

Chicago Fed Letter

Challenges and prospects for Midwest manufacturing

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The Chicago Fed held a series of conferences in 2003–04 aimed at understanding the recent poor performance of the manufacturing sector in the Midwest and the nation and identifying the challenges that lie ahead.

View the conference agendas and presentations at www.chicagofed.org/news_and_conferences/conferences_and_events/midwest_manufacturing_project.cfm.

In September 2003, the Federal Reserve Bank of Chicago convened the first in a series of conferences that asked some difficult questions about the performance of the manufacturing sector nationally and, especially, in the Midwest.¹ What are the long-term underlying trends in manufacturing and have they fundamentally changed in recent years? What are the challenges and prospects for Midwest manufacturing going forward? This *Chicago Fed Letter* summarizes the information gathered at these conferences from fall 2003 through spring 2004.²

Until 2000, U.S. manufacturing performance had been robust or at least benign since the 1970s—on average, of course. Similarly for the Midwest, until the year 2000, manufacturing had not led the region into recession since the early 1980s. Although there was much upheaval and variation across individual industries and market segments during the 1990s, overall U.S. real output in manufacturing rose rapidly for most of the decade.

For the nation, manufacturing output began its descent half a year before the recession of 2001, dropping 7% by the end of 2001. And by mid-2004, real manufacturing output remained slightly below its peak of four years earlier. Employment trends were much worse. Payroll employment in manufacturing fell by 8% in 2001 and another 8% by the end of 2003. By this time, on net,

payroll employment had fallen three million below its previous peak. In the Midwest, manufacturing output and employment fell at about the same pace as in the nation.

The Midwest economy remains highly concentrated in manufacturing relative to the remainder of the U.S. economy. The region's overall economy lagged the nation during the recession *not* because its manufacturing sector performed worse, but because of this outsize concentration.

Midwest states—Illinois, Indiana, Michigan, Ohio, and Wisconsin—are among the most concentrated in manufacturing. Though manufacturing activity has been shifting west and especially south, Indiana, Wisconsin, and Michigan still rank among the top five states nationally in manufacturing output. A ranking of the nation's top ten would also include Iowa. Iowa's relative economic concentration in manufacturing has been growing significantly since the 1970s, while Indiana, Ohio, Michigan, and Wisconsin have maintained their status. Illinois's concentration in manufacturing has been declining, as the Chicago area has shed production activity in favor of business, transportation, and distribution services, though many of these services are ultimately sold or otherwise linked to manufacturing firms in surrounding states.

As measured by the share of personal income derived from the sector, durable goods manufacturing is over three-quarters more concentrated in the Midwest than the nation, especially in basic industrial equipment and the automotive industry. The auto industry is almost eight times more concentrated in the Midwest than in the rest of the U.S. On the other end of the spectrum, computer and electronic components are not well represented. And in terms of nondurable manufacturing, the Midwest is 25% more concentrated than the nation—heavily represented in food processing, furniture, chemicals and paper, while textiles and apparel factor much less into the region's industrial composition.

Manufacturing's steep and prolonged descent has meant that the resulting impact on the Midwest economy has been acute. That is because the Midwest economy has sustained its historic concentration in manufacturing, so that the proportionate downturn in the sector (versus services) became a disproportionate downturn for the region's economy. Led by manufacturing, *total* payroll job losses across all sectors in the Midwest fell by 3.6% from late in 2000 to mid-2004, compared with .9% for the U.S. overall.

Structural vs. transitory factors

The recent manufacturing experience does not necessarily reflect a structural decline in manufacturing. Transitory factors, such as slow world economic growth and domestic overstocks in capital goods and production capacity from the 1990s weighed heavily on U.S. manufacturing during the early years of this century.

However, the depth and length of the manufacturing downturn took many by surprise and tended to bolster the view that a structural break had taken place—that break being the accelerated erosion of manufacturing activity in the U.S. economy. In particular, the manufacturing sector lost three million jobs from the previous peak through the first quarter of 2004. More surprisingly, the sector experienced greater net job losses *after* the recession of 2001 than during the recession.

Erica Groshen and Simon Potter of the Federal Reserve Bank of New York

found that those industries that suffered steep rates of decline during the recent recession tended to continue to decline during the recovery period.³ Further, this pattern contrasts markedly with earlier recession/recovery episodes, when those industries that experienced cyclical job losses during the formal recession tended to reverse those losses during the recovery.

Is this evidence of a structural break with the past? A look at the historical performance of U.S. manufacturing suggests that persistent net job losses that outlast the formal period of national recession are not that unusual. A more comprehensive way of looking at the data is to examine trends in employment *shares* rather than levels. This approach reveals a very longstanding trend in the U.S. for the manufacturing sector's *share* of total payroll jobs to fall by 2% per year. During a general economic downturn, this loss temporarily tends to accelerate. Sometimes, though not always, manufacturing regains share during the economic recovery stage of the business cycle, before settling back to its long-term average annual decline of 2%.

