

# Chicago Fed Letter

## Midwest manufacturing exports: Who buys? What sells?

Exports have been responsible for a large share of the growth in gross domestic product (GDP) over the last decade. Between 1987 and 1995, exports as a share of total GDP rose from about 8% to more than 13%. Moreover, exports play an important role in sustaining not only manufacturing jobs, but also jobs that support manufacturing, such as services, transportation, and shipping. According to government reports, in 1992, 10.5 million U.S. jobs (approximately one-tenth of all nonfarm jobs) were supported by exports—7 million by merchandise exports and 3.4 million by services exports.

From a policy perspective, particularly at the state level, it is important to know the role exports play in a state's or region's economy. It is especially useful to know which types of goods are in high demand worldwide and which regions of the world are demanding them. With this information, state and federal export promotion efforts have a better chance of succeeding.

This *Chicago Fed Letter* looks at the midwestern states of Illinois, Indiana, Iowa, Michigan, and Wisconsin and examines the types of goods these states export as well as their major destinations. Although services exports are an important and growing part of the U.S. economy, data on services exports at the state or regional level are unavailable. Therefore, this article will discuss only manufacturing exports.

### Export intensity in the Midwest

Over the 1987–94 period, Midwest manufacturing exports grew 96%

compared to a 116% increase for the U.S. Nearly two-thirds of all Midwest manufacturing exports are concentrated in three industries—machinery, both electrical and non-electrical, and transportation equipment. The individual states of the Midwest extend this mix somewhat. Illinois and Indiana both have large chemical exports; Iowa has large processed-food exports; and measuring instruments are Wisconsin's third-largest export industry. The top export destinations for Midwest manufacturing goods are Canada, Japan, and Mexico (see figure 1).

Manufacturing exports' share of total manufacturing output (gross state product, or GSP) in the Midwest rose from 22% in 1987 to 29% in 1992. The comparable figures for the U.S. were 25% and 38%. Thus the region's manufacturing is not as export-intensive as the nation's. Among midwestern states, only Michigan's manufacturing is more export-intensive than the nation's, with a 39% share of output in 1992.

When one calculates this share at the industry level, the Midwest lags the U.S. in most industries. However, the individual states tend to be dominated by two or three industries, and these industries tend to be more export-intensive at the state level than they are nationally. For example, Illinois's top export industries are machinery and transportation equipment. These industries are more export-intensive in Illinois than nationwide. Following is a state-by-state analysis of Midwest exports over the 1987–94 period.

### Illinois

Over half of Illinois's manufacturing exports is concentrated in three industries: electrical machinery, non-

| 1. Top export destinations, 1994 |               |              |
|----------------------------------|---------------|--------------|
|                                  | Value         | Percent      |
|                                  | (\$ billions) |              |
| Canada                           | 33.6          | 48.3         |
| Japan                            | 4.5           | 6.5          |
| Mexico                           | 4.1           | 5.9          |
| United Kingdom                   | 3.1           | 4.4          |
| Germany                          | 2.6           | 3.8          |
| <b>Total Midwest exports</b>     | <b>69.5</b>   | <b>100.0</b> |

electrical machinery, and chemicals. This is not surprising, since Illinois is home to numerous large capital goods producers, consumer appliance companies, electronics and telecommunications manufacturers, and pharmaceutical companies. Canada is the largest export destination for Illinois goods, as it is for total U.S. goods and the goods of each of the other Midwest states. Canada received nearly a third of the state's exports in 1994.

While Canada garnered the largest share of Illinois's exports, the state's exports to China and Mexico grew more rapidly over the 1987–94 period. Half of Illinois's exports to China in 1994 was electrical machinery, primarily computers and telecommunications equipment, accounting for 40% of all U.S. electrical machinery exports to China. About 70% of China's computer imports are from the U.S.<sup>1</sup> Telecommunications equipment, which includes cable TV, paging, cellular, and network computer equipment, is a high-priority sector for development in China, which is good news for Illinois's exports.

Another Illinois growth export industry to China was chemicals, with most of the increase occurring in 1993–94.



Illinois's chemical exports to China accounted for 13% of all U.S. chemical exports to China in 1994. Quick surges such as this are sometimes only temporary, reflecting a temporary need or favorable exchange rate. This surge may be more durable, however, as the U.S. has worked extensively over the last few years to persuade China to open its doors to more U.S. goods.

