

# Innovation Policy Lessons From America

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# ITIF: Who We Are

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The Information Technology and Innovation Foundation is a think tank at the cutting edge of designing innovation policies and exploring how innovation drives boost growth and competitiveness. ITIF focuses on:

- Innovation processes, policy, and metrics,
- Internet, big data and ICT policy,
- Tech, productivity, and jobs,
- Science and tech policy, and
- Innovation and trade policy.

# Today's Presentation

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1

Explaining the Paradox of U.S. Innovation Leadership

2

Historical-Structural Reasons For U.S. Innovation Leadership

3

Innovation Policy Reasons for U.S. Leadership

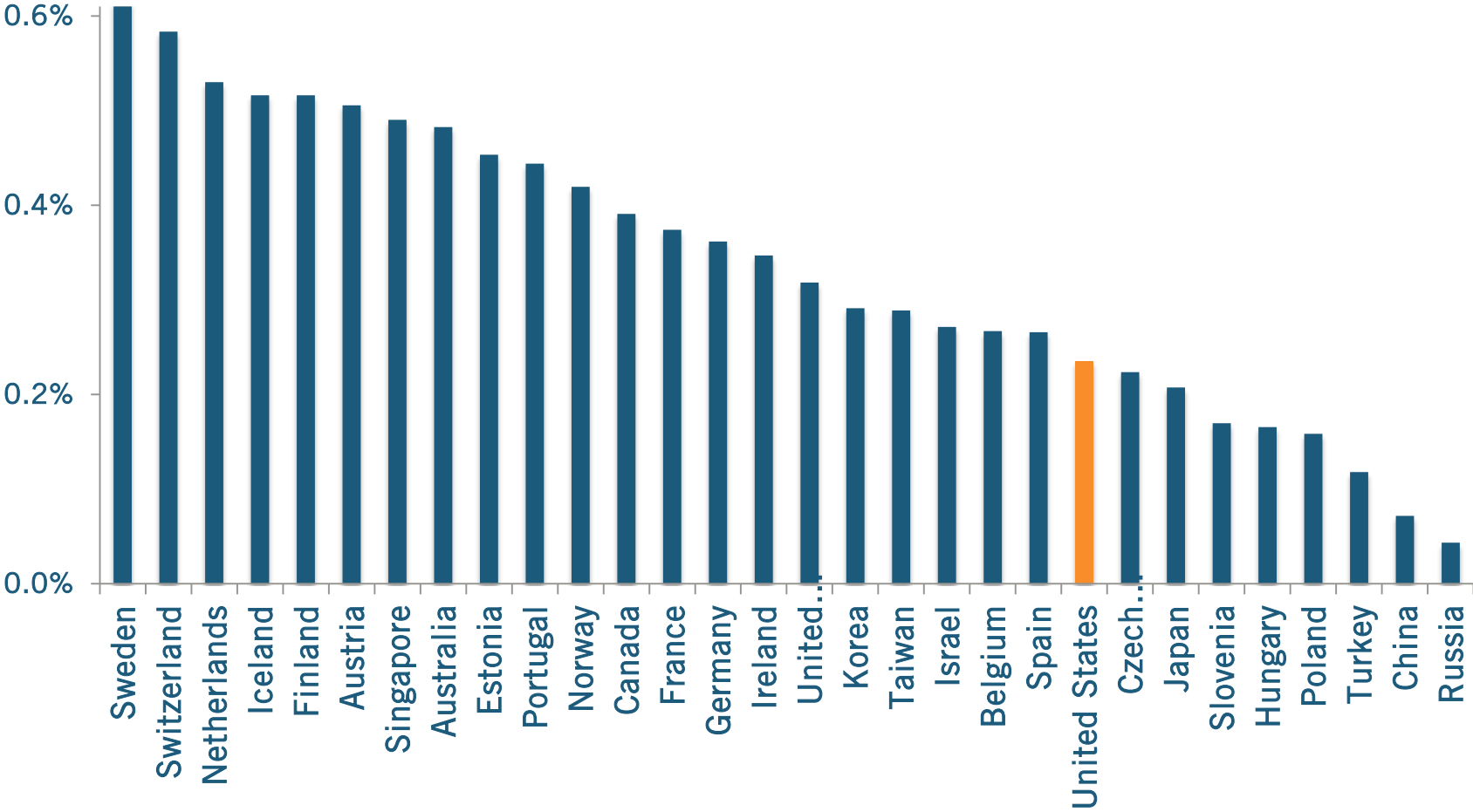
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Innovation Policy Principles

