

## What Accounts for the Decline in Manufacturing Employment?

### Summary

The manufacturing sector of the U.S. economy has experienced substantial job losses over the past several years. In January 2004, the number of such jobs stood at 14.3 million, down by 3.0 million jobs, or 17.5 percent, since July 2000 and about 5.2 million since the historical peak in 1979. Employment in manufacturing was its lowest since July 1950 (see Figure 1).

Much of the decline in manufacturing employment since 2000 reflects the recession that began in 2001 and the relatively weak recovery in demand that followed. The recession was particularly hard on the manufacturing sector, as the demand for goods weakened in both the United States and the rest of the world. Those cyclical losses in manufacturing employment persisted through the first two years of the recovery, but they are likely to be at least partially reversed as the economy expands in the next few years.

However, long-term trends indicate that even after the economy has fully recovered from the 2001 recession, employment in manufacturing is unlikely to return to its prerecession level. Over the long term, productivity in manufacturing has increased at a consistently strong pace, so sales would have needed to expand even faster for employment to show any gains. But the growth in demand for manufactured goods has not kept pace with the growth in productivity, as consumers continue to devote more of their spending to services instead of goods. In addition, U.S. manufacturers have faced competition from countries where businesses face lower compensation costs. Finally, the downward trend is in part a statistical artifact: manufacturers are increasingly using contract and temporary labor, which provides jobs that, in the past, would have shown up in the statistics as manufacturing employment but now do not.

The loss of manufacturing jobs is a burden for affected workers but should not have a lasting effect on employment in the economy as a whole. The labor market in the United States is quite flexible, so even if gains in productivity, shifts in demand, or increasing international competition bring about permanent job losses in manufacturing, the effect on aggregate employment is not permanent, lasting only through a period of adjustment during which displaced workers obtain other employment (albeit in many cases in less desirable jobs).

**Figure 1.**  
**Manufacturing Employment**



Sources: Congressional Budget Office; Department of Labor, Bureau of Labor Statistics.

Note: The vertical bars indicate periods of recession as defined by the National Bureau of Economic Research.

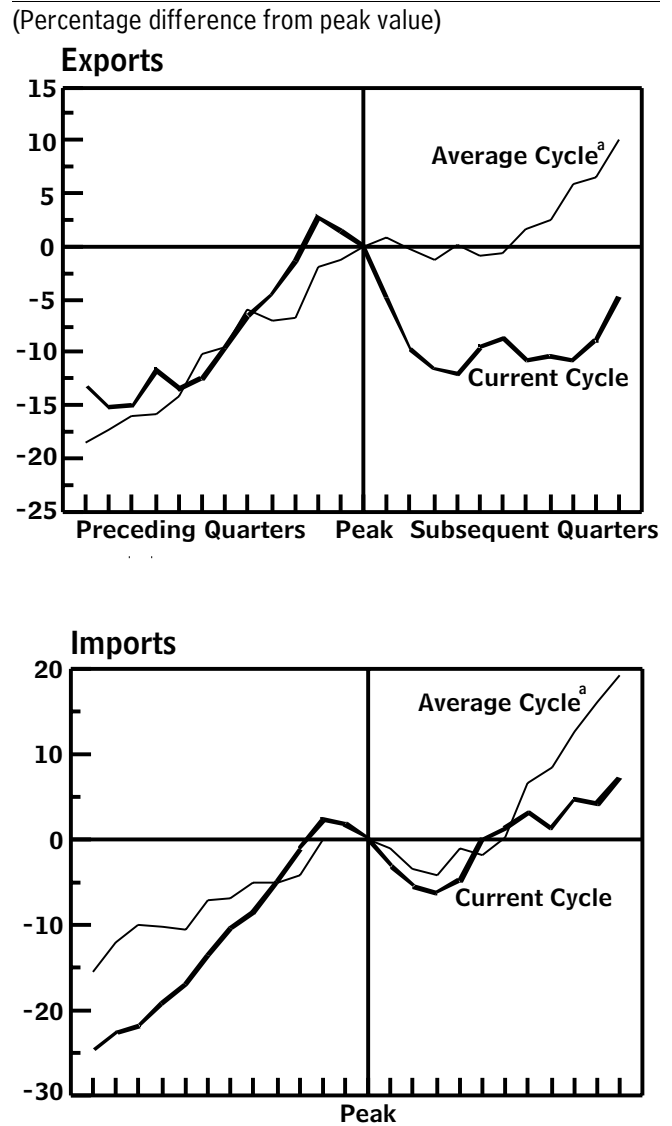
## The Recession of 2001 and Its Aftermath