Almost all Illinois industries saw exports to Mexico grow significantly over the 1987-94 period, with nonelectrical machinery, electrical machinery, and processed foods experiencing the largest dollar increases. Mexico has accomplished significant economic development over the last decade, partly the result of a more open trade policy. A growing economy typically needs certain types of goods to support growth—goods to build an infrastructure (such as roads or communications), industrial equipment, and eventually, consumer goods. Illinois, like most midwestern states, has already benefited from increased trade with Mexico in just those goods. However, the devaluation of the peso in late 1994 and Mexico's sharp economic downturn in 1995 have upset this trend considerably. The U.S.'s exports to Mexico will likely take a beating this year.

### Indiana

Indiana's manufacturing exports increased 121% over the 1987-94 period. The state is home to many large auto parts suppliers, pharmaceutical manufacturers, and industrial machinery manufacturers; its largest export industries in 1994 were transportation equipment, nonelectrical machinery, and chemicals. In the same year, Indiana's top export destinations were Canada, Japan, and the United Kingdom. Manufacturing exports to Canada accounted for nearly half of the state's total exports.

Of the top destinations for Indiana's exports, Belgium and Germany realized the largest percentage gains over the 1987-94 period. The state's manufacturing exports to Belgium

increased 321%, with transportation equipment accounting for nearly two-thirds of that growth. Indiana's transportation equipment exports to Belgium grew from \$2 million in 1987 to \$95 million in 1994; the latter figure represented 10% of all U.S. transportation equipment exports to Belgium that year.

Indiana's leading export to Germany in 1994 was chemicals, accounting for nearly a third of the state's exports to Germany in that year. In the previous year, the U.S. ranked fourth among Germany's leading chemical suppliers, with almost 10% of its import market. Industrial chemicals as well as drugs and pharmaceuticals are considered good prospects for increased exports to Germany.

### Iowa

Over the 1987-94 period, Iowa's manufacturing exports increased 91%. Since Iowa is home to several large farm equipment and industrial equipment manufacturers, it stands to reason that nonelectrical machinery made up one-third of the state's manufacturing exports in 1994. Processed foods and electrical machinery were the second- and third-largest export industries, respectively.

Canada accounted for over one-third of Iowa's total manufacturing exports in 1994. However, between 1987 and 1994, South Korea and Australia experienced faster rates of growth as markets for the state's exports. Iowa's manufacturing exports to South Korea increased more than 400%, with processed foods accounting for over half of the state's exports in 1994. As a large and growing market for U.S. goods, South Korea was the U.S.'s sixth-largest export market in that year, supplying about 23% of the country's total imports.

Iowa's manufacturing exports to Australia increased from \$32 million in 1987 to \$106 million in 1994. About 60% of the state's exports to Australia are nonelectrical machinery, probably farm equipment, since agriculture plays an important role in Australia's economy. Despite several years of drought, Australia continues to be a growth market for U.S. farm equipment exports, which now make up about 50% of Australia's total imports in this category.

### Michigan

In 1994, Michigan's manufacturing exports accounted for 40% of the Midwest's manufacturing exports, yet they contributed only 30% of the region's export increase over the 1987-94 period. This is not surprising, since Michigan's manufacturing exports grew only 57% over the entire period. Why the lackluster performance compared to the other Midwest states? As figure 2 shows, Michigan's economy is no longer so heavily dependent on the auto industry. Nevertheless, transportation equipment is still the largest export industry of the state; it accounted for 55% of all manufacturing exports and 30% of manufacturing employment in 1994. Yet transportation equipment exports grew only 27% over the 1987-94 period, largely because of slow export growth to the state's largest

## 2. Industry share of total GSP/GDP

|                   | Michigan             |       | U.S.  |       |
|-------------------|----------------------|-------|-------|-------|
|                   | 1977                 | 1992  | 1977  | 1992  |
|                   | (------percent-----) |       |       |       |
| Total GSP/GDP     | 100.0                | 100.0 | 100.0 | 100.0 |
| Manufacturing     | 40.1                 | 27.2  | 23.9  | 17.7  |
| Motor vehicles    | 19.0                 | 10.1  | 1.9   | 0.9   |
| Transportation    | 7.1                  | 6.8   | 9.2   | 8.8   |
| Wholesale trade   | 5.5                  | 6.6   | 7.1   | 6.6   |
| Retail trade      | 9.1                  | 9.3   | 9.7   | 9.3   |
| FIRE <sup>a</sup> | 12.1                 | 16.5  | 14.5  | 18.5  |
| Services          | 10.9                 | 17.7  | 13.1  | 19.7  |

Note: Columns will not total 100.0% because some categories are not listed.