5

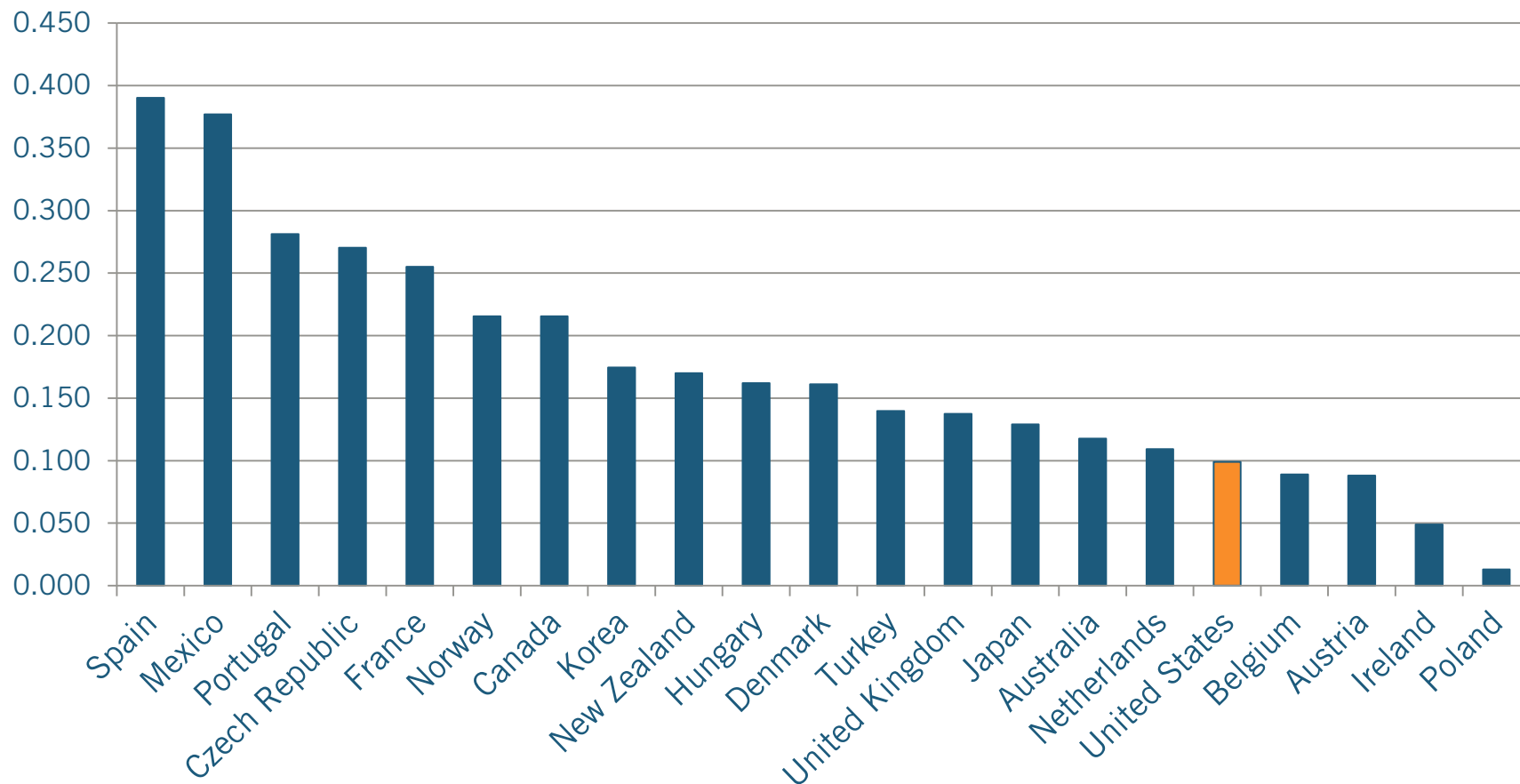
Global Best Practices for Innovation Policy

