of existing businesses, and losses from the contraction of existing businesses.

The percentage of jobs gained or lost from these four components are displayed in table 1 for Ohio's 17 metropolitan statistical areas and are shown in figure 2 for three separate periods, coinciding with expansions and recessions during the last business cycle. The 1976-78 period marks the middle years of the previous recovery (not counting the brief recovery in 1981); the 1980-82 period spans two recessions; and the 1984-86 period falls in the middle of the present expansion.

The components are also broken down by firm size and affiliation, as shown in table 1. The percentages of manufacturing employment change are based on total employment at the beginning of each period. The percentages related to firm size are also based on total employment, so that the percentages by subgroup add up to the total.

How does the economy move from net employment increases during an expansion to net employment decreases during a recession and then back again? The four components of net employment change present numerous possibilities. However, it turns out that the mechanism is quite simple.

The opening of manufacturing firms is the primary source of net employment change over the business cycle for Ohio: of the four components, openings exhibit the largest fluctuation over the business cycle. As illustrated in figure 2, the percentage of jobs gained as a result of firm openings dropped 5.8 percentage points from the recovery of 1976-78 to the recession of 1980-82. Job increases from openings then bounced back by 4.4 percentage points between 1984 and 1986, which helped to pull net employment up from a 10.2 percent decline to a slight 0.2 percent increase.

In terms of employment levels, openings accounted for an average increase or decrease over the business cycle of roughly 66,000 jobs, assuming an average manufacturing base of 1.3 million jobs.

Openings are also the largest source of new jobs during each period, and the importance of this source is greater in the current expansion than in the previous one. Between 1976 and 1978, the heart of the first expansion, job gains from openings were 40 percent higher than gains from expansions. After falling during the recession, the ratio has risen to 56 percent in the current expansion.

Contractions of existing establishments exhibit the second-largest degree of fluctuation over the business cycle. The percentage of jobs lost due to contractions increased by 2.1 percentage points between 1976-78 and 1980-82 and then fell by 3.5 percentage points between 1980-82 and 1984-86.

A surprising finding is that the proportion of jobs lost from firm closings is virtually the same during recessions as it is during expansions. Over the business cycle, the percentage of jobs lost due to closings deviated by less than two percentage points.

TABLE 1 COMPONENTS OF MANUFACTURING EMPLOYMENT CHANGE IN OHIO'S METROPOLITAN STATISTICAL AREAS  
Percentage changes over two-year period

	1976-1978					
	Open	Close	Expand	Contract	Net Change	Percent of Total
All establishments	13.3	-13.0	9.4	-8.5	1.3	100.0
Small	1.1	-1.2	2.1	-1.1	0.9	14.5
Medium	0.8	-0.7	1.6	-1.0	0.6	11.5
Large—headquartered in the state	2.7	-2.9	2.6	-3.0	-0.5	-27.3
Large—headquartered outside the state	8.7	-8.3	3.2	-3.4	0.2	46.7
	1980-1982					
	Open	Close	Expand	Contract	Net Change	Percent of Total
All establishments	7.5	-13.7	6.5	-10.6	-10.2	100.0
Small	0.9	-1.3	1.5	-1.3	-0.2	15.1
Medium	0.8	-0.9	0.6	-1.3	-0.8	11.7
Large—headquartered in the state	1.7	-3.3	1.1	-3.3	-3.8	26.6
Large—headquartered outside the state	4.1	-8.2	3.3	-4.6	-5.4	46.6
	1984-1986					
	Open	Close	Expand	Contract	Net Change	Percent of Total
All establishments	11.9	-12.1	7.6	-7.1	0.2	100.0
Small	1.7	-1.8	2.4	-0.8	1.4	16.4
Medium	1.2	-1.7	0.9	-0.8	-0.4	12.0
Large—headquartered in the state	2.0	-2.1	1.6	-2.2	-0.7	23.2
Large—headquartered outside the state	7.0	-6.5	2.6	-3.3	-0.1	48.4

NOTE: Small businesses are defined as affiliated with firms with less than 100 employees; medium businesses are affiliated with firms with 100 to 500 employees; and large businesses are affiliated with firms with more than 500 employees.

