

Testimony of Maryann Feldman before the Subcommittee on Research and Technology  
America's Seed Fund: A Review of SBIR and STTR  
February 5, 2020

Chair Stevens, Ranking Member Baird, Chair Johnson, Ranking Member Lucas and Members of the Research and Technology Subcommittee of the Committee on Science, Space, and Technology, thank you very much for inviting me to testify at this hearing.

I am the Heninger Distinguished Professor in the Department of Public Policy at the University of North Carolina, an Adjunct Professor of Finance at Kenan-Flagler Business School and a Research Director at UNC Kenan Institute of Private Enterprise. While I am appearing today in my capacity as an expert in innovation and a scholar of the SBIR and STTR programs, I will note that I am currently the co-chair of several assessments of the programs that are underway at the National Academies of Sciences, Engineering, and Medicine. I would also like to state that my comments and recommendations today are my own, and they do not reflect consensus findings and/or recommendations of the National Academies.

The Small Business Innovation Research (SBIR) and Small Business Technology Transfer Research (STTR) programs demonstrate that effective public-private partnerships can play an important role in stimulating America's innovation economy and promoting the commercialization of science.

The SBIR and STTR programs have been highly successful and deserve Congress's continued and enthusiastic support. The program strengthens the United States' capacity for private-sector innovation.

Global competition for innovation advantage is intensifying. Efforts to continue to enhance the programs' potential to contribute to greater levels of technology transfer and commercialization are warranted. Our trading partners are investing in overtaking America's technological leadership. The U.S needs to keep pace.

Eleven federal agencies participate in SBIR, using the program to promote their federally designated mission and to commercialize technology important to the public good. The program is key to university technology transfer. Still, there is much more to do to promote technology transfer and commercialization from U.S. universities, federal laboratories, and other research institutions. There are also opportunities to link forward to increase opportunity in manufacturing, which is essential if we are to see wider effects from our public investments. Efforts to scale up technology and engage in

manufacturing suggest that further innovation is needed, and such investments will put in place the increasing returns that yield wider prosperity.

A bold broader initiative is needed.

The locus of inventive activity is essentially local and through the efforts of legislation such as the Bayh-Dole Act and the SBIR/STTR programs we have pockets of prosperity in university towns across the nation. The system works well in some places but not everywhere.

States have been experimenting with programs to encourage technology commercialization but state resources are unevenly spread. There is a need for additional federal resources to help U.S. states stimulate commercialization activity, such as by supporting state science and technology programs or by providing a pool of funds that could be used to provide matching funds for state initiatives. State programs assist the initial proof of concept stage before the SBIR application, provide funding to top-off the award amount, and also seek to further commercialization.

One example is the state Phase 0 proof of concept programs that encourage preliminary research and other activities related to development and submission of a Phase I SBIR/STTR proposal. About half the states have these programs, which typically provide \$2,000 to \$10,000 to increase the competitiveness of the SBIR/STTR proposal.

Once companies have been awarded SBIR funding, there are currently 15 states that offer a state match to increase the SBIR award amount. My own research, which is joint work with Lauren Lanahan, examined state SBIR matching programs. This research demonstrates that small amounts of additional funding, say \$25,000 to \$50,000 increase the probability of a firm successfully moving from a Phase 1 to a Phase 2 award. The program is being copied by states and rolled out on an ad hoc basis. The success of the state programs and their rapid diffusion across states argues for greater national consideration. Many states do not have the resources to adopt these programs causing a loss of potential benefits to the innovation ecosystem that would ordinarily accrue because of the SBIR/STTR programs.

The SBIR/STTR programs are only one component in the American innovation system. While SBIR/STTR is working well, other components of the system are not doing their part. Many SBIR/STTR recipients are unable to secure the required funding to move them forward.

The SBIR/STTR program, called *America's Seed Fund*, was intended to address the colorfully named *Valley of Death*. Venture Capital (VC) was expected to step in with follow-on funding to move the technology forward. Yet, in reality, most VC funding

lands on lower risk software investments, eschewing the longer development times, high capital costs, and less certain markets associated with the types of emerging technologies that SBIR/STTR funds and that are needed to address America's energy independence, provide new and better industrial materials, and create entirely new industries.

Tax credits for investment in high-risk technology sectors could help bridge this gap. The VC model is predicated on returning money to investors with a limited time span of 7 to 10 years. This is simply not enough time to incubate radical new technologies. Moreover VCs make their money on firm exits not when firms grow – these exits increasingly involve mergers and acquisitions. Technology companies incubated in university towns that receive venture capital funding are very likely to relocate away from their university town when they receive VC investment.

This is not the immediate concern today but I would encourage you to consider the larger system of technology commercialization surrounding the SBIR/STTR programs.

There are public-private partnerships that could move SBIR/STTR companies forward. For example, the National Institutes of Health's Research Evaluation and Commercialization Hubs (REACH) provides a national network of proof-of-concept centers that seek to accelerate the translation of biomedical innovations into public benefit. Each hub is required to secure non-federal matching funds and develop partnerships with state and regional economic development organizations to enhance the impact of federal investment.

The REACH program merges the strengths of high-impact research institutions with product development expertise and resources from federal and private-sector partners. This program could be copied or expanded for other technologies to enable SBIR/STTR firms to validate their discoveries and advance their small businesses and impacts. For many new technologies, this would involve scale-up manufacturing, and open opportunities for new suppliers and workers.

One thing to note, the SBIR/STTR programs should be considered in their totality as part of a larger system. In addition to providing support for knowledge creation, the SBIR program helps the government set a long-term agenda for scientific progress and innovation.

As seen in many academic studies -- the programs help firms overcome credit and capital constraints at early stages of innovation. But innovative small business benefit from all types of collaboration with the federal mission agencies provided by the SBIR/STTR programs. The programs help diversify the government supplier base and promote entry into technical fields. The SBIR/STTR programs open new procurement pipelines for federal agencies.

I also want to point out that there is strong evidence that technological innovation is most successful when it is combined with market opportunities as is the case with the SBIR/STTR programs. I want to caution the committee from placing too much importance on commercialization – too large of an emphasis on commercialization may push the agencies toward projects that have short-term commercialization potential rather than long term innovation potential.

I note that the proposed legislation adds a new emphasis on cybersecurity, which affects all agencies. I am most familiar with some of the work being done at the Department of Energy, which recently created the Office of Cybersecurity, Energy Security, and Emergency Response. Because this office is relatively new, the National Academies committee will not be providing an assessment of the topics or the awardees. SBIR topics offered by this office are focusing on cybersecurity to prevent attacks on the power grid. There may be benefit for Congress to encourage coordination across agencies on this topic, because cybersecurity cuts across most federal agencies.

Although I am the co-chair of several on-going National Academies assessments, I cannot speak to any findings or recommendations that the committee may end up with (although our first assessment – for the Department of Energy – will be published by the end of March). I can tell you that the committees are focused on the overall impact of the programs on the innovation ecosystem and that impact may be broader than simply the impact of the awardees. The committees are also focusing on how the program can help strengthen participation of women and underrepresented groups in the innovation ecosystem.

In conclusion, the SBIR/STTR programs are some of the most effective in America's arsenal of programs to stimulate innovation, though efforts toward continued refinement and improvement are warranted.