Innovation Policy and the Hidden Developmental State in the USA

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Which U.S. Model ?

What the U.S. tells other nations to do.

OR

What the U.S. practices at home—a decentralized and aggressive set of industrial policies.

Apple's iPod: From the Bush White House Web Page

"The development of MP3 technologies illustrates the unexpected benefits of basic research. In 1965, a hand-sized storage and playback device that would hold 15,000 recorded songs was the stuff of science fiction. Even simple hand-held calculators were rare and expensive at that time. Research funded by the Department of Defense, the National Science Foundation, the National Institutes of Health, the Department of Energy, and the National Institute of Standards and Technology contributed to the breakthrough technologies of magnetic storage drives, lithium-ion batteries, and the liquid crystal display which came together in the development of the MP3 device. The device itself is innovative, but it built upon a broad platform of component technologies, each derived from fundamental studies in physical science, mathematics, and engineering."

The Key Features of this Model

- Mobilize university and federal laboratory based researchers to focus on critical technology challenges.
- Encourage and support new small firms that will compete directly with established firms.
- Highly decentralized; multiple initiatives to overcome key technological barriers co-exist often with little coordination.

Key role of federal laboratories

- Department of Energy laboratories
  - Lawrence Berkeley
  - National Renewable Energy Laboratory
  - Sandia
  - Oak Ridge
- National Institutes of Health laboratories
- National Nanotechnology Infrastructure Network

  14 User Facilities at research universities
- National Institute of Standards and Technology

(previously National Bureau of Standards)

What happens at these laboratories?

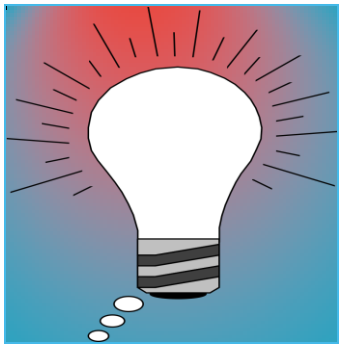
- Collaborations between public and private scientists and engineers
- Big and small corporations sometimes pay the laboratories to help overcome technological barriers
- Government scientists and engineers are encouraged to spin off new firms
- Many of these new firms get support from SBIR—Small Business Innovation Research

Program Descriptions

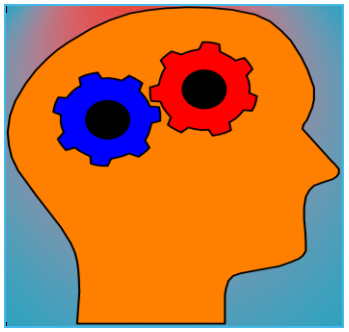
- SBIR: Set-aside program for small business concerns to engage in federal R&D --with potential for commercialization.
- STTR: Set-aside program to facilitate cooperative R&D between small business concerns and U.S. research institutions -- with potential for commercialization.

SBIR/STTR: 3-Phase Program

- **PHASE I**
  - Feasibility study
  - $100K and 6 months (SBIR)
    or 12 months (STTR)



- PHASE II
  - Full R/R&D
  - 2-Year Award and $750K (SBIR)
    or $500K (STTR)



- PHASE III
  - Commercialization Stage
  - Use of non-SBIR Funds

SBIR Grants and Shift of Ph.D Scientists

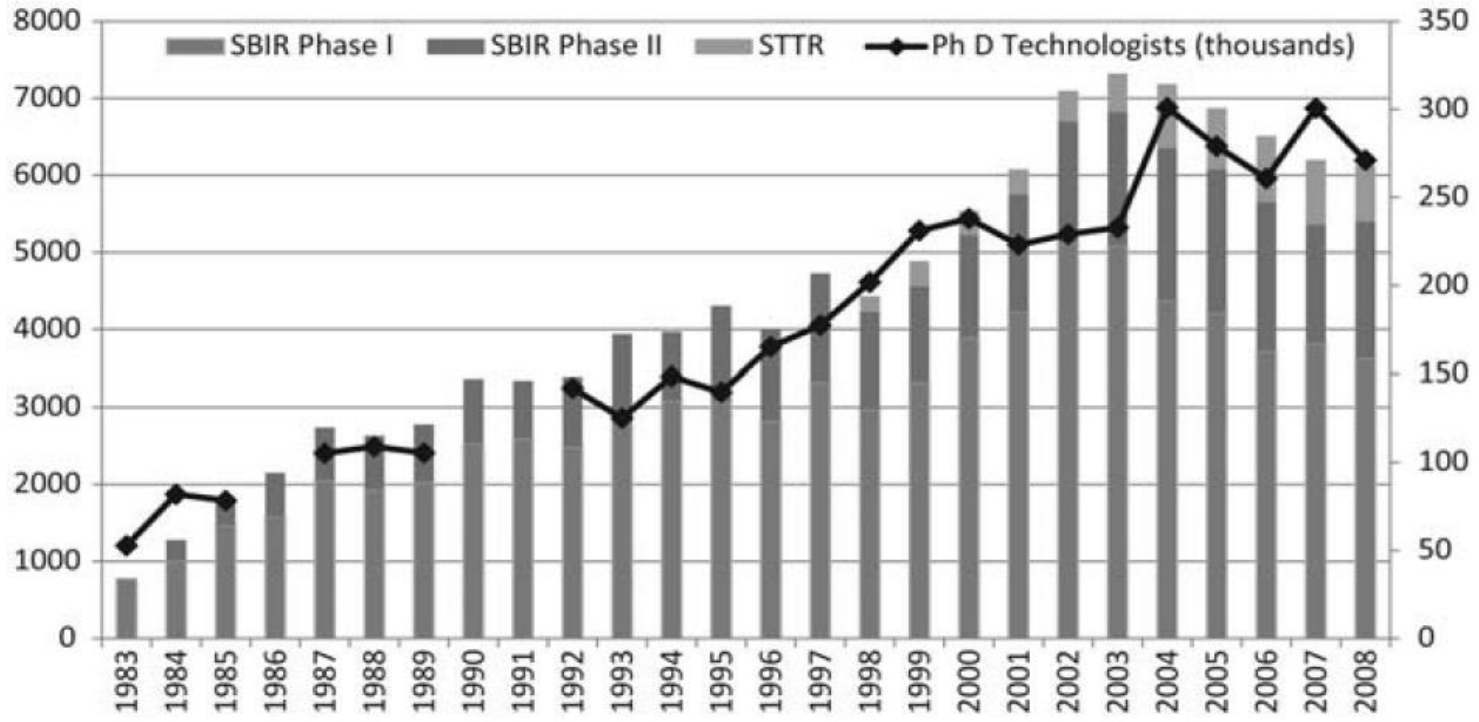


Figure 2 Trends in SBIR awards and PhD technologists employed by firms with fewer than 500 employees. *Note*: Data for 1983–1984 are for firms with fewer than 1000 employees; see note 7.

Global rules have been shaped to support the U.S. Model

- WTO Agreement outlaws export subsidies but initial language permits governments to fund 50% of pre-competitive R&D.
- That language expired in 1999, but with the exception of the ongoing litigation pitting Boeing against Airbus, there have been few cases in which nations have taken action against pre-competitive R&D.
- Entities receiving 50% of their pre-competitive funding could be worker owned or nonprofit firms as long as they are able to raise some nongovernment financing.

Why these programs work: Overcoming Network Failures

Occur in decentralized production systems when:

1. Firms cannot find the partners they need.
2. The potential partners lack the needed competence.
3. The potential partners lack integrity and honesty.

Public programs can help participants with all of these issues.

Source: Josh Whitford and Andrew Schrank.