

Summary

U.S. Manufacturing Innovation at Risk

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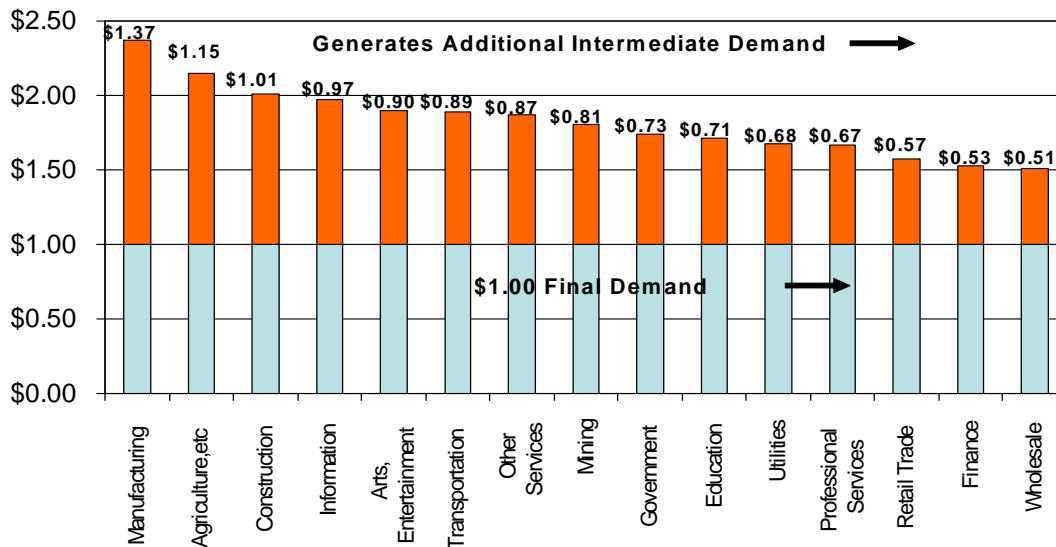
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Downward Trends Threaten America’s Manufacturing Innovation, Productivity and Competitiveness

The manufacturing innovation process is vital to promoting economic growth, productivity gains and increased living standards. The most important components of this productivity-enhancing process include investments in worker education and training, capital equipment, R&D and its “spillovers” — the unintended benefits to other producers and society in general. As Chart 1 shows, for each dollar of final demand in manufacturing, \$1.37 of additional goods and services are needed to support that demand. This “multiplier effect” is stronger in manufacturing than any other sector. A strong and vibrant domestic manufacturing base promotes workforce and R&D investments and keeps the innovation process functioning, fostering productivity, competitiveness and economic growth.

Chart 1: Manufacturing’s Linkages to the Rest of the Economy
 Intermediate Demand Necessary to Produce \$1.00 of Final Demand



Source: U.S. Bureau of Economic Analysis, From 2004 Industry-by-Industry Total Requirements

Five clear warning signs. Long-term U.S. economic growth and competitiveness in the global marketplace are at risk if recent trends in domestic manufacturing — and the innovation process it spawns — continue. There are five clear warning signs:

1. Manufacturing **output** since the last recession lags that of earlier economic recoveries — its 15 percent growth since the end of the recession is only half the pace averaged in recoveries of the past half-century.
2. Manufacturing **capacity** remains underutilized, slowing investment in new plants and equipment. Since the end of the recession, total plant and equipment investment has risen at half the pace averaged in recoveries of the past half century.
3. The U.S. share of **global trade** in manufactures has shrunk, falling from 13 percent in the 1990s to 10 percent in 2004. The U.S. share of global trade in some of the highest value-added export industries such as machinery, equipment and advanced technology products is falling.
4. Manufacturing continues to pay better than many other industries, employs 25 percent of scientists and related technicians and 40 percent of engineers and engineering technicians — critical skill groups for the R&D process — yet the sector is experiencing a **growing shortage of skilled workers**.
5. America's long-standing **leadership in R&D** will be challenged. While the United States continues to spend more than any other country on R&D investment, U.S. growth in R&D has averaged only about one percent per year in real terms since 2000. In addition, the United States is not keeping up with other countries in ensuring a supply of scientific personnel:

Implications of inaction. The United States invested more than \$290 billion in R&D in 2003, or 40 percent of all R&D spending in the industrial world. The domestic R&D activities of manufacturers account for 42 percent of that total. But the United States cannot be complacent about this leadership position. The rapid growth in overseas manufacturing is creating new global centers with the critical mass necessary to build their own innovation machines. Meanwhile, the challenges faced by America's manufacturing base **threaten to reduce the critical mass necessary for our own innovation process to work.**

Gains in manufacturing productivity are key to overall U.S. productivity growth. **If the innovation process goes offshore and the various wealth-enhancing aspects of that process are lost, a decline in the U.S. long-term economic growth rate is all but assured.** The report recommends economic policy changes to ensure a viable U.S. innovation process, including: (a) encouragement of investments that enhance productivity; (b) elimination of workforce and investment obstacles; (c) an increase in federal spending on basic R&D, including at U.S. universities; (d) improvement in the efficiency of the transportation and communication infrastructures and (e) improvement of tax policy and intellectual property enforcement.

In his State of the Union address in January 2006, President Bush laid out an ambitious **American Competitiveness Initiative** to turn the tide in favor of U.S. innovation. This is a good step forward to address the concerns raised in this report, but the President's recommendations need to be supported and expanded by a bipartisan coalition.

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The Manufacturing Institute is the research and education arm of the National Association of Manufacturers (NAM). The Council of Manufacturing Associations represents 225 manufacturing trade associations allied with the NAM.