Rather than using the officially declared recessions, Chicago Fed economist Ellen Rissman (re)based the observed national business cycle to an employment-based cycle.⁴ In examining the behavior of manufacturing's employment share in recent years, she found little if anything unusual in the sector's behavior relative to the remainder of the labor market. Evidence from the nonmanufacturing labor market shows strong parallels to manufacturing, which argues against the manufacturing-specific structural break interpretation of recent events. Across the economy, payroll job growth has been weak in relation to output growth.

Investment weakness

If declining manufacturing employment is not unusual in relation to the business cycle, why then has the cycle itself been so painful? A major reason is that the 2001 recession and its aftermath were marked by weak or declining investment spending by businesses located in the United States to a greater extent than

in most recessions. One contributing factor to weak investment was an over-accumulation in the nation's capital stock in the period leading up to the recession. For most of the 1990s, real investment in equipment and software grew 10% to 15% annually, a rate unparalleled over the previous four decades. This expansion contributed 1.0–1.5 percentage points to overall economic growth—at times accounting for more than one-half of the nation's overall average GDP growth. The ultimate deceleration of this spending was precipitous, beginning in mid-2000, and contributed significantly to the 2001 recession and its aftermath.

Following the initial adjustment to over-investment, investment spending remained extraordinarily weak, only beginning to regain forward momentum in 2003. Although the overall economy began to grow at the end of 2001, events such as September 11, corporate governance irregularities, and the imminent conflict in Iraq all acted to dampen investor sentiment and to create a climate of investor uncertainty. As these influences subside, the pace of investment is reviving. Falling relative prices for computing equipment, technological advances, and obsolescence of existing equipment have motivated investment in information-processing goods. In addition, revival of consumer spending on services is encouraging investment by these industries. Consequently, manufacturing output has been growing rapidly over the past year, which should ultimately contribute to revived investment in basic business equipment and structures.

Global trade

Recent developments in the global economy have also led many to argue that structural change is taking place, as U.S. manufacturing production continues to move overseas. Such conclusions are often based on the U.S. balance of trade account, which measures exports and imports of goods and services.⁵ Coincident with recent weakness in manufacturing employment and output, the U.S. has been running record or near-record deficits in its balance of trade with the

rest of the world. In particular, trade deficits with China now account for approximately one-quarter of the overall U.S. trade deficit with the world. Other Asian nations—particularly Japan—have intervened in international currency markets in support of the U.S. dollar, presumably as protection for home production and exports during their own unsteady economic recoveries. Such actions have added to the impression that an artificially supported dollar has spurred imports to and impeded exports from the U.S. In particular, China's policy of a non-convertible currency and fixed exchange rate has been identified as a factor in sagging U.S. manufacturing activity.

At the same time, some observers believe that a weakening of trade barriers in traded goods sectors such as manufacturing has contributed to "job flight" from the U.S. Much of the expansion of the U.S. deficit with China has developed in the years following China's entry to the World Trade Organization (and its most-favored-nation status) in 2001.

Still, such shifts and swings in the international accounts do not necessarily indicate a fundamental structural break with the past. Currency swings and differences in economic cycles across countries (which in turn drive own-nation imports) often turn out to be temporary. For example, the slowing of U.S. exports coincided with a slowing of world economic growth during the late 1990s following the Asian and Russian currency crises. The pace of global economic expansion decelerated from 4.2% in 1997 to 2.5% in 1998, while recovering to only 3.0% in 1999.⁶ In response, U.S. exports abroad flattened out in the latter 1990s, even while surging U.S. economic growth continued to expand U.S. imports.

Such volatile rates of economic growth in different geographical areas usually dominate other factors affecting swings in national exports and imports, such as swings in exchange rates and changes in trade agreements. The confluence of such forces makes it uncertain just how much of the decline in Midwest and U.S. manufacturing and the recent recovery are actually due to changes in the exchange rate of the dollar. The U.S.

continued to be the world's engine of growth over much of the early century, and this has surely contributed to its rising imports. And as the rest of the world economy has begun to revive, so have U.S. exports.

Structural change

Since 1950, nonfarm output per hour of work has been rising by about 2% per year, while manufacturing output alone has been rising even faster—at a rate of 2.8%.⁷ Using statistical methods that take into account improvements in product quality and changing product features, the output of manufacturing companies is reported to continue to run far ahead of prices. That is to say, prices per standardized unit of output have generally been falling across most manufactured goods. Because household consumption and sales have neither responded sharply to falling prices nor to rising incomes in the U.S., we have observed a falling share of manufacturing activity in the U.S. economy. As a partial offset, growing industry sectors such as consumer services and business services have been purchasing more manufactured goods. Nonetheless, the share of *nominal* GDP derived from the manufacturing sector fell from a high of 32% in the early 1940s to approximately 13% in 2003. All the while, due to rising productivity, year-to-year *real* output growth in manufacturing has met or exceeded that of the rest of the economy. This apparent paradox arises because we are producing more goods with less effort, freeing more of the work force to engage in service production.