# How Can the U.S. Lead When Other Nations Invest More in University Research?



Source: ITIF Report: *University Research Funding: The United States is Behind and Falling*, May 2011

# How Can the U.S. Lead When Other Nations Have Much More Generous R&D Tax Incentives?



Source: ITIF Report: *We're #27!: The United States Lags Far Behind in R&D Tax Incentive Generosity*, July 2012

# How Can the U.S. Lead When Other Nations Have National Innovation Agencies?

Country	Has Articulated a National Innovation Strategy?	National Innovation Agency/Foundation	Year Agency Introduced
Brazil	Yes	Brazil Innovation Agency	1967
China	Yes	Ministry of Science and Technology	1998
Denmark	Yes	Danish Agency for Science, Technology, and Innovation	2006
Finland	Yes	Tekes	1983
France	Yes	OSEO	2005
India	Yes	National Innovation Foundation	2000
Ireland	Yes	Forfas	1994
Italy	Yes	ENEA (National Agency for New Technologies, Energy and the Environment)	1999
Japan	Yes	New Energy and Industrial Technology Development Organization (NEDO)	1980
Korea	Yes	Korea Industrial Technology Foundation	2001
The Netherlands	Yes	Senter Novem	2004
Norway	Yes	Innovasjon Norge	2004
Portugal	Yes	Agência de Inovação	2003
South Africa	Yes	National Advisory Council on Innovation	2006
Sweden	Yes	VINNOVA	2001
Taiwan	Yes	Industrial Technology Research Institute	1973
Thailand	Yes	National Innovation Agency	2003
United Kingdom	Yes	Department of Business, Innovation, and Skills	2009
United States	Yes	N/A	N/A
Uruguay	Yes	National Research and Innovation Agency (ANII)	2008

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- 3 Innovation Policy Reasons for U.S. Leadership
- 4 Innovation Policy Principles
- 5 Global Best Practices for Innovation Policy