<sup>a</sup>Financial services, insurance, and real estate.

Source: U.S. Department of Commerce, *Gross State Product, 1977-92*, CD-ROM, 1995.



markets, Canada and Mexico. Excluding transportation exports, Michigan's remaining manufacturing industries increased their exports 120% over the period.

While Michigan's total manufacturing exports to Canada increased only 49% and those to Mexico increased only 41% over the period, several of the state's industries experienced significant export growth to those countries, including both of the machinery industries. Excluding transportation equipment, Michigan's total manufacturing exports to Mexico tripled over the period.

Trade with Michigan's other large partners in 1994 was more positive. In particular, Austria (a relatively new trade partner for Michigan) and France (a longstanding partner) experienced the largest percentage increases as Michigan's major trade partners over the period. The state's exports to Austria consisted almost exclusively of transportation equipment. Most of the U.S.'s transportation equipment trade with Austria is in auto parts. Trade in autos is minimal. Michigan's transportation equipment exports to Austria accounted for 80% of all U.S. transportation equipment exports to that country in 1994.

Michigan's largest export industry to France in 1994 was chemicals, accounting for nearly half of the state's increased trade with that country over the 1987-94 period. Michigan's chemical exports to France comprised 11% of all U.S. chemical exports to France in 1994. Chemicals are one of the U.S.'s best prospects for trade with France, particularly industrial chemicals and pharmaceuticals, two subindustries in which Michigan has several large manufacturers.

### *Wisconsin*

Over the 1987-94 period, Wisconsin's manufacturing exports increased 132%, the second-highest growth rate of the Midwest states. Nonelectrical machinery, transportation equipment, and measuring instruments were the

state's largest export industries in 1994. Measuring instruments exports have been a growth market for Wisconsin, increasing at least sixfold over the period. Wisconsin is home to several large and medium-sized measuring and test instruments manufacturers as well as medical instruments manufacturers. Much of the increased trade in this industry can be attributed to increased sales to France and Japan.

Wisconsin's largest export destinations in 1994 were Canada, Japan, and the United Kingdom. Saudi Arabia was the state's largest export growth market, rising from \$36 million in 1987 to \$346 million in 1994, almost entirely as a result of increased exports in the transportation equipment industry. Wisconsin's exports from that industry to Saudi Arabia accounted for 13% of all U.S. transportation equipment exports to the country in 1994. Saudi Arabia is the fifth-largest world market for auto parts, primarily because its used-vehicle market is sizable. In total, the U.S. supplies about 40% of Saudi Arabia's auto parts market.

Mexico was another growth market for Wisconsin's goods, increasing from \$69 million in 1987 to \$397 million in 1994. Compared with exports to Saudi Arabia, the growth in Wisconsin's exports to Mexico was more evenly spread across all industries, with nonelectrical equipment seeing the largest dollar value increase. Other growth industries to Mexico were electrical machinery, processed foods, and chemicals. The U.S. Commerce Department reports that the best prospects for trade with Mexico in nonelectrical equipment are in pollution control equipment, air conditioning and refrigeration, and machine tools—industries in which Wisconsin has several large manufacturers.

### **Summary**

Recent Midwest export data show that the region has responded to the world's increased demand for U.S. goods, whether those markets

are our traditional partners such as Canada, Japan, and Europe, or emerging markets such as South Korea and China.

The Midwest has a large and diverse manufacturing base, and many of its products are of the types that growing economies need in order to develop: farm equipment, construction equipment, and telecommunications equipment, as well as a broad range of industrial equipment. Demand for consumer goods such as household appliances or prepared foods also increases as countries develop. This bodes well for the Midwest, since it means that manufacturing exports are likely to continue playing an important role in the region's economies.

—Linda M. Aguilar  
Regional Economist

---

<sup>1</sup>U.S. Department of Commerce, International Trade Administration, *China: Data on Best Prospects*, CD-ROM, 1995. All subsequent references to export prospects for various countries are from this series of sources, with the same citation but a different country name (Germany, France, Saudi Arabia, and Mexico).

---

Michael H. Moskow, *President*; William C. Hunter, *Senior Vice President and Director of Research*; David R. Allardice, *Senior Vice President, regional programs*; Douglas Evanoff, *Assistant Vice President, financial studies*; Charles Evans and Kenneth Kuttner, *Assistant Vice Presidents, macroeconomic policy research*; Daniel Sullivan, *Assistant Vice President, microeconomic policy research*; Anne Weaver, *Manager, administration*; Janice Weiss, *Editor*.