The manufacturing sector has experienced a severe downturn and only a modest recovery to date. The loss of jobs in the recent recession and recovery has been significantly worse than in a typical recession. Instead, the extent of the losses has been comparable to that during the more severe back-to-back recessions in 1980 and in 1981 and 1982. Since 2000, more than half of the losses have occurred in five industries: those producing computer and electronic products, transportation equipment, machinery, fabricated metals, and apparel. But in all 21 industries that constitute the manufacturing sector,<sup>1</sup> employment has declined, and 17 of the 21 have seen losses exceeding 10 percent. In fact, all 21 industries have shown declines even since the recession's end in November 2001.

The drop in manufacturing employment since the beginning of the recession largely reflects the weak demand for capital goods in the United States and for both capital and consumer goods among its major trading partners. In the United States, the demand for machinery and other capital equipment slumped after the investment surge of the late 1990s and was only beginning to recover in 2003. The resulting loss in production in industries producing capital goods severely reduced employment in the sector. Meanwhile, tepid growth overseas and a high U.S. real exchange rate meant weak demand for U.S. goods among the nation's major trading partners. Consequently, U.S. exports have been weaker during the 2001 recession and the recovery thus far than during and after most previous recessions, while imports have grown about as fast as they typically have after previous recessions (see Figure 2).

1. As identified in the North American Industry Classification System (NAICS), recently created jointly by the United States, Canada, and Mexico. The NAICS classifies all establishments on the basis of the production process they use, in contrast to the previous U. S. Standard Industrial Classification (SIC) system, in which some establishments were classified using different criteria (such as class of customer).

**Figure 2.**  
**U.S. Exports and Imports of Goods**



Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis.

Note: The peak of the last business cycle occurred in March 2001, as designated by the National Bureau of Economic Research.

a. Average of the seven recoveries during the 1949-1990 period, excluding the recovery in 1980 from the recession that year because that recovery was so short-lived.

## Long-Term Influences

A number of long-term factors have influenced U.S. manufacturing employment, including these:

### Shift in Demand Away from Manufactured Goods

The share of consumer spending devoted to manufactured goods has declined over time both in the United States and in other industrialized nations. As consumers' income has risen, they have increased their purchases of goods but boosted their spending on services—including medical care, notably—even more. In 2000, 42 percent of U.S. consumer spending was devoted to goods, down from 53 percent in 1979 and 67 percent in 1950. Likely factors contributing to that shift are an increase in the value of time resulting from rising real (inflation-adjusted) wages and married women's increased participation in the labor force, which has led households to substitute some purchased services for tasks formerly performed in the home.

### Manufacturing Productivity

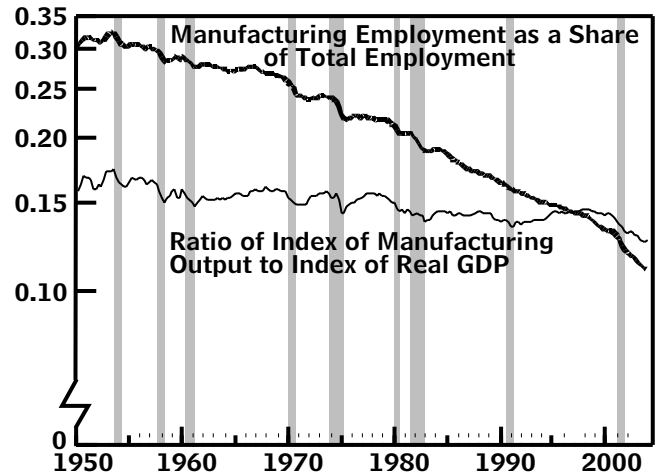
Over recent decades, U.S. manufacturers have continually invested in more and better capital goods and manufacturing techniques in order to remain competitive in world markets. That investment has enabled them to raise their output and keep pace with overall economic growth without a corresponding increase in the number of workers that they employ. Since 1979, the productivity of manufacturing workers has grown at an average annual rate of 3.3 percent, significantly faster than the 2.0 percent growth of labor productivity in the nonfarm business sector overall.<sup>2</sup>

Improvements in productivity are economically beneficial, as they permit greater profits, higher real wages, and lower prices. But while the prices of manufactured goods have indeed fallen consistently relative to other prices, those lower prices have not led to increased sales: the share of gross domestic product (GDP) accounted for by manufacturing output has been roughly constant over the past half-century (see Figure 3). Strong growth in productivity and a slower rate of growth in the demand for manufactured goods have necessarily entailed a decline in manufacturing's share of total employment.

