

## Erosion of U.S. Industrial Base Is Troubling

Growing dependence on foreign suppliers should concern policy makers

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The U.S. industrial base is eroding, and this situation has enormous national security implications. It has made the United States so dependent on foreign countries for critical components and systems that it may have lost its ability to control its supply chains.

The United States is becoming dependent on countries such as China, India, Russia, France and Germany for critical weapons technology. It's conceivable that one of these governments could tell its local suppliers not to sell critical components to the United States because they do not agree with U.S. foreign policy.

The federal government, and in particular, the Department of Defense, does not manage the country's industrial base as a "system."

U.S. government agencies are fiefdoms that rarely compare notes to see how their collective policies might affect a company or an industry. Interagency cooperation is an essential element of what needs to change in the future.

A Defense Department report entitled "Transforming the Defense Industrial Base: A Roadmap," recommended the department consider "viewing the industrial base as being composed of operational effects-based sectors that support transformational war-fighting. ... Organizing its decision processes to optimize operational effects—not programs, platforms or weapons systems."

This report makes sensible arguments, but more needs to be done.

U.S. corporations increasingly act as large social systems with a global focus. But ask the CEOs of the Fortune 500 to describe the issues on their minds and, more than likely, national security or the disintegration of the U.S. industrial base would not be among them. Many global corporations do not believe they owe allegiance to any stakeholder except their stockholders, and sometimes, their customers.

This attitude has not changed since the end of the Cold War—not even since 9/11. A new vision of national security is needed that includes cooperation between government and industry.

National security requires a healthy market-based economy, with a strong industrial base of globally competitive industries continuously improving quality and productivity.

The United States cannot sustain the kind of growth it has enjoyed for the last several decades if the industrial base steadily erodes. Increasingly, a number of U.S. companies in specific industries find it impossible to compete in world markets. This is of particular concern for the industrial base that supplies the U.S. military.

According to U.S. Census Bureau data from 1992 to 1996, the domestic market share of military and civilian aircraft combined (traditionally an American manufacturing powerhouse) dropped from 88.5 percent to 86.6 percent. Aircraft engines and engine parts suffered a steeper decline—from 70.9 percent to 63.2 percent. And domestic producers' share of the non-engine aircraft parts market plummeted all the way from 80.5 percent to 68.5 percent, said industrial base expert Alan Tonelson of the U.S. Business and Industry Council, quoting census data.

Much of the high-value American industry experienced the same deterioration from 1992 to 1996, according to Tonelson.

Domestic market share for relays and industrial controls dropped from 81.1 percent to 75.1 percent, for computer storage devices from 39.3 percent to 31.9 percent, for analytical instruments from 78.5 percent to 75.6 percent, for metal-cutting machine tools from 55.2 percent to 47.9 percent, for specialized industrial machinery from 85.2 percent to 82.7 percent, for pharmaceuticals from 95.7 percent to 93.1 percent and for industrial inorganic chemicals from 68.2 percent to 60 percent.

Data for the 1997-2001 period shows further weakening in domestic manufacturing. But the rate of deterioration was rarely faster than from 1992 to 1996, as the weak-dollar advocates have been claiming. Precise comparisons between these periods are difficult because in 1997, the government changed a key system for classifying industries. Nonetheless, 1997-2001 data for 80 out of 90 industries show market share losses during these years, Tonelson said.

Of note to the military defense sector, from 1997-2001, civilian jetliners fell from an 84.7 percent domestic market share down to 73.9 percent; aircraft engines and engine parts, from 60 percent to 50.7 percent, and non-engine aircraft parts, from 68.9 percent to 64.6 percent.

Falling domestic market share during the late 1990s afflicted many other core industrial sectors as well.

Market share for domestic producers of relays and industrial controls dropped from 70 percent to 60.5 percent, metal-cutting machine tools from 41.5 percent to 37 percent, ball and roller bearings from 77.4 percent to 75.8 percent, mechanical power transmission equipment from 75.1 percent to 72 percent, turbines and turbine generator sets from 74.4 to 57.7 percent, pharmaceuticals from 90.5 to 85.9 percent, and plastics and resins from 88.9 percent to 85.4 percent, Tonelson said.