Such gains in productivity and falling prices of manufactured goods translate into rising standards of living for U.S. households. Since 1940, real U.S. household incomes have risen 88%, on average. Even the average real hourly wage in goods-producing industries has risen 23% (on average) since 1964.

Still, shrinking of the nominal manufacturing sector has brought about differences across income groups, skill levels, and geographic regions. Regionally, as nominal income derived from paychecks in manufacturing companies shrink, the

source of income for manufacturing intensive regions such as the Midwest has come under more serious pressure. In addition, the secular fall in manufacturing as a share of economic activity has contributed to lagging population growth in the Northeast and Midwest. The desirability of such regions for service jobs has not been as compelling as for manufacturing.

Aside from macroeconomic restructuring, structural changes (and structural breaks) can take place through geographic shifts, movement, or migration in the location of industrial activity. Over the past three decades, for example, manufacturing shifts out of the Midwest have occurred as cost conditions have changed and markets have moved elsewhere. In some instances, entirely new industries, such as aerospace and micro-electronics, have emerged in regions largely outside of the Midwest.

Auto industry shifts

Currently, a shift of the domestic automotive industry away from the upper Midwest toward the mid-South poses the most likely structural threat to the region's economy. The automotive industry—both automotive parts production and assembly operations—is geographically

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concentrated in the Midwest and its performance and location remain critical to the continued stability of the manufacturing sector here.

More specifically, the domestic assembly plants continue to be heavily concentrated in the traditional auto production states in the Midwest, while the assembly plants of foreign producers have concentrated in the southern end of the auto corridor, representing about 20% of all light vehicle assembly plants, half of which are foreign producers. Automotive supplier plants are also gravitating southward toward the assembly plants, because they generally want to be within one day's drive (about 400 miles) of their customers. By one account, southern states now host 35% of major auto parts plants.⁸

Has the geographic shift southward accelerated in recent years? Market share of the Big Three U.S. automakers has been declining since the mid-1990s. Until recently, strong auto sales may have masked the importance of the shift southward in production. But now, with the U.S. economic expansion shifting somewhat from consumer expenditure toward general investment spending, the geographic shift is becoming more apparent. Owing to its sharp concentration in automotive, for example, Michigan's unemployment stood stubbornly one full percentage point above

the nation's in 2004. Moreover, high inventories and low sales were inducing production pullbacks by major domestic automakers during the final two quarters of the year. If the Big Three's market share continues to decline and sales continue to stagnate, losses in assembly and supplier jobs will likely be disproportionately concentrated in the Midwest.⁹

Conclusion

This report contributes to our understanding of Midwest manufacturing just as the region is emerging from its most difficult economic period since the early 1980s. While much of the analysis here is preliminary, this research offers useful guideposts to the region's policymakers as they plan for a future in which manufacturing will remain a vibrant part of the Midwest economy, but also a future in which transition to new occupations and industries will remain challenging.

¹ We define Midwest here as the states of Illinois, Indiana, Michigan, Ohio, and Wisconsin. As appropriate in this article, we also refer to the Seventh Federal Reserve District, comprising Illinois, Indiana, Iowa, Michigan, and Wisconsin.

² See William A. Testa, Thomas Klier, and Richard H. Mattoon, 2005, "Challenges and prospects for Midwest manufacturing: Report on 2003/2004 Chicago Fed Manufacturing Project," *Chicago Fed Letter*,

Federal Reserve Bank of Chicago, No. 211b, February at www.chicagofed.org/economic_research_and_data/chicago_fed_letter.cfm.

³ Erica Groshen and Simon Potter, 2003, "Has structural change contributed to a jobless recovery?," *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, Vol. 9, No. 8, August.

⁴ See Ellen Rissman, 2004, conference presentation at Federal Reserve Bank of Chicago, April 27.

⁵ See Jack L. Hervey and Loula Merkel, 2000, "A record current account deficit: Causes and implications," *Economic Perspectives*, Federal Reserve Bank of Chicago, Vol. 4, pp. 2-13.

⁶ See International Monetary Fund, *World Economic Outlook* (various issues).

⁷ See remarks by N. Gregory Mankiw, 2003, Council of Economic Advisors, December 17.

⁸ See remarks by James Rubenstein in Thomas Klier, 2004, "Challenges to the U.S. auto industry," *Chicago Fed Letter*, Federal Reserve Bank of Chicago, No. 200a, March.

⁹ See Thomas Klier, 2005, "Caution ahead: Challenges to the Midwest's role in the auto industry," *Chicago Fed Letter*, Federal Reserve Bank of Chicago, No. 211, February.