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# University Research Funding: The United States is Behind and Falling

**Dr. Robert D. Atkinson, President**

**The Information Technology and Innovation Foundation**



The Information Technology and Innovation Foundation (ITIF) is a Washington, D.C.-based think tank at the cutting edge of designing innovation policies and exploring how innovation will create new opportunities to boost economic growth and improve quality of life. ITIF focuses on:

- Innovation “verticals”: energy, life sciences, telecom, manufacturing, and Internet and IT transformation
- Innovation “horizontal”: trade, tax, talent, and tech policy
- “Innovation economics” as an alternative to mainstream economics

## ■ Headlines

- Federally-funded university-based research plays an increasingly vital role in the U.S. innovation system.
- But, as a share of GDP, both growth in and actual government funding—and business funding—for university research falls notably below the OECD country average.

## ■ Today's Presentation

1

**Why Does S&T-Based Innovation Matter?**

2

**Trends in R&D Funding for Universities**

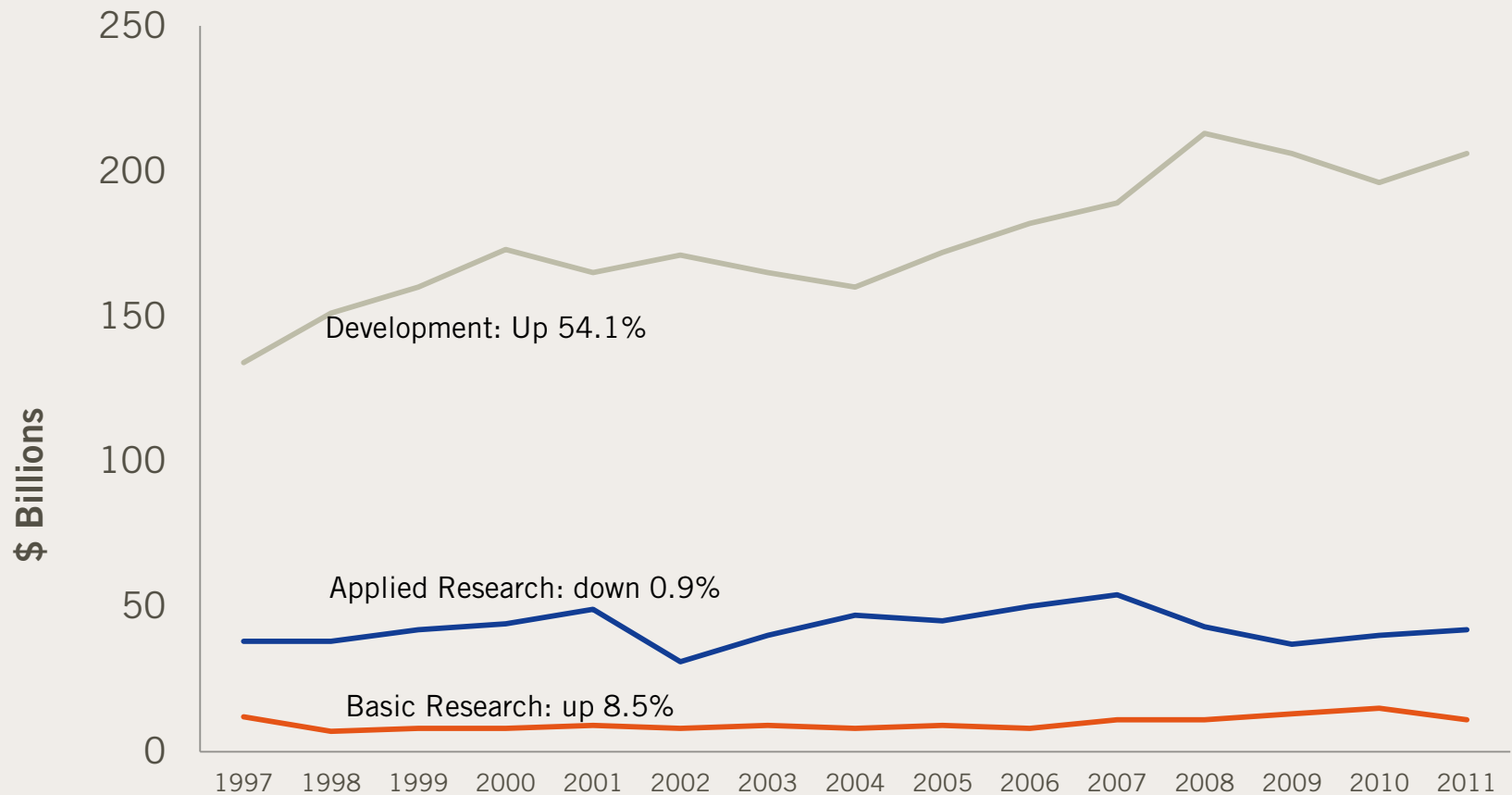
3

**Effects of Future R&D Cuts**

# Why S&T-based Innovation is Critical to Growth

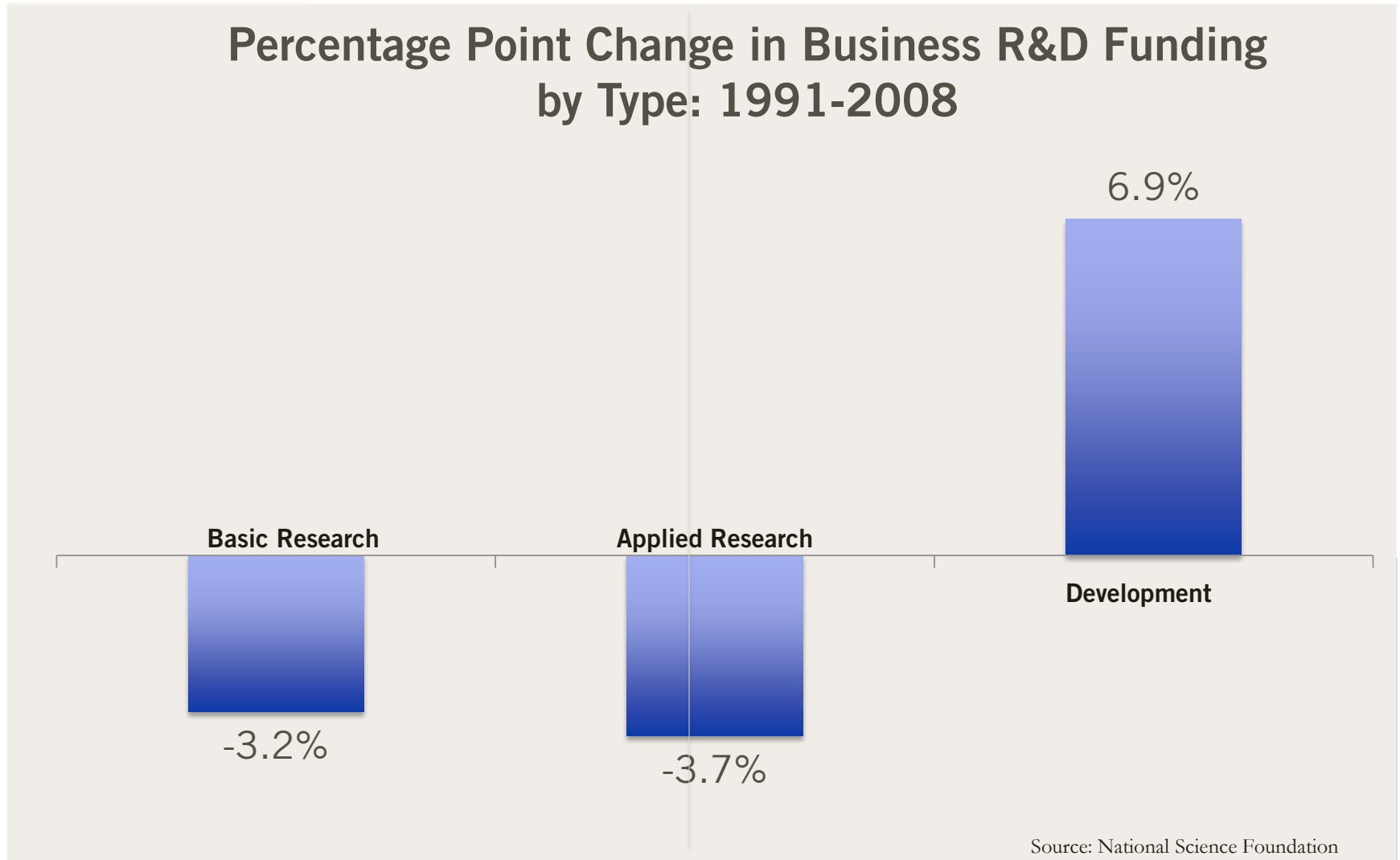
- The societal rates of return to R&D are at least twice private returns.
- The private return to R&D is 7% while the societal RoR is 30% suggesting that the optimal level of R&D investment in the US economy is between two to four times larger than the total current level of private investment. (Jones and Williams, 2000)
- Every 1% increase in investment in research increased productivity by 0.23%. (Coe and Helpman, 1995)
- At least two-thirds of increase in per-capita GDP is attributable to innovation.