SOURCE: U.S. Establishment Longitudinal Microdata (USELM), Small Business Administration.

The finding that closings do not vary appreciably over the business cycle runs counter to the general perception that recessions help to restructure the economy by purging it of inefficient firms. Rather, these results suggest that restructuring from closings occurs continuously, in expansions as well as in recessions. The question is whether enough startups will occur to replace the jobs that are lost due to closings.

For Ohio, jobs lost from closings have outnumbered jobs gained from openings in all periods except 1976-78, when the two components were virtually the same. Expansions of existing establishments account for the rest of the job gains, but these increases barely cover the jobs lost due to contractions of firms in either expansionary period.

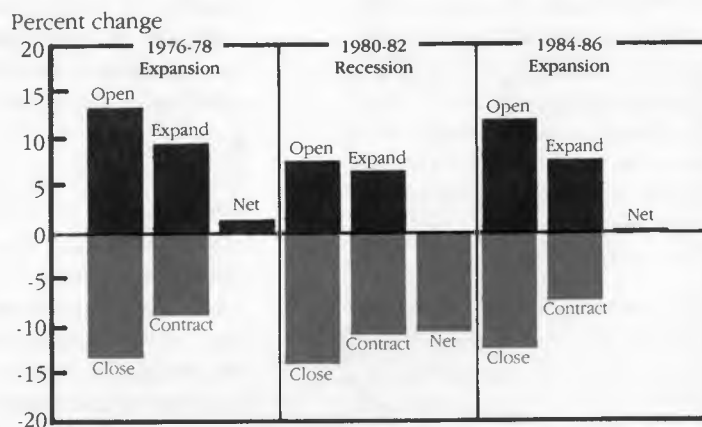
What, then, has happened to manufacturing jobs in Ohio? The answer is simply that fewer jobs are being created from openings and expansions in this economic expansion than in the earlier one. The smaller net job gain is not due to more jobs being lost from closings or layoffs. In fact, the percentage of jobs lost as a result of closings and contractions is lower now than in the 1976-78 period.

#### ■ Who Is Falling Behind?

Jobs gained from the opening of establishments affiliated with large firms (500 or more employees) are lower in this period than in the earlier expansion, and their share of total job creation is also lower. The openings of establishments affiliated with large corporations currently add 9 percent to the employment base, whereas in the earlier expansion these establishments added 11.4 percent to the employment base.

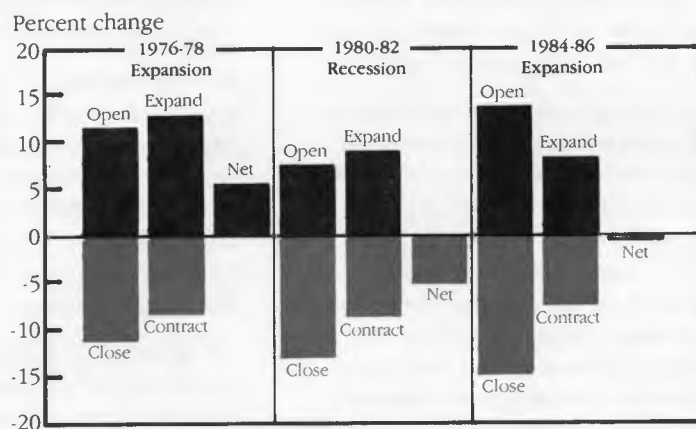
Consequently, the contribution of large corporations to employment has fallen from 86 percent of all new jobs resulting from firm openings to 76 percent. Expansions of large firms have also dropped off, from generating 5.8 percent additional jobs

**FIGURE 2 COMPONENTS OF MANUFACTURING EMPLOYMENT CHANGE FOR OHIO METROPOLITAN AREAS**



SOURCE: U.S. Establishment Longitudinal Microdata (USELM), Small Business Administration.