Globalization and the intense pressure applied by Wall Street to U.S. companies encourages indiscriminant cost cutting, a measure that frequently works in the short term, but often creates losses in the long term.

The “better, faster, cheaper” mentality sometimes sacrifices long-term gains by forcing a company to outsource work to low-wage countries in the near term. These decisions can come back to haunt a company. This is especially the case when the work acquired is of inferior quality, or the accessibility of an essential item can be put in jeopardy.

In many cases, the United States is unable to manufacture critical military equipment. This situation is not officially documented and monitored, but it needs to be.

The United States does not have control over foreign shipping. Enemies can easily disrupt the economy just by sinking ships that feed the industrial base and consumer culture. The United States is vulnerable because of its dependence on foreign parts, services and fuel to maintain economic growth, not to mention military capability.

Global purchasing organizations in industry and the military are not sufficiently looking at the risks of potential disruption of supply lines. They tend to be rewarded for getting commodities less expensively, and nothing else.

In a global economy, the rules of engagement are different. Just look at the results of the brief longshoremen’s strike last year on the West Coast and the billions of dollars it cost the nation.

The Defense Department’s Diminishing Manufacturing Sources and Material Shortages (DMSMS) program, monitors spare part shortages regardless of cause.

DMSMS is the loss or impending loss of manufacturers or suppliers of critical items and raw materials due to production discontinuance. DMSMS can be caused by rapid changes in item or material technology, uneconomical production requirements, foreign source competition, federal environmental or safety requirements, and limited availability or increasing cost of items and raw materials used in the manufacturing process.

The problem is further complicated by a reduction in the industrial base dedicated to production of military equipment. In fact, the Defense Department now accounts for less than one-half of 1 percent of total microelectronic component sales. In addition, aging fleets of ships and aircraft have lost their original supplier-base of constituent mechanical, hydraulic and other components.

The DMSMS database is an example of how badly the industrial base is deteriorating.

The Industrial College of the Armed Forces at National Defense University has an industry studies program that annually examines 20 industries representing key components of national security. ICAF’s work has chronicled the deterioration in industries such as advanced manufacturing and shipping.

## **Manufacturing**

When government R&D investment in an industry deteriorates, it is only a matter of time before an industry is in trouble. Manufacturing R&D by the federal government is declining.

According to Manufacturing News, “in the mid 1990s, the government was spending \$1.5 billion on manufacturing related R&D, including such programs as Technologies Enabling Agile Manufacturing at the Energy Department and \$500 million in electronics manufacturing programs at DARPA. Both of those programs have been discontinued.”

In the same article, Dick Engwall, the 2002 recipient of the multi-association “Individual Manufacturing Excellence Award,” said he is “concerned about the military’s desire to abandon programs related to materials, processes and affordability.”

## **Shipbuilding and Repair**

In May 2001, the U.S. Department of Commerce’s Office of Strategic Industries and Economic Security, in partnership with the Carderock Division of the Naval Surface Warfare Center, completed a three-year national security assessment of the U.S. shipbuilding and repair industry. Some of the findings were disconcerting.

According to the study, employment in the industry has “dropped sharply since the early 1980s, when total private employment was close to 180,000 workers. Survey estimates indicated that employment would decline to about 83,500 in 2000.” In addition, “orders for U.S. warships have declined 60 percent during the 10 years since the end of the Cold War.”

Young people no longer view working in a shipyard as a viable way to make a living. Consequently, according to DOC, “survey responses indicate that labor shortages have reduced profits, impacted construction costs, and delayed project completion for most shipyards.”

According to the study, the basis for U.S. ship-building superiority has been the research and development expertise that currently resides in Navy’s laboratories, acquisition commands, and certain shipbuilders and universities. “Collectively, these organizations have conceived and designed most of the state-of-the-art hull, mechanical, electrical, power projection, air defense and undersea warfare capabilities that are operational today. With reduced research and development budgets, some of that capability now is becoming fragmented.”

This situation also exists in other industries, such as machine tools, the high performance explosives and explosive components industry, cartridge and propellant actuated device sector and welding. nd

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