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Made in America, and Everywhere Else

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President Obama has entered his second term calling for a revival of U.S. manufacturing. He is championing an "Advanced Manufacturing Technologies" initiative intended to spur the development and commercial deployment of American-made high-tech goods.

The initiative calls for billions in increased federal R&D spending and clean-energy manufacturing tax credits for new investment by private firms. This is in addition to the president's proposed \$1 billion investment in 15 Institutes for Manufacturing Innovation, public-private partnerships to serve as regional hubs for manufacturing excellence and to encourage investment in the U.S.

The idea behind the initiative is simple: Lowering manufacturing costs will allow American firms to sell more products in world markets. Government support will help spread know-how throughout U.S. industry and boost this country's competitiveness.

The problem with this concept -- aside from the challenge of "picking winners" -- is that much of today's manufacturing, including emerging clean-energy technologies, isn't restricted by a single nation's borders. Rather, the manufacture of key energy technology products depends on an interdependent supply chain whose many components often reach final assembly in a location different from the point of sale or headquarters of the manufacturer.

Our recent analysis for the "MIT Study on the Future of Solar Energy," comparing photovoltaics manufacturing in China and the U.S., bears this out. Instead of national firms competing to produce end-product devices with exclusively domestic content, we found a supply chain in which U.S. firms sell key manufacturing equipment and materials -- such as high purity poly-silicon, precision printers and nanomaterial coatings -- to Chinese firms that make cells and modules for sale globally.

In many cases, U.S. firms work directly with producers in China to develop technologies and bring them to market. A manufacturing advance achieved in one country, such as reducing the amount of high-grade silicon needed to make a solar cell, will inevitably find its way to producers elsewhere.

The president's new manufacturing technology initiative understandably stresses the potential advantage to U.S. firms and workers. It doesn't acknowledge the growing global character of manufacturing, especially in high-technology fields, or the difficulty of designing assistance programs that target "inside the U.S." activities only.

It is unlikely that such programs can or will be restricted to domestic firms, however defined, or that effective technology-transfer controls can or will be put in place to prevent the diffusion of manufacturing technology advances to competitors such as China. It also is uncertain a new manufacturing technology created in this country is best put to commercial use here.

Many factors influence the choice of manufacturing location, including labor rates, materials availability and the cost

of capital. U.S. firms that successfully operate abroad in many cases also strengthen the U.S. economy. The president's manufacturing initiative is only marginally relevant to the broader problem of encouraging U.S. firms to bring manufacturing home or foreign firms to establish new facilities here.

The strength of the president's initiative is that it recognizes the importance of manufacturing to innovation. But for many high-tech products such as photovoltaics, innovation and manufacturing take place as part of a global manufacturing ecosystem that spans the Americas, Asia and Europe.

U.S. innovators would be severely impeded if removed from such systems. The administration should explain how its manufacturing initiative accommodates those areas in which cross-border commercial interactions and technology cooperation are critical. A step in this direction is the U.S. government's recent filing of a case at the [World Trade Organization](#) that challenged -- as a violation of global trade rules -- the domestic content requirement for India's national solar program.

If done right, advances achieved from the U.S. program will benefit firms around the world and create better products and more jobs in the U.S. and elsewhere. Technology transfers with other firms -- whether in China, Japan, Germany or Canada -- is important for U.S. firms that operate globally.

Moreover, it is important to encourage other countries in Europe and Asia to mount similar advanced technology programs and to assure that U.S. firms have access to these efforts. In a world economy that depends on innovation and production, the U.S. must encourage technology transfer and the opportunity to invest and trade globally.

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