*Chicago Fed Letter* is published monthly by the Research Department of the Federal Reserve Bank of Chicago. The views expressed are the authors' and are not necessarily those of the Federal Reserve Bank of Chicago or the Federal Reserve System. Articles may be reprinted if the source is credited and the Research Department is provided with copies of the reprints.

*Chicago Fed Letter* is available without charge from the Public Information Center, Federal Reserve Bank of Chicago, P.O. Box 834, Chicago, Illinois, 60690-0834, (312) 322-5111.

ISSN 0895-0164

## Tracking Midwest manufacturing activity

### Manufacturing output indexes (1987=100)

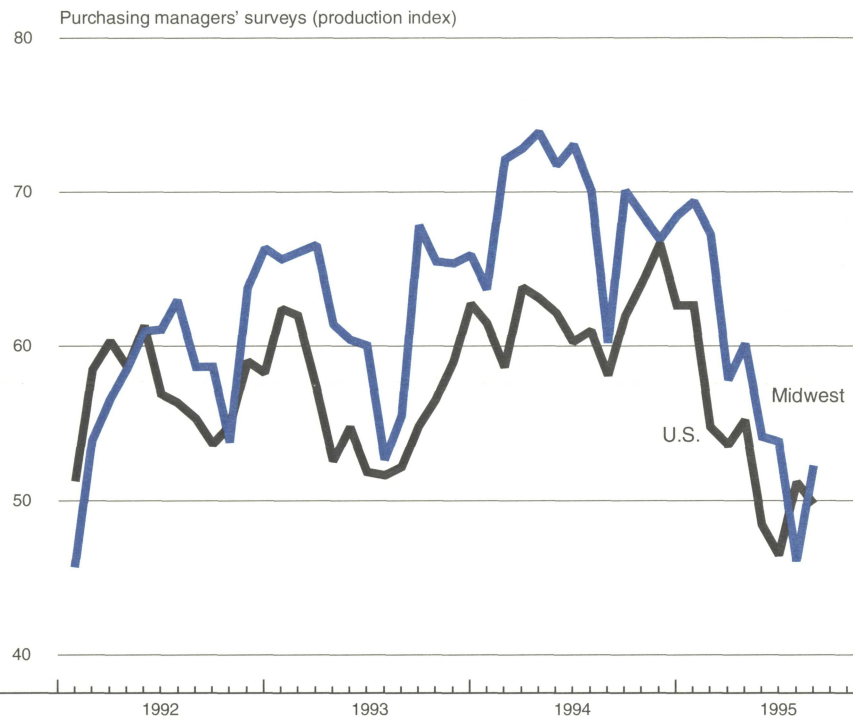
|     | July  | Month ago | Year ago |
|-----|-------|-----------|----------|
| MMI | 138.7 | 140.2     | 133.7    |
| IP  | 122.8 | 123.1     | 119.8    |

### Motor vehicle production (millions, seasonally adj. annual rate)

|              | July | Month ago | Year ago |
|--------------|------|-----------|----------|
| Cars         | 6.1  | 6.0       | 6.0      |
| Light trucks | 4.6  | 5.4       | 4.7      |

### Purchasing managers' surveys: net % reporting production growth

|      | Aug. | Month ago | Year ago |
|------|------|-----------|----------|
| MW   | 52.3 | 46.2      | 60.3     |
| U.S. | 49.8 | 51.2      | 58.1     |



Purchasing managers' surveys indicate that Midwest manufacturing activity flattened out in recent months, after decelerating significantly in the second quarter. The composite production component of surveys in Chicago, Detroit, and Milwaukee rose in August, but remained at a level consistent with only modest growth in output in the region. Extended hot, humid weather cut into production hours in August, but stronger retail sales and housing activity should help prompt rising manufacturing output in the months ahead.

Sources: The Midwest Manufacturing Index (MMI) is a composite index of 15 industries, based on monthly hours worked and kilowatt hours. IP represents the Federal Reserve Board industrial production index for the U.S. manufacturing sector. Autos and light trucks are measured in annualized units, using seasonal adjustments developed by the Board. The purchasing managers' survey data for the Midwest are weighted averages of the seasonally adjusted production components from the Chicago, Detroit, and Milwaukee Purchasing Managers' Association surveys, with assistance from Bishop Associates, Comerica, and the University of Wisconsin-Milwaukee.