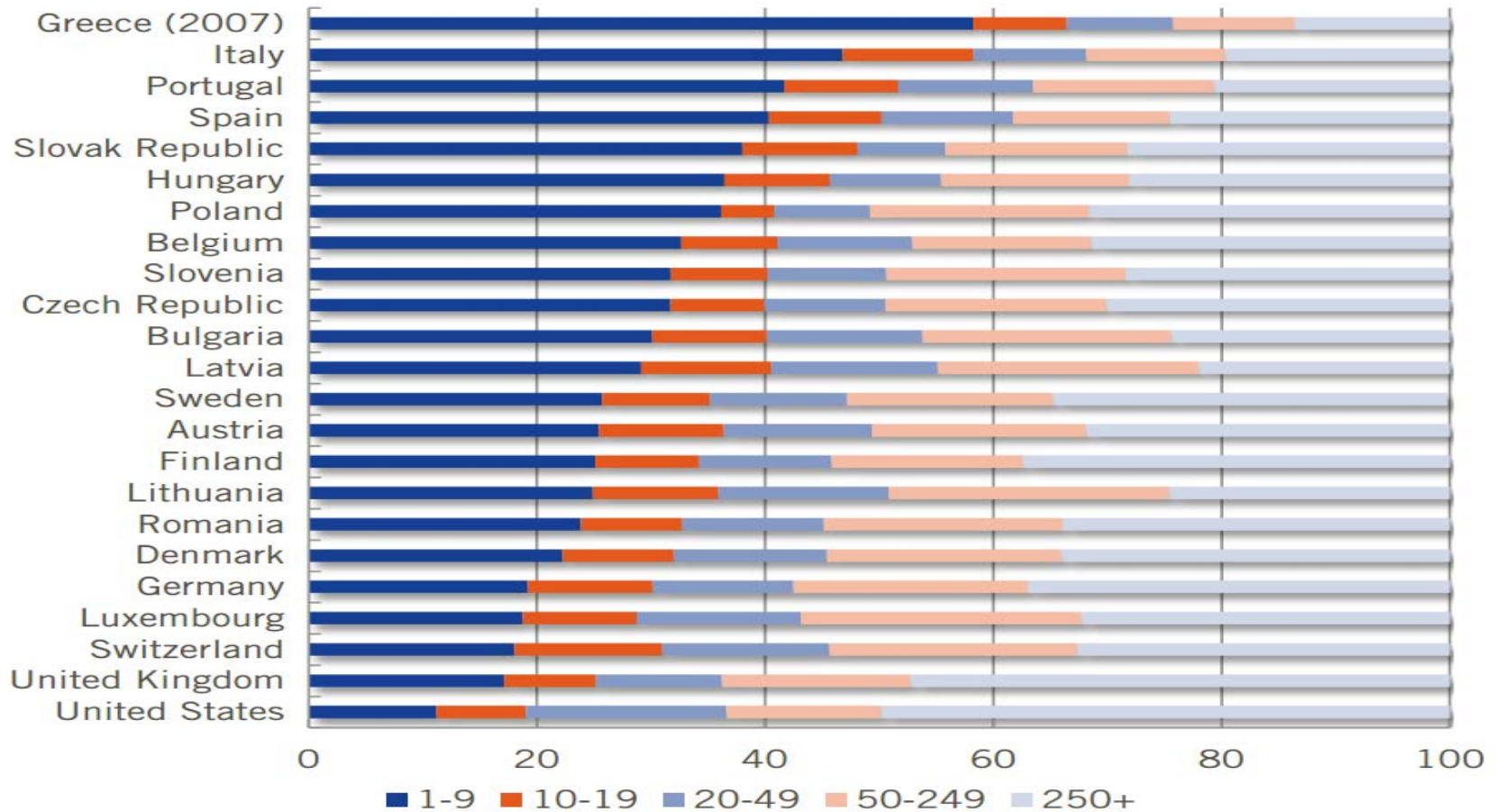
# Scale Matters

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- Scale matters in innovation-based industries with high fixed costs and low marginal costs.
- The U.S.'s large integrated continental market means its firms can get to scale faster than firms in most other markets.
- This is one reason U.S. firms are much larger (32% of AU firms over 200 workers; 50% of U.S. firms over 250 workers)



# This Is One Reason U.S. Firms Are Much Larger



Percent of total workforce employed at enterprises by size, 2010. Source: OECD, Entrepreneurship at a Glance 2013

# First Mover Advantage Matters

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- In the 1960's, the U.S. federal government spent more on R&D than the rest of world, government and business, combined.
- United States was first in world to develop a venture capital industry.
  - *American Research and Development Corporation in Boston in 1946*
- These helped U.S. innovation firms and U.S. innovation gain first mover advantages that remain.

# Federally Supported Innovations

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- Google Search Engine
- GPS
- Supercomputers
- Artificial Intelligence and Speech Recognition
- ARPANET: Foundation of the Internet
- Closed Captioning
- Smartphone Technologies
- The Shale Gas Revolution
- Seismic Imaging
- Visible LED Lighting Technology
- Magnetic Resonance Imaging (MRI)
- Advanced Prosthetics
- The Human Genome Project
- HIV/AIDS
- Reverse Auctions
- Kidney Matching Program
- Fast Multipole Method
- SCALE-UP (Student-Centered Active Learning Environment for Undergraduate Programs) Learning Science Advances
- Civilian Aviation
- Hybrid Corn
- Lactose Free Milk