2. The Bureau of Labor Statistics' current series of data on productivity in manufacturing is available only since 1987. For earlier years, CBO used figures from the recently discontinued SIC system. The two series of data show virtually identical growth in productivity, on average, between 1987 and 2002.

**Figure 3.**  
**Output and Employment in the Manufacturing Sector**

(Log scale)



Sources: Congressional Budget Office; Department of Labor, Bureau of Labor Statistics; Department of Commerce, Bureau of Economic Analysis.

Note: The vertical bars indicate periods of recession as defined by the National Bureau of Economic Research.

The gains in manufacturing productivity have continued recently, even through the downturn in 2001. Since the peak of the last business cycle in March 2001, labor productivity in manufacturing has risen at an average annual rate of 5.5 percent, faster than its average annual rate of growth during previous postwar recessions and the early part of the ensuing recoveries.

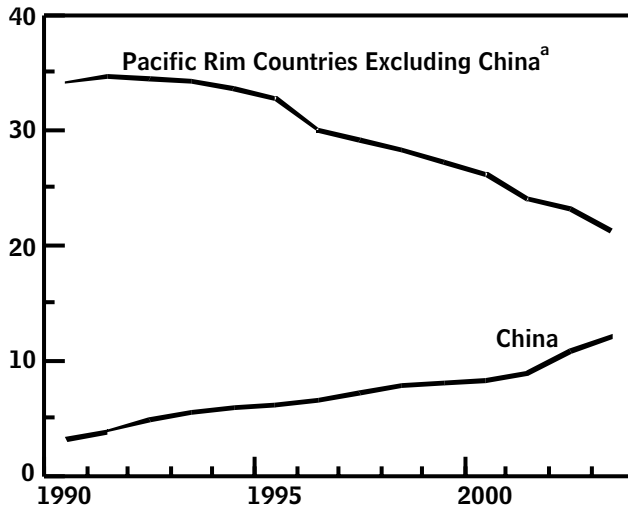
### Competition from Foreign Producers

A portion of the long-term decline in employment in some manufacturing industries can be linked to the expansion of trade. The gains from trade arise as nations specialize in the goods and services that they can produce efficiently relative to other countries. Thus, the expansion of trade necessarily involves changes in the mix of products. The United States has specialized in products requiring a highly skilled labor force even as lesser jobs have shifted to countries where labor is less skilled. In the apparel sector, for example, the number of jobs in this country has declined from over 900,000 in 1990 to less than 300,000 today.

Some observers have specifically attributed recent job losses in manufacturing to a surge in the bilateral trade deficit with China. From 1992 to 2003, the trade deficit

**Figure 4.****U.S. Imports from China and from Other Pacific Rim Countries**

(Percentage of total imports)



Sources: Congressional Budget Office; Department of Commerce, Bureau of the Census.

a. Australia, Brunei, Hong Kong, Indonesia, Japan, Korea, Macao, Malaysia, New Zealand, Papua New Guinea, Philippines, Singapore, and Taiwan.

with China grew from \$18.3 billion to \$124.0 billion, which is larger than the deficit with any other country. However, much of the increase in imports from China reflects a shift away from imports from other Asian countries rather than an increase in total imports. In fact, while U.S. imports attributable to China increased from 5 percent in 1992 to 12 percent in 2003, the share of imports from other Pacific Rim countries declined from 34 percent to 21 percent (see Figure 4).

**Changes in the Structure of Manufacturing Employment**

Finally, manufacturing employers increasingly have met short-term fluctuations in demand not by adding permanent staff but by hiring temporary workers through agencies and by contracting with outside firms to provide certain support functions (for example, cafeteria, janitorial, and payroll-processing services). Although those structural shifts probably have little if any effect on manufacturing output, they do reduce the measured level of employment in manufacturing. The expansion of temporary employment probably accounted for between 0.5 million and 1 million of the 2.2 million reduction in manufacturing jobs between 1979 and 2000. But because temporary workers are typically the first to be let go when demand weakens, how much (if any) of the decline in manufacturing jobs since 2000 can be ascribed to the structural change in the sector is unclear. And as the economy recovers, some portion of the rebound in manufacturing employment is likely to be obscured by the hiring of temporary workers and contracting with outside firms.

**Related CBO Publication:** Statement of Douglas Holtz-Eakin, Director, Congressional Budget Office, *Chinese Exchange Rate and U.S. Manufacturing Employment*, before the House Committee on Ways and Means, October 30, 2003.

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