

# **Early-stage Capital in the United States and the Role of SBIR**

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## **Issues and Opportunities from the National Academies Review of SBIR**

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# Global Challenges for the 21<sup>st</sup> Century

- Fostering Economic Growth
  - Driving domestic Growth and Employment through Innovation
- Developing New Sources of Energy
  - Commercializing renewable alternatives to oil
  - Increasing the capacity to fuel growing global demand for electricity
- Addressing Climate Change
  - Growing a Green Economy; A major Growth opportunity
- Delivering Global Health
  - Transforming large investments in research to affordable and personalized treatment and care
- Improving Security
  - Through all of the above

# A Major National Challenge is 'Jobs'

## Innovative Start-ups are a Key National Asset

“Between 1980 and 2005, virtually all net new jobs created in the U.S. were created by firms that were 5 years old or less,”

Robert Litan, Kauffman Foundation

# Small Businesses are a Key Source of Innovation, Jobs, and Growth

- Small Innovative Companies are Key Players in Bringing New Technologies to Market
  - Audretsch & Acs
- Small Businesses...
  - Grow Jobs
  - Increase Market Competition
  - Generate Taxable Wealth
  - Create Welfare-Enhancing Technologies
  - Over time, innovative small businesses transform the composition of the economy

## But Small Firms Face Major Challenges

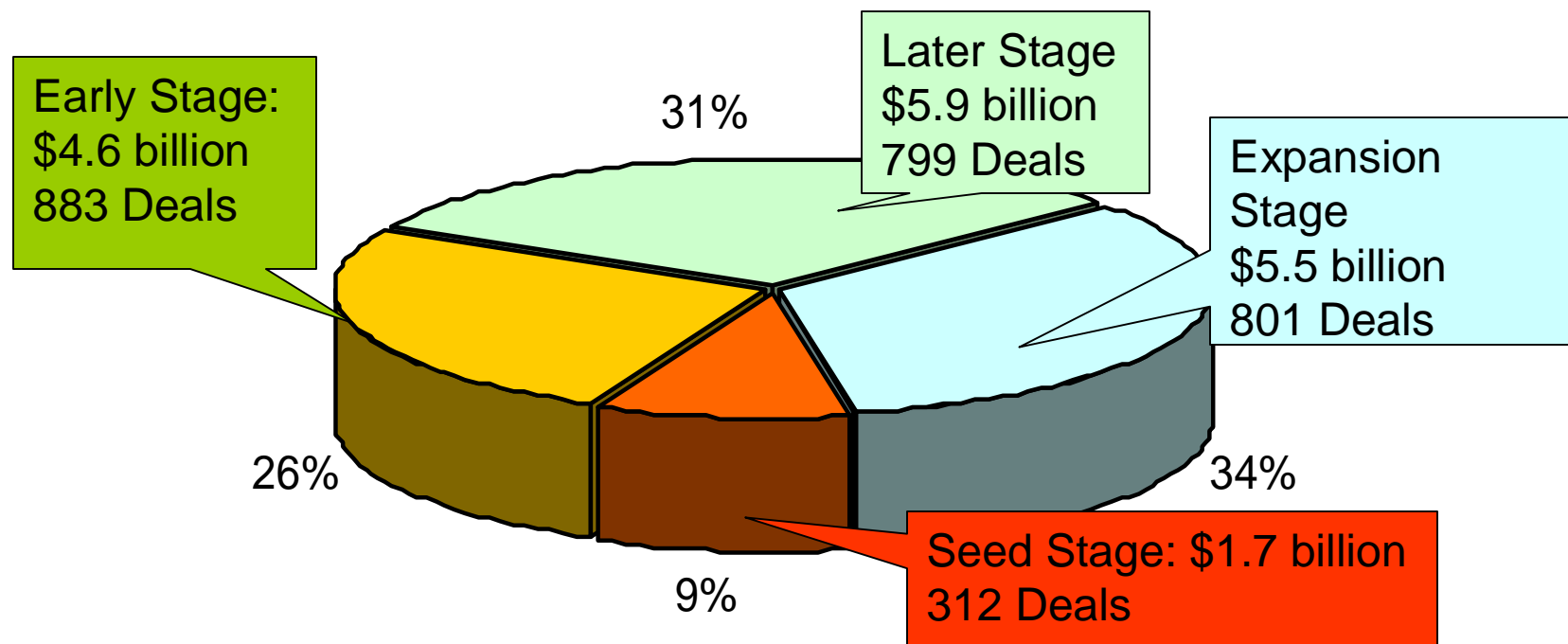
- SME's Face High Regulatory Burdens
  - Very small firms (less than 20 employees) spend 60% more per employee than large firms to comply with federal regulations
- New Firms Struggle for Adequate Financing
  - Start-Up funds from “Friends, Family, and Fools”
  - Over 80% of small firms in U.S. rely on credit but banks hesitate to lend

