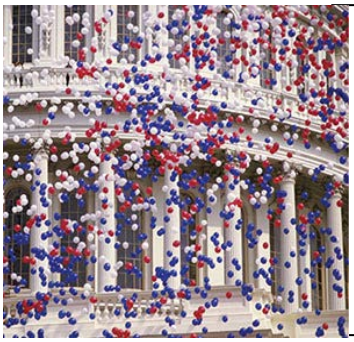
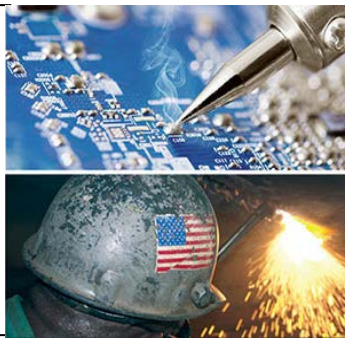


U.S. Manufacturing and Public Policy Conference:

"What the Next President Should Do About U.S. Manufacturing: An Agenda for the First 100 Days"

National Press Club, September 14, 2016



Manufacturing Technology Policy Recommendations

Written by: **Rob Atkinson**
President, Information Technology and Innovation Foundation (ITIF)

A core goal of a U.S. manufacturing competitiveness strategy should be to support the development and adoption of new technologies that radically improve production processes or that can be transformed into innovative new products. There is no way manufacturing firms in the United States will be able to compete with low-wage economies specializing in high volume, commodity-based production unless those U.S.-based firms can sustainably achieve high levels of productivity growth and consistently produce high-tech, high-value added products and services. The U.S. needs to be producing things other countries cannot (or producing the same things more efficiently) and the only way to achieve that is through high levels of innovation in product and process technology.

Unfortunately, the U.S. manufacturing economy is increasingly less high-tech than its major competitors. For example, in 2009, 42 percent of U.S. manufacturing occurred in medium-high-tech or high-tech industries—industries in which R&D intensity (R&D as a percentage of sales) is greater than 3 percent—whereas 58 percent of German, 52 percent of Korean, and 48 percent of Japanese manufacturing occurred in such industries. And not only do Germany, Korea, and Japan each have more R&D-intensive manufacturing sectors than the U.S., they each export a greater share of technology-intensive products. Thus, one objective of the strategy should be to promote the technological upgrading of U.S. manufacturing, not only through cutting-edge new products like electric cars or rechargeable batteries, but by infusing new technology into "legacy" industries such as textiles, materials, paper, steel, ceramics, or numerous others. The U.S. should also promote "smart manufacturing"—the fusion of information technology and manufacturing.

Another key objective of the strategy should be to support public-private partnerships designed to help strengthen the connection between scientific research and technology commercialization in order to assist firms in "bridging the gap" between transforming technologies developed in universities and federal laboratories into commercialized products and efficient production processes. In other words, it is not

enough to simply invent new technologies in America; the U.S. must also invest in the ability to manufacture those technologies in America, as well.

To achieve these aims, the U.S. will have to become much more of an engineering-based economy that embraces a real engineering culture. At least since World War II, the United States has led the world in science-based innovation, as research from U.S. corporate, academic, and government laboratories contributed to a series of transformative innovations, in everything from transistors and mobile phones, to lasers, graphical user interfaces, search engines, the Internet, and genetic sequencing. That approach worked well when few nations had the capacity to leverage U.S. scientific discoveries for their competitive advantage. But now U.S. federal R&D dollars for basic science generate knowledge that is essentially a non-rival, non-appropriable public good that can be quickly picked up and leveraged by foreign competitors. That's why many nations invest much less in basic research and more in applied research. Instead, these countries often rely on the basic research discoveries coming out of U.S. universities and national laboratories, which allows them to concentrate their efforts on turning U.S. scientific discoveries into their own innovative technologies and products that they sell to other nations, including the U.S. In other words, investments in science create essential new knowledge that is freely traded around the world, but it is the application of that knowledge (e.g., through engineering) that creates wealth through new products and processes. The U.S. must also be able to make things here. And that requires engineering-based innovation, an appropriable activity through which U.S. establishments can add and capture value. But the U.S. faces an engineering gap compared to its manufacturing competitors in countries like Germany, Japan, and Korea.

Recommendations

Significantly Expand Funding for the National Network of Manufacturing Innovation—(NNMI)

Under the Obama administration, nine centers have been launched to bring together industry and academia to cooperate on precompetitive generic research related to manufacturing. To codify this effort, Congress passed the Revitalize American Manufacturing and Innovation Act of 2014. But funding for these initiatives, especially compared to our competitor nations, is low. Therefore, the next administration should propose funding continued expansion of the NNMI network with an investment of at least $425 million dollars.

Pass and Fully Fund the National Manufacturing Universities Act

This initiative would establish a national network of at least 20 universities that brand themselves as leading manufacturing universities. These universities would revamp their engineering programs and focus much more on manufacturing engineering and in particular work that is more relevant to industry. This would include more joint industry-university research projects, more student training that

incorporates manufacturing experiences through co-ops or other programs, and a Ph.D. education program focused on turning out more engineering grads who work in industry.

Increase Funding for the Hollings Manufacturing Extension Partnership (MEP)

The National Institute of Standards and Technology's Manufacturing Extension Partnership plays a vital role in enhancing the productivity, competitiveness, and innovation potential of U.S. SME manufacturers. However, compared to our competitor nations, we invest very little in helping SME manufacturers with technology. For example, Japan invests approximately 40 times more as a share of GDP and Germany 20 times more. Moreover, the MEP budget has not grown over the last two decades as a share of GDP. As such, we recommend that Congress double the MEP funding to at least $260 million per year.

Increase R&D Tax Credit Generosity

Manufacturing performs over 75 percent of U.S. R&D. The R&D tax credit is an effective tool in spurring more private sector R&D investment. But while the U.S. created the R&D tax credit in 1981, and had the world's most generous R&D tax credit as late as 1992, by 2012 the U.S. has slipped to offering the 27th most generous R&D tax credit out of 41 nations offering the credit. As such, Congress should increase the generosity of the Alternative Simplified Credit (ASC) from 14 percent to at least 20 percent. At the same time, Congress should modify the existing collaborative R&D tax credit that provides a flat 20 percent credit for collaborative R&D (with universities, federal labs or industry consortia) for energy research and allow it to be applied for all fields.

Endorsers:

Jerry Jasinowski, *Former CEO, National Association of Manufacturers*