**FIGURE 3 COMPONENTS OF U.S. MANUFACTURING EMPLOYMENT CHANGE**



SOURCE: U.S. Establishment Longitudinal Microdata (USELM), Small Business Administration.

between 1976-78 to adding 4.2 percent between 1984-86. Furthermore, much of this reduction has come from establishments affiliated with firms headquartered outside the state.

The slack in job creation has been picked up by small businesses (less than 100 employees). During the 1976-78 expansion, 14 percent of the new jobs (from both openings and expansions) came from small businesses. During the 1984-86 expansion, their share climbed to 21 percent.

This small contribution, although on the rise, runs counter to the popular belief that small firms are the primary creators of new jobs in the United States.<sup>3</sup> Of course, small businesses' contribution is much higher when all sectors are considered, since small businesses account for more than 50 percent of job creation in wholesale and retail trade. In manufacturing, however, the national average is roughly 20 percent, and Ohio manufacturing is not much different.

Small businesses' net contribution to a region's employment growth requires more than simply creating jobs. They must also retain jobs and expand employment by staying in business. Since the average life of small businesses is quite short, they also have a high closing rate. As shown in table 1, jobs lost by small-business failures outnumber jobs gained from small-business formation in every period. However, expansions of small businesses have exceeded contractions in every period. During the current expansion, three jobs are created from expansions for every job lost from contractions. Consequently, the success of small businesses comes more from the rate of expansions than from openings.

Considering both openings and expansions, the small-business sector made a larger contribution to Ohio's manufacturing employment in the 1984-86 period than in the other two periods. Fifty-seven percent more jobs were created by small businesses during this period than were lost. In contrast, 39 percent more jobs were gained than lost by small businesses in the 1976-78 expansion.

The current ratio of job gains to job losses for small businesses is certainly better than for large businesses. During every period but the first, large businesses have lost more jobs from closings and contractions than they have created from openings and expansions. Much of this loss is attributed to closings: an average of 40 percent more jobs are lost from this source than from contractions. More than half of these losses result from the closing of establishments affiliated with large firms with over 500 employees that are headquartered outside the state in which the branch plant is located.

Even though the role of small businesses appears to be increasing in Ohio's economy, large businesses still dominate, especially establishments affiliated with firms headquartered outside the state. Currently, large establishments affiliated with out-of-state corporations, which comprise 9.9 percent of Ohio's metropolitan manufacturing establishments, account for 48.4 percent of the state's metropolitan manufacturing jobs. Firms affiliated with large corporations headquartered within Ohio employ 23.2 percent of the factory workers in 5.6 percent of the establishments. Small businesses, on the other hand, account for 75.2 percent of establishments but only 16.4 percent of the manufacturing jobs.

■ **Ohio Compared with the Nation**  
The process of net employment change over a business cycle described above is not unique to Ohio. National estimates show the same general pattern, but with a slight twist. As displayed in figure 3, the percentage of jobs gained nationally due to openings fell from 11.5 percent in 1976-78 to 7.4 percent in 1980-82 and then sprang back to 13.6 percent in 1984-86.

The percentage of jobs lost due to closings, on the other hand, increased by only 1.9 percentage points between the earlier expansion and the recession. However, the difference between the nation's closing rate and Ohio's is that the national rate has continued to climb an additional 1.8 percentage points during the current expansion, whereas Ohio's closing rate has settled back to 12.1 percent—1.6 percentage points lower than the recessionary rate.

Why does the national closing rate continue to increase? Part of the answer may be related to a flurry of mergers and acquisitions during this expansion. This phenomenon may account for the equal percentage of jobs gained and lost due to openings and closings of large firms (9.7 percent for each), since mergers and acquisitions in many cases merely represent a change of ownership. The earlier two periods do not show this balance between openings and closings.

