

Tom Still: For a stronger economy and national security, don't cut science

Posted on Friday, Mar 24, 2017

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With his proposed cuts in federal research and development spending, President Trump risks harming a priority he puts at the top of his own list – national security.

The history of federal investment in R&D, especially since the end of World War II, reflects a bipartisan consensus that money spent on basic and applied research pays economic and security dividends over the long haul while helping the nation respond to short-term crisis.

The dawn of the Cold War in the late 1940s and '50s, the space race in the '60s, the oil crisis in the '70s, the defense build-up of the '80s and the post-9/11 threats to homeland security are ready examples of how federal R&D spending often parallels national challenges.

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If you want a more secure America, policymakers have agreed for decades, the government must invest enough to stay ahead of competing nations that would like nothing better than to close the historic research and innovation gap.

Trump's discretionary spending budget moves in the opposite direction. It calls for a 20 percent reduction in spending by the National Institutes of Health, a 10 percent cut in the National Science Foundation budget, a 44 percent cut in the Department of Energy budget and the outright elimination of other R&D programs.

These massive reductions are being pushed despite the fact federal R&D spending as a share of the gross domestic product has already declined. It was at a lower level in 2016 than it was at any point since the Soviet Union launched Sputnik in 1957. Federal R&D spending in 2015 was 40 percent less in relative terms than where it stood in the late 1980s.

Supporters of Trump's budget proposal say federal R&D spending is supplanting privately funded research and preventing the marketplace from deciding where to put its own research dollars.

The evidence suggests otherwise: Federal R&D and research supported by states and academic institutions "de-risks" private investment, thus making it easier for the market to move quickly on vetted ideas and inventions with the greatest potential.

"Cutting federal spending on science is a sure way to slow, not advance, (private research) growth," wrote Adams Nager, an economic policy analyst with the Information Technology and Innovation Foundation.

Most studies over time have concluded that private R&D dollars chase the federal investment, leading to creation of economic value and jobs that leverage the public dollars. For example, a 2013 study by the non-profit Battelle Institute noted that every \$1 spent by the federal government on the Human Genome Project led to \$65 in genetic-related private activity.

The Trump cuts in federal R&D spending would have a ripple effect in Wisconsin, where federal R&D spending has been a major factor in creation of intellectual property, direct and indirect jobs, company spinoffs and related industry research spending.

Wisconsin is 16th among the states in patents issued per capita, 12th in academic R&D per capita and 15th in industry R&D per capita, all metrics that can be linked to federal investment in key sectors such as the life sciences, advanced manufacturing and engineered products.

UW-Madison, the Medical College of Wisconsin, UW-Milwaukee, Marquette University, the Marshfield Clinic, the BloodCenter of Wisconsin and most UW System campuses receive merit-based federal dollars to conduct research. Most often, the sources are NIH and NSF. Cuts in those grants and contracts would slow progress on

critical research that benefits people close to home and far beyond Wisconsin's borders.

The UW Board of Regents heard this month about the effects of federal cuts in just one program: the UW Sea Grant Project, which supports research on the Great Lakes through the National Oceanic and Atmospheric Administration. Elimination of \$2 million in federal money in that single project would likely wipe out matching dollars from other sources and endanger efforts to protect the Great Lakes, which support a \$62-billion regional economy.

The United States continues to rank as the world's leading R&D nation in gross expenditures and as a percentage of Gross Domestic Product. Other nations are closing the gap, however, at a time when the challenges to U.S. security and economic dominance are looming in the rear-view mirror. President Trump's proposed cuts stand to draw those challenges even closer.

— Still is president of the Wisconsin Technology Council. He is the former associate editor of the Wisconsin State Journal.