Becoming America’s Seed Fund: NSF’s SBIR Program As a Model for the Rest of Government

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Becoming America’s Seed Fund: Why NSF’s SBIR Program Should Be a Model for the Rest of Government

ROBERT KOZINSKY / SEPTEMBER 2019

The National Science Foundation’s Small Business Innovation Research (SBIR) program focuses on high-growth startups and commercializing federally funded research and development (R&D). Other federal agencies should consider emulating this model.

KEY TAKEAWAYS

- SBIR is a federal program之初ized by the Small Business Administration that funds small business R&D. The program has helped newcomers such as Nvidia, Zillow, and Qualcomm, and has been copied by 17 countries around the world.

- Over the past two decades, the National Science Foundation (NSF) reinvigorated its SBIR Program to specifically target growth-focused startups and to stimulate commercializing innovations derived from federal R&D.

- Other agencies should follow NSF’s model and do more to target growth-focused companies, optimize program management, hire dedicated program directors, and coordinate SBIR awards with other agency programs that provide support for commercialization.

- Congress should allow SBIR funding to prime agencies more autonomy, ensure agencies provide commercialization grants in funding decisions, allow warrant to use funds for commercialization activities, and increase federal funding by 50%.
Outline

1 Overview: Small Business Innovation Research (SBIR) Program

2 The National Science Foundation (NSF) “Seed Fund” Model

3 Recommendations to Enhance SBIR’s Impact
Innovative Small Business Face a Capital Gap

- Early-stage capital is needed
- Too high-risk for private sector
- Government can fill the capital gap
Overview: Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Program

- Objectives include:
  - Fund small business to meet Federal R&D needs.
  - Increase private-sector commercialization of innovations.

- 11 agencies award over $3 B annually.

- Extramural research budgets contributions:
  - If > $100 M, 3.2% to SBIR
  - If > $1 B, 0.45% to STTR

- Three phases of funding
SBIR Has an Impressive Track Record

- Over the past 35 years,
  - 70,000 patents
  - Nearly 700 publicly traded companies
  - $41 billion in venture capital

- Past awardees:
Outline

1 The SBIR Program

2 The NSF “Seed Fund” Model

3 Recommendations to Enhance SBIR’s Impact
Agencies Have Flexibility in How They Implement SBIR

<table>
<thead>
<tr>
<th>Agencies Choose</th>
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<tbody>
<tr>
<td>What kind of companies?</td>
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<td>What topics to fund?</td>
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<tr>
<td>Who works with companies?</td>
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<td>What other support to offer?</td>
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## The NSF SBIR Model

<table>
<thead>
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<th>Agencies Choose</th>
<th>The NSF Model</th>
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<tr>
<td>What kind of companies?</td>
<td>Start-ups</td>
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<tr>
<td>What topics to fund?</td>
<td>Broad topic areas</td>
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<tr>
<td>Who works with companies?</td>
<td>Dedicated officials with entrepreneurial experience in a central office</td>
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<tr>
<td>What other support to offer?</td>
<td>Initiatives to enhance commercialization</td>
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NSF’s Portfolio is Rich in Companies with High Growth Potential

Share of Companies with One or Multiple Phase II Awards in Major SBIR Agency Portfolios (2014-2018)
NSF has Dramatically Changed its Portfolio Over Time

Share of Companies with One or Multiple Phase II Awards in the NSF SBIR Portfolio

[Bar chart showing the share of companies with one or multiple Phase II awards from 1999-2003 to 2014-2018]
Examples of Start-ups NSF Funds

ClearFlame ENGINES

Accelerate Wind

Putting CO₂ to Work

emergy FOODS

CinderBio
NSF SBIR Has Demonstrated Strong Commercial Outputs

- Since 2014
  - $6.5 billion in private investment
  - 87 exits

- Among surveyed Phase II awardees
  - Reported sales from 70%
  - Ave. growth from 6 to 10 employees (over time period of 4-13 years)
  - Accelerated commercialization reported by 80%
Outline

1. The SBIR Program
2. The NSF “Seed Fund” Model
3. Recommendations to Enhance SBIR’s Impact
Other Agencies Should Adopt Elements of the NSF Model

- Agencies should consider the following, where there is potential for commercially viable R&D:
  - Funding companies with high growth potential
  - Broadening topics in solicitations
  - Centralizing management among dedicated program directors
  - Offering supplemental programs to enhance commercialization
Congress Can Help Enhance SBIR Commercial Outputs

- Make permanent administrative funding pilot.
- Require agencies to increase weight of projects’ commercialization potential in funding decisions.
- Allow small business to use portion of SBIR awards for commercialization activities.
- Direct SBA to develop guidance on commercialization metrics.
- Increase overall federal funding for R&D.