# What about the Capital Markets?

- Amount of Venture Capital available, especially at the Seed and Early Stage, is limited
- Venture Capitalists have
  - Limited information on new firms
  - Prone to herding tendencies
  - Focus on lower-risk, later stages of technology development
  - Most VC investors seek early exit
- And Venture Fund investments are sharply lower

# U.S. Venture Investments Down 37% in 2009

## U.S. Venture Capital by Stage of Investment 2009



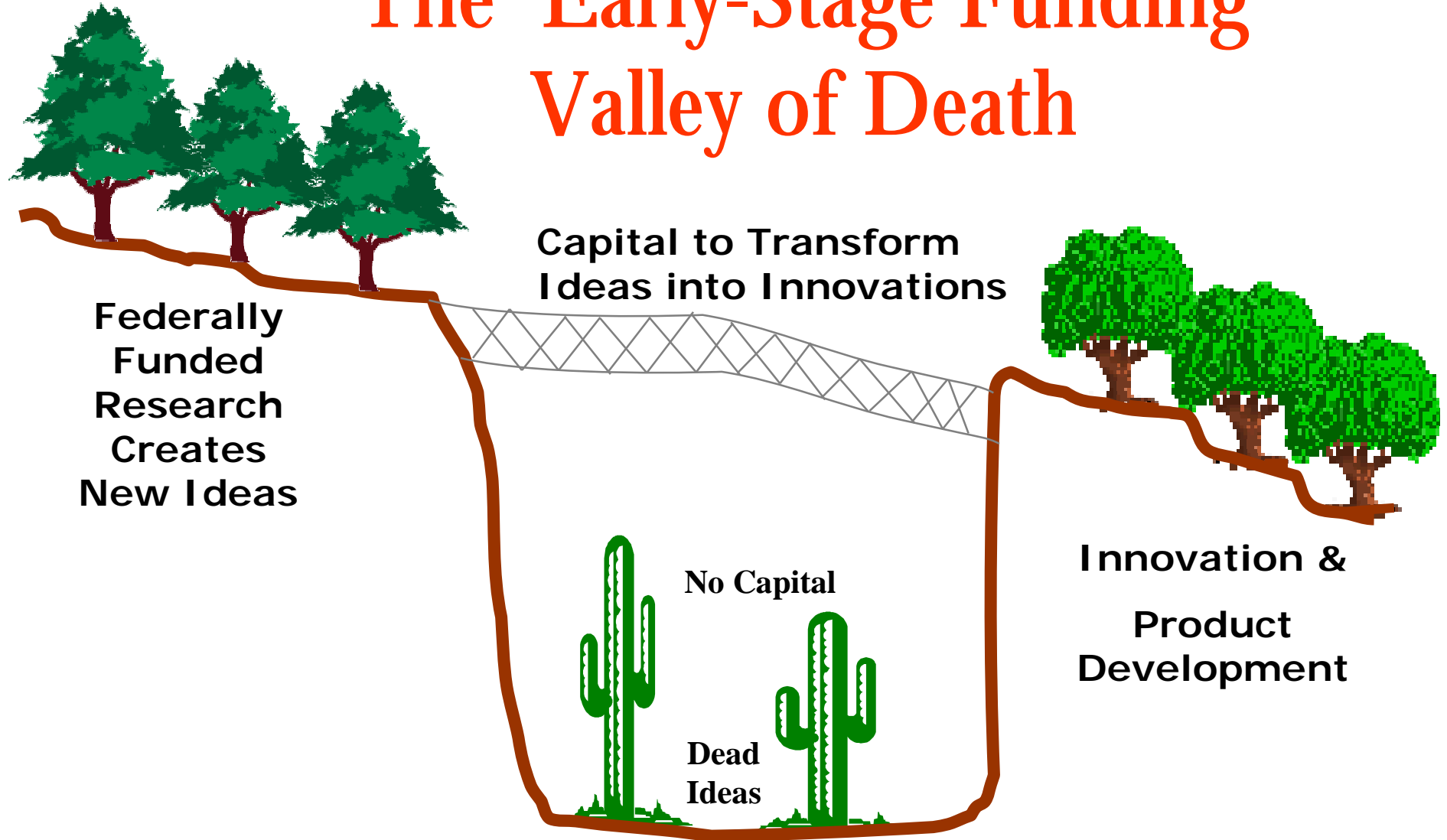
Total: 17.7 Billion, 2795 deals

Source: PWC-MoneyTree Report

# What Does this Mean for New Ideas and New Firms?



# The Early-Stage Funding Valley of Death



# Crossing the Valley of Death is a Major Challenge

There are many paths:

The Small Business Innovation Research  
(SBIR) Program is one Proven Approach

# SBIR Program—Key Features

- **Long-lived:** In place since 1982
- **Stable Budget:** 2.5% of Agency R&D budgets set-aside for small business awards
- **Focus:** Funds Proof of Concept and Prototype
- **Role:** Helps firms across the Valley of Death and attract private capital or public contracts

# SBIR Program—Key Features

- **Large Scale:** Largest U.S. Innovation Partnership Program: Currently a ~\$2.5 billion per year
- **Portfolio Effect:** Substantial sums invested over a long period increase success rates
- **Decentralized:** Each Agency uses its funds to support research by small companies to meet its mission needs



After nearly 20 years of operation,  
The Congress asked the NRC:

How well is SBIR Working Overall?