Another piece of the puzzle may simply be related to the higher number of openings in this economic expansion than in the previous one. Since new firms, especially small ones, have a high probability of closing, the increase in closings in 1984-86 may simply reflect the fallout from the increase in small-firm openings.

Another difference is that the role of openings in manufacturing employment is greater in Ohio than in the nation. Nationally, expansions generated more jobs than openings in both

1976-78 and 1980-82, and only recently have openings contributed more than expansions. In Ohio, the percentage of jobs created from openings consistently exceeds the number generated from expansions for those two periods as well as for the current expansion.

#### ■ **Conclusion**

The current expansion has yielded sizable productivity gains in Ohio's manufacturing sector, but at the expense of employment growth. The primary reason for this relatively slow employment growth compared with the previous expansion is that openings and, to a lesser extent, expansions have not created enough new jobs to replace the normal rate of job loss that typically takes place in the economy. During the 1984-86 period, Ohio's manufacturing sector created jobs at an 11 percent slower rate than the nation and at a 16 percent slower rate than during the previous expansion.

Although the rate of job growth is important to a region's economy, it is also important to consider the composition of this job growth. In Ohio, job growth has shifted away from large corporations to small firms. This trend may bring some long-run benefits to the state.

For instance, the small-business sector is thought to be a powerful force for technological innovation and entrepreneurial ingenuity that can stimulate an industry and a local economy. Small businesses have been shown to generate more innovations per employee than larger firms and to spend twice as much of their research and development dollar on fundamental research.<sup>4</sup> In addition, small businesses are believed to be more responsive to structural changes than large firms through quicker entry and exit into markets, enhancing a region's ability to adjust more rapidly to changing economic conditions.

Furthermore, the slight trend away from the dominance of large corporate affiliates in Ohio may decrease the relatively wide fluctuations in employment observed across business cycles and reduce the state's vulnerability to decisions made by parties outside the region.

However, neither trend promises to bring back the tens of thousands of manufacturing jobs to Ohio's economy that have been lost over the last decade. In order to maintain a leaner, more efficient posture, manufacturing enterprises must continue to rely on proportionately smaller work forces per unit of output. The only hope for increasing the manufacturing employment base in Ohio is for this increase in productivity and entrepreneurship to spawn and attract greater industrial activity within the state.

*Randall W. Eberts is an assistant vice president and economist at the Federal Reserve Bank of Cleveland. The author would like to thank Ralph Day and John Swinton for computer assistance.*

*The views stated herein are those of the author and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.*

**Federal Reserve Bank of Cleveland  
Research Department  
P.O. Box 6387  
Cleveland, OH 44101**

#### ■ **Footnotes**

1. The Ohio Manufacturing Index is estimated using manufacturing employment and electric power consumption data. For more details, see Michael F. Bryan and Ralph L. Day, "Views from the Ohio Manufacturing Index," *Economic Review*, Federal Reserve Bank of Cleveland, Quarter 1 1987, pp. 20-30. The index is similar in many respects to the Federal Reserve Board of Governors' Industrial Production Index for the nation.

2. Details of the restructuring taking place within individual firms are documented in Myron Magnet, "The Resurrection of the Rust Belt," *Fortune*, vol. 118, no. 4 (August 15, 1988), pp. 40-46.

3. See David L. Birch, *The Job Generation Process*, Cambridge, Mass.: MIT Program on Neighborhood and Regional Change, 1979. Recent estimates by Catherine Armington and Marjorie Odle, "Small Business—How Many Jobs?" *Brookings Review*, vol. 1, no. 2 (Winter 1982), pp. 14-17, place small businesses' contribution to total employment growth at around 36 percent.

4. See Morton I. Kamien and Nancy L. Schwartz, *Market Structure and Innovation*, Cambridge, Mass.: Cambridge University Press, 1982, p. 67; and National Science Foundation, "Trends to 1982 in Industrial Support of Basic Research," Washington, D.C.: U.S. Government Printing Office, 1983.

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