Is the U.S. Losing Its Manufacturing Base?

Georgia State University
Economic Forecasting Center
Atlanta, Georgia
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William Strauss
Senior Economist
and Economic Advisor
Federal Reserve Bank of Chicago
The Setup
Manufacturing output peaked in June 2000 and fell 6.8% over the following 18 months.
Manufacturing capacity utilization collapsed in the middle of 2000
Job declines in the manufacturing sector began to escalate, with nearly 1.5 million jobs lost.
Is the U.S. Losing Its Manufacturing Base?
Manufacturing employment as a share of national employment has been declining for over 50 years.
The number of jobs in manufacturing has been relatively stable over this period, averaging 0.1% growth per year since 1947.
Not to make a mountain out of a molehill, but manufacturing employment was increasing up until 1979 and has been moving lower over the past 28 years.
However, service sector employment has grown more than fivefold over this period, averaging growth of 2.5% per year since 1947.
While manufacturing employment growth was flat over the past 50 years, manufacturing output increased by 3.7% per year.
This translated into an almost 700 percent increase in manufacturing output over this time period.
The Caterpillar 797B costs over $5,000,000
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The increase in output can be attributed to strong productivity growth experienced by the manufacturing sector.
What took 1,000 workers to produce in 1950 takes less than 200 workers today.

Manufacturing Sector:
Number of workers needed to do the work of 1,000 workers in 1950

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>1,000</td>
</tr>
<tr>
<td>1960</td>
<td>813</td>
</tr>
<tr>
<td>1970</td>
<td>627</td>
</tr>
<tr>
<td>1980</td>
<td>485</td>
</tr>
<tr>
<td>1990</td>
<td>362</td>
</tr>
<tr>
<td>2000</td>
<td>244</td>
</tr>
<tr>
<td>2007</td>
<td>189</td>
</tr>
</tbody>
</table>
Manufacturing productivity growing faster over the past 37 years

### Productivity

**Average annual percent change**

- **1950s**: 2.1%
- **1960s**: 2.2%
- **1970s**: 2.6%
- **1980s**: 2.6%
- **1990s**: 3.0%
- **2000-2007**: 3.7%

- **1950s**: 2.0%
- **1960s**: 2.7%
- **1970s**: 2.7%
- **1980s**: 1.6%
- **1990s**: 2.0%
- **2000-2007**: 2.5%
The divergence in productivity appears to have occurred around the mid-70s.
This divergence is especially apparent in durable manufacturing.
Strong productivity growth has allowed the manufacturing sector to grow faster than the overall economy.
However, lower relative prices in the manufacturing sector has lead to manufacturing comprising a smaller share of GDP over time.
Winners and Losers Among Manufacturers
These industries have experienced significant losses in production over the past twenty years.

![Graph of Industrial production from 1987 to 2007.](image)

- **Textile mills**
- **Apparel**
- **Leather and allied products**

The graph shows the Index 1987 = 100 for each industry.
These industries’ production has been flat over the past twenty years.
These industries’ production growth has been moderate over the past twenty years.
These industries’ production growth has been solid over the past twenty years.
These industries’ production growth has been among the strongest over the past twenty years.
Computer and electronic production growth has been in a league of its own.
How profitable is manufacturing?
While more cyclical, profits in manufacturing have out-performed returns in nonfinancial corporate businesses.
The doldrums that manufacturing experienced in 2000-2003 were closely linked with the economic recession.
Manufacturing workers have suffered steep employment declines over the current cycle.
But the overall economy’s employment growth has also struggled
When changes in nonfarm employment are considered, the most recent manufacturing employment downturn is not unprecedented.
The economy has been hit hard by a number of negative economic shocks over the past years:

- The equity market collapse that began in early 2000
- Soaring energy prices
- The September 11, 2001 attack on the United States
- The corporate governance scandals that started in late 2001
- A war with Afghanistan in late 2001
- The geopolitical uncertainties regarding Iraq that began in the summer of 2002
- The hurricanes that hit the Gulf Coast in 2005
- The housing market correction that began in 2005
These shocks hampered the current economic expansion.
The loss of manufacturing employment is consistent with the relatively sluggish performance of manufacturing production.
Productivity in the overall economy has grown at a rate within the range of previous expansions.
However, productivity within the manufacturing sector has grown at a faster rate than during any previous expansion.
Manufacturing employment losses have occurred across numerous countries – among 20 big economies, 22 million jobs were lost.

**Percent change in manufacturing employment from 1995 to 2002**

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>25%</td>
</tr>
<tr>
<td>Canada</td>
<td>20%</td>
</tr>
<tr>
<td>Philippines</td>
<td>18%</td>
</tr>
<tr>
<td>Taiwan</td>
<td>15%</td>
</tr>
<tr>
<td>Mexico</td>
<td>10%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>5%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0%</td>
</tr>
<tr>
<td>Australia</td>
<td>-5%</td>
</tr>
<tr>
<td>India</td>
<td>-15%</td>
</tr>
<tr>
<td>France</td>
<td>-20%</td>
</tr>
<tr>
<td>Germany</td>
<td>-25%</td>
</tr>
<tr>
<td>Sweden</td>
<td>-30%</td>
</tr>
<tr>
<td>United States</td>
<td>-25%</td>
</tr>
<tr>
<td>Russia</td>
<td>-20%</td>
</tr>
<tr>
<td>South Korea</td>
<td>-15%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-10%</td>
</tr>
<tr>
<td>China</td>
<td>-5%</td>
</tr>
<tr>
<td>Japan</td>
<td>0%</td>
</tr>
<tr>
<td>Brazil</td>
<td>-25%</td>
</tr>
</tbody>
</table>
Is the U.S. positioned to continue its strong productivity gains?
U.S. maintaining its commitment to research and development
Lessons from the farm sector
We are producing more in our farm sector than at any time in our history

Real gross domestic farm business product

Billions of 2000 chained dollars

1947  '52  '57  '62  '67  '72  '77  '82  '87  '92  '97  '02  '07
And we are accomplished this remarkable feat with just 2.0% of our employment devoted to farming.
The Current Expansion
Manufacturing output in the United States is at an all-time record high, nearly 18% higher than at the end of 2001.
Manufacturing capacity utilization recovered back-up to its historical average.
Job losses in manufacturing have moderated

Manufacturing employment

Percent change from year ago

Quarterly change (saar)

1990 '91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08
Summary

• Manufacturing output in the U.S. has never been higher
• The success of manufacturing has been driven by productivity
• Manufacturing employment has shown little change over the past 60 years
• The most recent decline in manufacturing was cyclical, not structural
• Profits in manufacturing have outperformed profits for the rest of the nation
• The trends that have dominated manufacturing for the past 60 years are suggestive of the future for U.S. manufacturing: ever increasing output with employment representing a smaller share of total employment