## ■ Corporations Shifting to Later-Stage Development



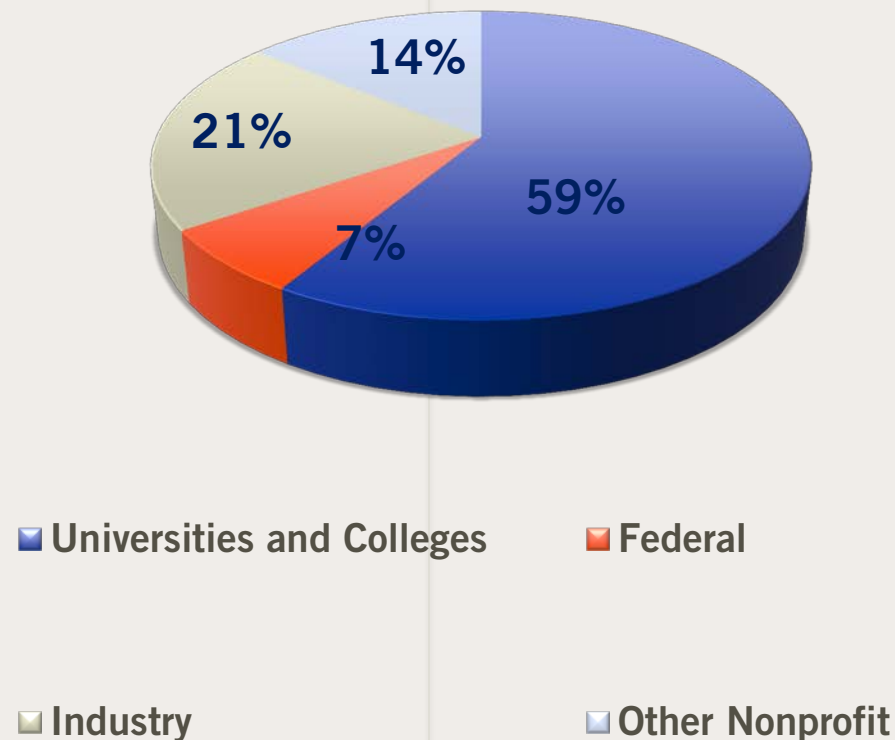
Source: National Science Foundation

# ■ Corporations Shifting to Later-Stage Development



# As a Result, University Research has Become More Important to the U.S. Innovation System

U.S. Basic Research Expenditures by Performing Sector: 2008




Source: National Science Foundation



# University Research Generates Substantial Societal Returns

- The social rate of return from investment in academic research is at least 40 percent.
- Scores of companies directly trace their origin to federally-funded university-based research.

