

**Make Me: The State of U.S. Manufacturing**

The United States has been hollowed out. It no longer manufactures goods. Once the factory of the world, the U.S. now manufactures debt. The high wage manufacturing jobs have been out-sourced to low wage economies. The demise of U.S. manufacturing is at the core of the decline of America, its chronic trade deficits and growing international indebtedness. It makes the world's savers reluctant to be exposed to the U.S. dollar.

There is one problem with this widely held view: It is factually wrong.

The value of U.S. manufacturing output in real terms (adjusted for inflation) was a little more than \$3 trillion in 2008. That is up from \$1.2 trillion in 1972. If the U.S. manufacturing sector was a separate country, it would be the world's 5<sup>th</sup> largest economy (behind the rest of the U.S., Japan, China and Germany). The U.S. remains the world's largest manufacturer. Full stop.

Although international comparisons are fraught with measuring problems, it appears that the U.S. share of world manufacturing is roughly the same as the combined total of the BRICs (Brazil, India and Russia account for a combined 11-12% share).

**Share of World's Manufacturing Output**

	1995	2000	2007
<b>United States</b>	22.3%	21.2%	24.7%
<b>Japan</b>	21.1%	20.1%	15.5%
<b>China</b>	4.7%	5.7%	11.4%
<b>Rest of the World</b>	42.4%	53.0%	48.4%

Source: United Nations Industrial Development Organization

The data also suggests that the impressive rise of Chinese manufacturing has come at the expense of Japan and other East Asian countries more than the United States, which the UN data suggests actually saw a small rise of its global share in recent years.

China has largely injected itself into the production chain at the labor intensive stages, so that television or electronic good that may have been made in Japan or Taiwan or South Korea now says made in China.

Before the end of this business cycle, the real value of U.S. manufacturing output was never higher. If that is true, why is it we can go into a store and have difficulty in finding goods produced in the United States? The simple answer is that many of the goods that are manufactured in the U.S. are not finished consumer goods. Often they are parts or components that may be exported and further processed or assembled abroad, often by affiliates of U.S. multinationals and capital goods.

Metals, minerals and chemical products are the largest U.S. manufacturing sectors, but you are not going to see them in Wal-Mart or Tiffany's. The U.S. also manufactures motor vehicles and other means of transportation, foodstuffs, and computers and electronics, machinery, appliances and furniture.

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**Wrong Metrics**

The popular under-appreciation of the economic prowess of American manufacturers may stem from two other facts. First, manufacturing has shrunk as a share of the overall economy. In the past decade alone, manufacturing's share of GDP has fallen from 15.5% to nearly 11% now.

Second, there has been a persistent loss of manufacturing jobs in the United States. The share of private sector jobs accounted for by manufacturing has fallen from 26.5% in 1969 to almost 9% now. There were more than 17 million manufacturing workers then. There are now less than 12 million; the least in almost 70 years.

The manufacturing sector is smaller compared to the overall economy and there are fewer people working in manufacturing ergo the U.S. lost its manufacturing edge. Wrong. Manufacturing has not shrunk, productivity has gone up.

Output per manufacturing worker has roughly tripled since the early 1970s and doubled since the early 1980s. Today it stands just shy of a quarter million dollars. For the past decade, what economists call multifactor labor productivity, has risen at an average annual rate of 4.6%. This is nearly two-thirds faster than overall non-farm productivity growth.

### Working Hard

The number of manufacturing workers fell by 30% and output per worker grew three-fold. How could that happen? Technology broadly understood is the key. On one hand there are organizational and conceptual advances, like continuous improvement, and lean techniques, including concepts learned from others, such as just-in-time inventory management.

On the other hand, investment has boosted the amount of capital per worker. The stock of capital per manufacturing employee has more than tripled in the last quarter century. Simply put, manufacturing has increasingly become capital intensive rather than labor intensive.

This in turn is made possible by the spending on research and development. Manufacturers punch well above their weight; accounting for more than two-thirds of all the U.S. R&D spending prior to the recession, according to the National Science Foundation



Data from the Bureau of Economic Analysis clearly shows that fixed investment in manufacturing has generally trended lower as a percentage of GDP. In 1996, fixed investment was around 2.4% of GDP. Last year it stood near 1.4%. It has hovered around there for the last four or five years. Moreover, when you adjust for depreciation (net investment), it has fallen from almost 1% of GDP in 1996 to less than 0.3% in 2008.

This decline in manufacturing investment may not be as ominous as it sounds. Capital investment is not only labor savings, but it is also capital savings. Machines themselves have become more powerful, capable of producing more, with less wastage, often using less energy. This means that the replacement stock carries with it technological advances.

### End of the Line

The point is that conventional wisdom does not appreciate the strength of U.S. manufacturing. It remains the world's largest manufacturer and it achieved this with an absolute and relative decline in the share of labor it commands. That comparisons with GDP are not flattering, says more about the growth of the service sector than a demise of manufacturing. Surprisingly, its share in the world has been relatively steady in the face of the incredible increase in China's manufacturing sector.

The secular decline in American manufacturing jobs is not because they have been out-sourced. By all accounts, China, for example, has lost manufacturing jobs as well. A couple of years ago, for example, in a Washington Post op-ed, William Overholt of the RAND Corporation estimated that between 1994 and 2004, China lost as many as 25 million manufacturing jobs.

Last year, Paul Solomon on On-Line News Hour provided slightly different figures. He said that between 1995 and 2002, China lost about 15 million manufacturing jobs, while the U.S. lost about 2 million. Precision is not necessary to make the point that China (and other developed and developing countries) have lost manufacturing jobs.

The biggest threat to jobs (after the business cycle) is technology not foreign workers. More than half of the workers employed by affiliates of U.S. multinationals live in the high wage economies of Canada, Western Europe, Japan, and Australia. And even when U.S. multinationals operate in developing countries, they often locate in the higher wage ones in that space, like South Africa, Israel, Mexico, and Brazil. Competitive pressures drive businesses to be close to their customers.

Mistaking American manufacturing heft for decline may lead to poor policies by the government and poor investment strategies for investors. Some dollar bears claim that the greenback is going the way of U.S. manufacturing, but the bulls should hope they are that lucky. As Josh Billings' observed (according to H.L. Mencken), "It isn't what we don't know that gives us trouble, it's what we know that ain't so."

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