## Trade wars are bad for higher ed

In the last few weeks we have heard a lot about trade wars (taking place or looming) between the U.S. and virtually every economically important nation in the world. This is surprising in today's world where the tendency has been over the past few decades to eliminate trade barriers.

Mainstream economists have pointed out for years the benefits of free trade: international economic growth, improved financial performance of investments, lowered business risks, more competition that lowers prices while increasing choices for the consumers, and diversification of revenues. Although there are some risks associated with free trade, such as the environmental and labor abuses that accompanied free trade agreements such as NAFTA (North American Free Trade Agreement), but they have usually incorporated side agreements, such as the creation of the Commission for Environmental Cooperation, to deal with that type of issues.

There is a pretty strong consensus among economists that trade wars will reduce jobs. Under the

present climate, a number of U.S. manufacturers have already said that they will have to lay off workers or move their manufacturing plants elsewhere. Warnings of that have been given by manufacturers as large as General Motors and Harley-Davidson, all the way to soybean farmers. They all have said that these trade wars will lead to the loss of jobs and competitiveness in our country. To make things worse, the Trump Administration has focused its actions on the three largest trading partners with the U.S. - China, Canada, and Mexico.

In an article published last week in The New York Times, Richard Newell, president of Resources for the Future, a nonpartisan research organization in Washington, described the administration's overall approach as "whack-amole policy," full of uncertainties, lack of clarity, and great potential for unintended consequences.

But will these trade wars affect higher education in general and scientific research in particular? Of course.

Let's take the case of China, which the administration has zeroed in on as a major target for its trade

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wars. China and the U.S. are the world's two largest economies, and the administration announced a 25 percent tax on 818 goods imported from the Asian country effective July 6. Among those goods are scientific equipment that includes microscopes and geological-survey devices. Tariffs on another 284 industrial goods, including chemicals, are being considered.

In response, China's Ministry of Commerce set its own tariffs on 545 U.S. products also effective July 6, and announced plans to apply tariffs on another 114 American-manufactured products, including chemicals and medical instruments such as X-ray and the now commonly used MRI (magnetic resonance imaging) devices.

All this will translate into higher prices for scientific equipment. The problem is not only the cost itself, but can be much farther reaching. When researchers submit grant proposals (particularly to major federal funding agencies), those proposals are budgeted for several years. Under the proposed tariffs research will cost thousands of dollars more,

with the researchers or their home institutions having to foot the bill. This is a tall order in the current climate of budget cuts to colleges and universities.

That is not the case for scientific research in China, which is in large part financially supported by the Chinese government. These tariffs will also mean that the Chinese will start importing equipment from Europe and Japan that is of comparable quality to American products, while encouraging their own industries to manufacture more scientific and technological goods. The Chinese market will be lost for U.S. manufacturers.

This will play perfectly into the hands of the Chinese government whose ambitious "Made in China 2025" plan is to make that country self-sufficient in manufacturing products that are mostly now imported from the U.S., such as microchips, automated engines, and selfdriving cars. Automation is a great objective of the Chinese. As average wages have increased Chinese manufacturers are looking at ways to use fewer workers.

By the same token, U.S. manufacturers of chemicals and other scientific goods, such as the widely popular DNA sequencers as well as medical equipment, can expect to see exports being reduced. This drop will lead to a loss of jobs and other economic benefits for U.S. workers and corporations.

This trade war - together with the new immigration policies – will also have the social effect of reducing scientific collaboration and the talent flow between the U.S. and countries like China and others. For example, a lot of high-tech companies depend upon foreign students who, once graduated, work for them because there are not enough U.S.born individuals to supply their talent needs.

And there can be health and food consequences as well. Chemicals are not just supplies for lab research. The pharmaceutical and biotech sectors depend heavily on synthetic chemicals produced in China for the manufacturing of their products. Higher tariffs on those products will mean an increase in prices for drugs and food.

To make things worse, the history of trade wars has taught us that they tend to escalate in a titfor-tat dynamic with no end in sight, constantly expanding the list of products under trade restrictions. This is why mainstream economists agree that in trade wars nobody wins.

If the U.S. government thinks that it is being treaty unfairly by China, for example, it should have gone to the World Trade Organization so solve those disputes without causing collateral damage. That is the way true dealmakers work out situations like this.

Trade wars will further erode the leadership of the U.S. in science and technology, and will make "America Second" the more accurate reality. These tariffs are a clear case of how demagoguery and nativism have real negative consequences for our country,

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