# NRC Study of SBIR—First Phase

## Unprecedented Large Scale Original Field Research

- Surveys: Over 7000 Projects Surveyed
  - Phase I Award Survey targeted 3000 firms
  - Survey on Phase II Awards (1992-2002) involved over 4000 firms
  - Program Manager Survey
  - Technical Manager Surveys (TPOCs and COTRs)
- Case Studies
  - Approximately 100 case studies conducted
  - Case Study selection reflects program diversity
- Surveys & Case Studies Developed in Consultation with Agencies & SBIR users

# Does SBIR Work?

- No culture of evaluation meant there was very limited data, hence the need for green-field research.
  - 20 person research team
  - 19 person oversight Committee
  - Nearly 30 reviewers
- Key Question: What do we mean by “Does it Work”?
  - Compared to What?
  - Should it work the same for each agency?
  - (or reflect their different missions?)

# Focus of the NRC Assessment

- Do the agency SBIR programs meet Congressional objectives?
  - to stimulate technological innovation
  - to increase private sector commercialization of innovations
  - to use small business to meet federal research and development needs
  - to foster and encourage participation by minority and disadvantaged persons in technological innovation
- How effective is the management of agency SBIR programs?
  - Are there best practices in agency SBIR programs that may be extended to other agencies' SBIR programs?



# 10 Answers to these Questions:

## National Academies SBIR Reports



An Assessment of the SBIR Program at NSF



An Assessment of the SBIR program at NASA



An Assessment of the SBIR Program at DOE



An Assessment of the SBIR Program at NIH



An Assessment of the SBIR Program at DoD



An Assessment of the Small Business Innovation Research Program (Overview Report)



SBIR Program Diversity and Assessment Challenges



SBIR and the Phase III Challenge of Commercialization



Venture Funding and the NIH SBIR Program



Revisiting the DoD SBIR Fast Track Initiative



What did we find?

SBIR is “sound in concept and effective in practice”

# Key Findings of the NRC's First Phase Study of SBIR

- SBIR is Making Significant Progress in Achieving Specific Congressional Goals for the Program
  - Stimulating Technological Innovation
  - Using Small Businesses to meet Federal R&D Needs
  - Fostering and Encouraging Participation by Minorities & Disadvantaged Persons in Technological Innovation
  - Increasing Private Sector Commercialization of Innovations derived from Federal R&D

# SBIR's Flexibility is a Strength in Meeting Multiple Agency Missions

- Adapts to Agency Missions, Agency Culture, and Technology needs
  - Each agency typically has its own manner of choosing awardees and screening applications
  - Different metrics reflecting unique agency missions and needs
  - Different Metrics by industrial sector, e.g., software vs. drug development vs. weapon components

# SBIR Strengthens University-Industry Links

- Over a third of the respondents in the NRC Phase II Survey of 4000 firms reported university involvement in their SBIR project. Of these:
  - More than 80% of NIH respondent companies had at least one founder from academia
  - About 1/3<sup>rd</sup> of founders were most recently employed as academics before founding the company
  - About 1/3<sup>rd</sup> of projects had university faculty as contractors on the project and 1/4<sup>th</sup> used universities themselves as subcontractors
  - 15% of SBIR awards involved graduate students<sub>21</sub>

# Key Committee Recommendations:

## Designed to improve the operation of the SBIR program

- Preserve Program Flexibility
  - SBIR flexibility and adaptability are strengths
  - Draw out and adapt best practices across the federal government
- Experiment, Evaluate, and Report
  - Improve program processes
  - Experiment with programs that help firms transition from Phase I to Phase II and from Phase II to Phase III
  - Regularly Evaluate and Report
- Improve participation by women and minorities

# Issues and Opportunities for the Second Phase of the NRC Assessment



## The 2nd Phase of the NRC Study

- Second Snapshot of the SBIR Program:
  - New NRC survey can highlight changes in program perceptions, practices, and outcomes
  - This is important: Where were we? Where are we? Without research, we just do not know.
- Review of Program Processes
  - Gap funding mechanisms, e.g., applying Phase II-plus awards more broadly to address agency needs and operations.
  - Streamlining the application process
  - New ideas for a better or expanded program



## The 2nd Phase of the SBIR Study

- Explore methods to encourage Minorities and Women to participate in SBIR.
- Describe University-industry partnering and synergies with the SBIR programs.
- Examine the STTR program
- Document the role of complementary state and federal programs.
- Assess the efficacy of post-award commercialization programs

**We welcome your  
Views and Suggestions**

And look forward to your  
continued cooperation



# Thank You

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