# A Risk-Taking Culture Matters

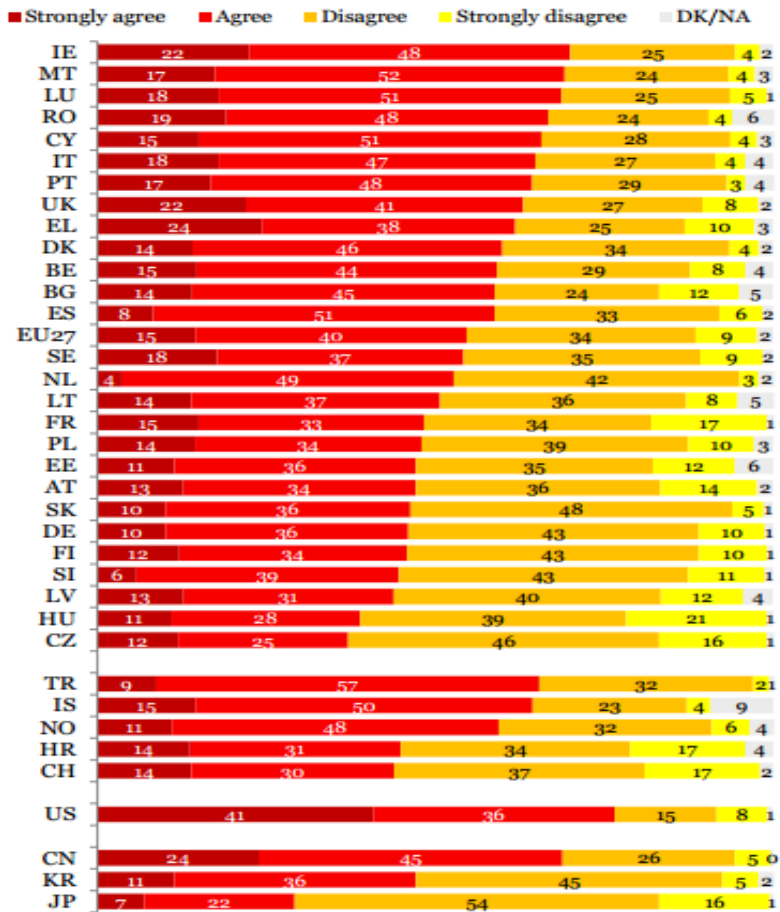
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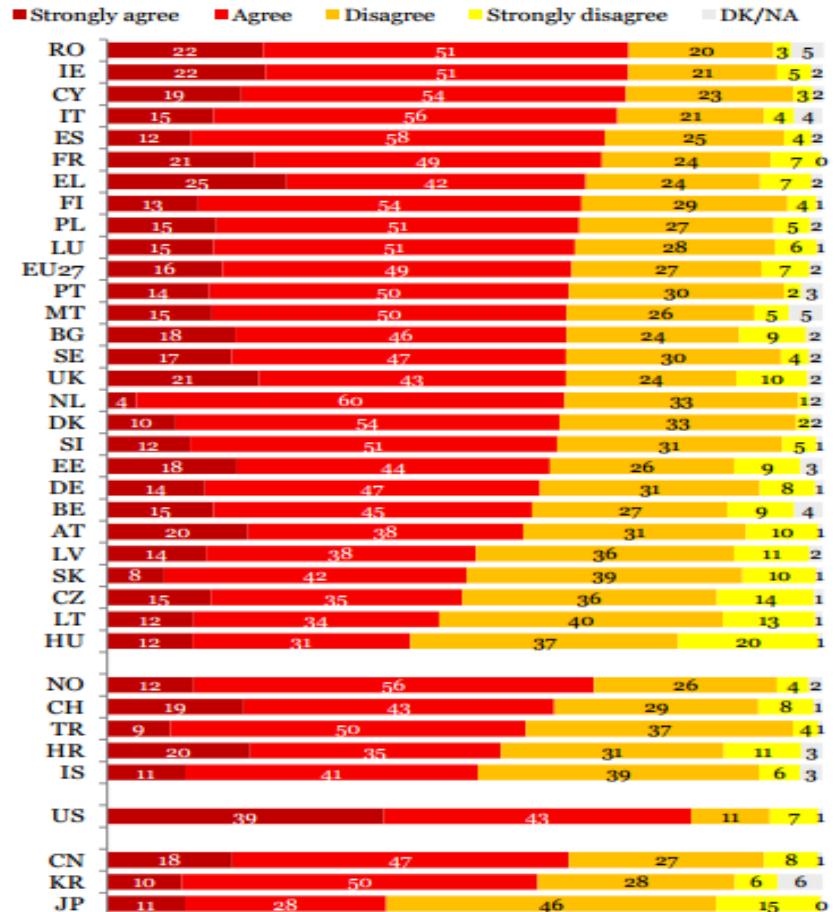
- Long culture of “Yankee ingenuity,” meaning a deep-seated interest in tinkering, inventing, and making things better.
- Acceptance and even embrace of “Schumpeterian destruction.”

