

# **Public-Private Partnerships: Evidence from the Advanced Technology Program (ATP)**

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# ATP Mission ...

*To **accelerate** the development of **innovative technologies** for **broad national benefit** through **partnerships** with the private sector.*



# Key Characteristics of ATP

- Co-invested in industry-led projects
- Made investments positioned after basic science and before product development
- Emphasized innovation for broad national economic benefit
- Focused on the civilian sector
- Required projects have well-defined goals/sunset provisions

# Transferable Lessons from ATP

- Define the rationale for the partnership
- Broader public-private partnerships can learn from other collaborations (e.g. Joint Ventures)
- Structure matters (who pays, who “leads”, etc.)

# Rationale for the Partnership

- “Valley of Death” and the “Darwinian Sea”
- Inefficiencies in capital markets for early-stage technologies
  - Information asymmetries
  - High uncertainty of outcomes (technical risk)
  - Appropriability of enabling technologies

# A View from Industry

**“Why should the government fund the development of enabling technologies?”**

Because enabling technologies have the potential to bring enormous benefits to society as a whole. Yet private investors will not adequately support the development of these technologies because profits are too uncertain or too distant.”

**Elizabeth Downing  
3D Technology Laboratories**

# A View from the VC Community

“[The ATP] is an excellent program for developing enabling, or platform, technologies, which can have broad applications but are long-term, risky investments. Venture capitalists are not going to fund these opportunities, because they will feel that they are at too early a stage of maturity. Government can and should fund these technologies. In fact, it should do more than it is doing.”

**David Morgenthaler**  
**Morgenthaler Ventures**

# Long History – 1990 to 2007

## ATP received:

- 7,530 proposals submitted to 45 competitions, requesting \$15.9 B

## ATP awarded:

- 824 projects with 1,581 participants and as many subcontractors
- 227 joint ventures and 597 single companies
- \$4.6 B of high-risk research funded
  - ***ATP share = \$2.4 B***
  - ***Industry share = \$2.2 B***
- Small businesses are thriving
  - ***67% of projects led by small businesses***

# Performance Measures

- 377 projects with new technologies under commercialization (multiple “applications”)
- Over 1900 publications and 1500 issued patents
- 96 percent of projects reported an increase in risk and/or time horizon
- 85 percent of projects involved R&D collaboration
- 86 percent of participating organizations reported an acceleration of their R&D
- A survey of 36 highly successful projects found revenues and cost savings of more than \$2.7B, more than the total ATP funding for the entire history of the program

# Lessons from ATP Joint Ventures

- Presence of competitors not correlated with success (or lack of)
- Higher levels of trust and stronger governance structure positively correlated with success (“Trust but Verify”)
- Frequency of communication positively correlated with success
- Ambitiousness (technical risk and measures of new R&D direction) positively correlated with success
- “Champions” matter for sustaining collaborations

# Additional Reading...

- Dyer, Jeffrey H., Benjamin C. Powell, Mariko Sakakibara, and Andrew J. Wang, *Determinants of Success in R&D Alliances*, NISTIR 7323, August 2006.
- Petrick, Irene J., Ann E. Echols, Susan Mohammed, and Jesse Hedge, *Sustainable Collaboration: A Study of the Dynamics of Consortia*, GCR 06-888, August 2006.
- You can access these and many more at...  
[http://www.atp.nist.gov/eao/eao\\_pubs.htm](http://www.atp.nist.gov/eao/eao_pubs.htm)

# Paying for the Partnership

- Does the share of public funds versus private funds matter for success of the partnership?
- Does the cost sharing impact the “types” or “goals” of willing partners
- Many partnerships require “skin in the game”

*The difference between “involvement” and “commitment” is like an eggs-and-ham breakfast: the chicken was “involved” – the pig was “committed”.*

*Anonymous*

# Analysis of ATP Projects with Voluntary Additional Cost Sharing

- Neither the existence (amount) or intensity (%) of additional industry cost sharing are correlated with the following:
  - Project outcomes of publications, patenting, commercialization, or continuing R&D post funding
  - Industry assessment of technical risk or commercial time horizon
- In some statistical regressions, the intensity of industry cost sharing is negatively correlated with a survey measure of new R&D direction – industry may be less willing to entertain new R&D directions when cost share is higher
- Both the existence and intensity of additional industry cost sharing are correlated with projects stopping before the end of the proposed research – industry may be less patient with greater cost sharing on their part

# Want to chat more?

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