# Americans Are More Eager to Take Risks and Compete

“I like situations in which I compete with others”



“In general, I am willing to take risks”



[http://ec.europa.eu/public\\_opinion/flash/fl\\_283\\_en.pdf](http://ec.europa.eu/public_opinion/flash/fl_283_en.pdf)

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# Long Tradition of Policies to Support Tech-Transfer

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- Bayh Dole Act to give universities rights to IP from federally-funded research
- Stevenson-Wydler Technology Innovation Act in 1980 made a number of changes to better enable the transfer of technology from federal laboratories to commercial use
- System of industry-university institutes (e.g., Engineering Research Centers, Industry-University Cooperative Research Centers)
- The Small Business Innovation Research Program requires federal agencies to allocate around 3% of R&D budgets to small business research projects related to agency goals
- Cooperative Research and Development Act in 1984 allowed companies to gain an anti-trust exemption for participating in pre-competitive R&D consortia

# Most U.S. States Have Innovation Policies

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- Illinois Science & Technology Coalition Corporate-Startup Challenge
- Pennsylvania Ben Franklin TechVentures
- i2E, Inc. Oklahoma's Proof-of-Concept Fund
- Georgia Research Alliance



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# Strategic Issues Related to S&T Goals

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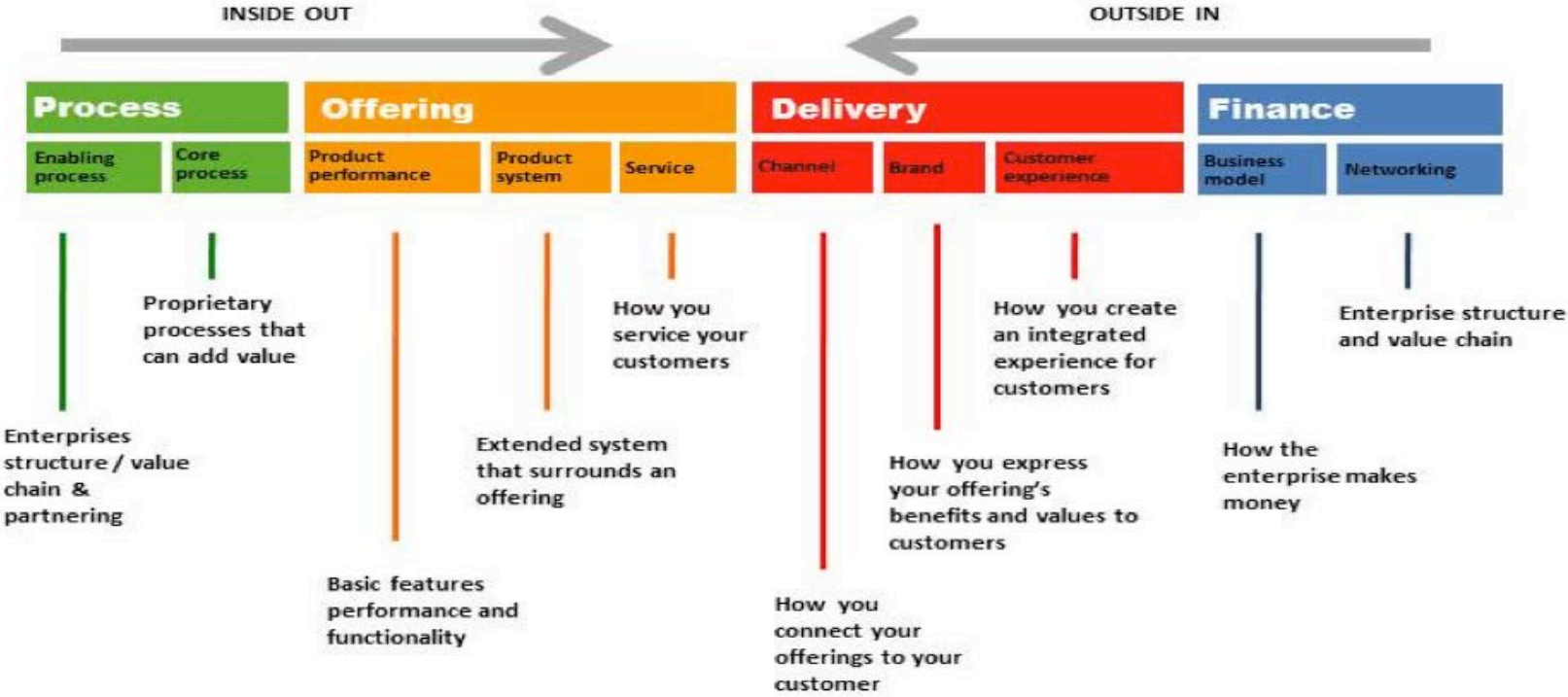
## 1. Sci-Tech or Innovation

# Innovation is More Than Sci-Tech Product Development

		Phase of Development				
		Conception	Research & Development	Transfer	Production/ Deployment	Usage
Type of Innovation	Products					
	Services					
	Production process					
	Organizational models					
	Business models					

# Innovation is More Than Sci-Tech Product Development

## Ten Types of Innovation



Source: Dublin On Innovation Effectiveness, March 2005

# Strategic Issues Related to S&T Goals

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1. Sci-Tech or Innovation
2. **Development or Diffusion**

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5. **Laissez Faire or “Industrial Policy”**



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# Global Examples of Innovation Policy Best Practices: SME Support and Tech Transfer

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- Innovation vouchers (Austria, Netherlands, & Germany)
- Refundable R&D tax credits (France, Norway, Australia)
- Performance-based university funding (Sweden, Finland)
- Design assistance (UK, Ontario)
- “On the spot” new firm registration (Portugal, Chile)

# Global Examples of Innovation Policy Best Practices: University Policies

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- Accountability for results (Finland and Sweden)
- Industry-University Centers (Germany, Taiwan, U.S.)
- Industry-Aligned R&D (U.C. San Diego)
- Specialized Colleges (Olin College)
- Cluster-based Higher Ed (Montreal's Pharma Tech program)
- Entrepreneurial Education (U.S.)
- Professional Masters' Degrees (U.S.)
- Industrial Ph.D. program (Denmark, Brandenburg, Alberta)

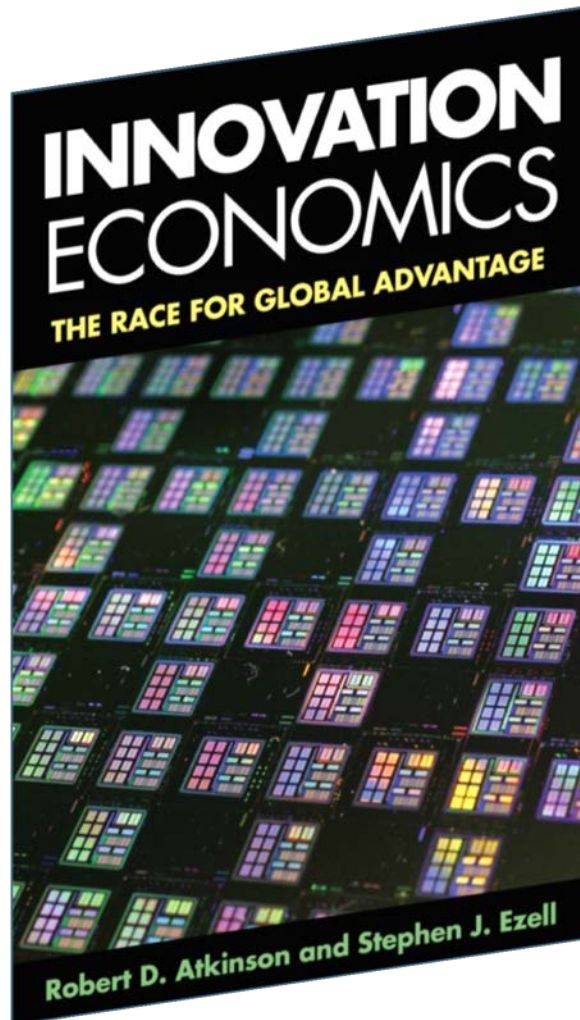
# Global Examples of Innovation Policy Best Practices: Tax Policies

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- Patent boxes (Belgium, France, Netherlands, UK)
- Refundable R&D tax credits (France, Norway, Australia)
- Collaborative R&D tax credits (Korea, FR, JP, Spain, UK)
- R&D tax credits to services industries; (Australia, Denmark, Finland, Netherlands, Norway)
- Generous R&D tax credits (e.g., France, India)
- Knowledge tax credits

[www.globalinnovationrace.com](http://www.globalinnovationrace.com)

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Yale University Press  
2013

# Thank You!

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