<http://www.sciencecoalition.org/successstories>

100 SUCCESS STORIES	
	<b>SPARKING ECONOMIC GROWTH</b>
GOVERNMENT FUNDING + UNIVERSITY RESEARCH = INNOVATION, COMPANIES, JOBS	How federally funded university research creates innovation, new companies and jobs
	 <b>THE SCIENCE COALITION</b>
APRIL 2010	<a href="http://www.sciencecoalition.org">www.sciencecoalition.org</a>

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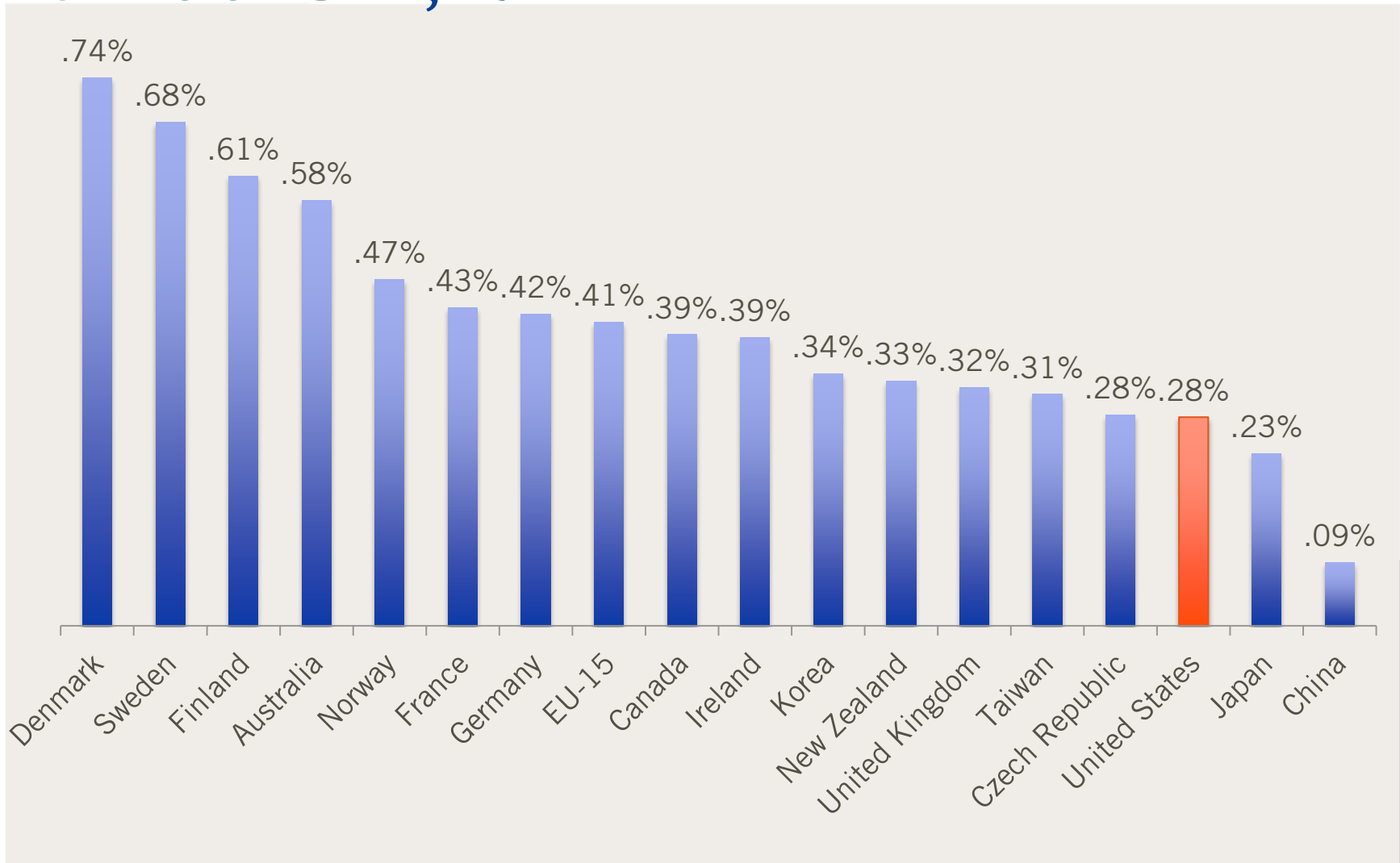
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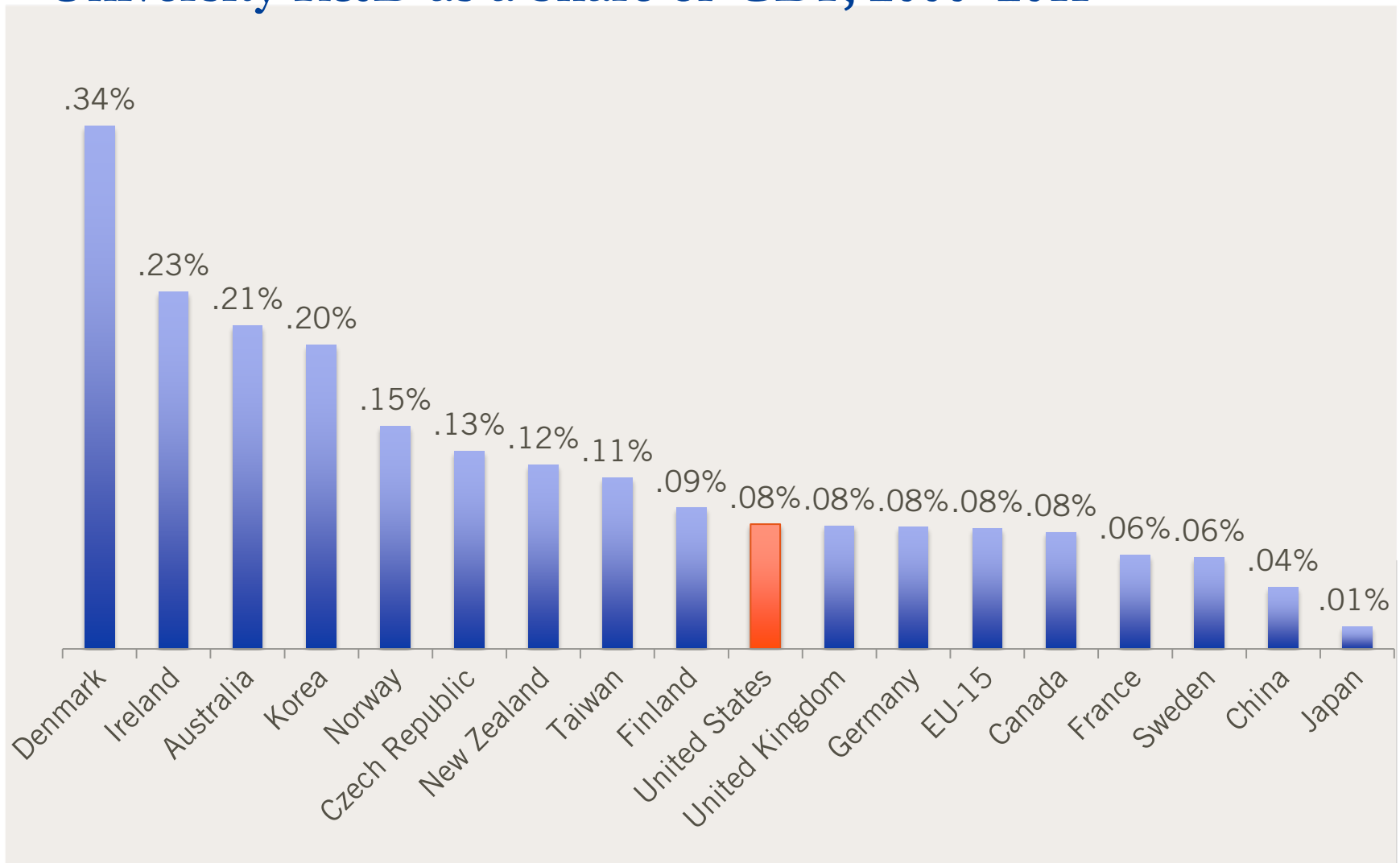
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**Effects of Future R&D Cuts**

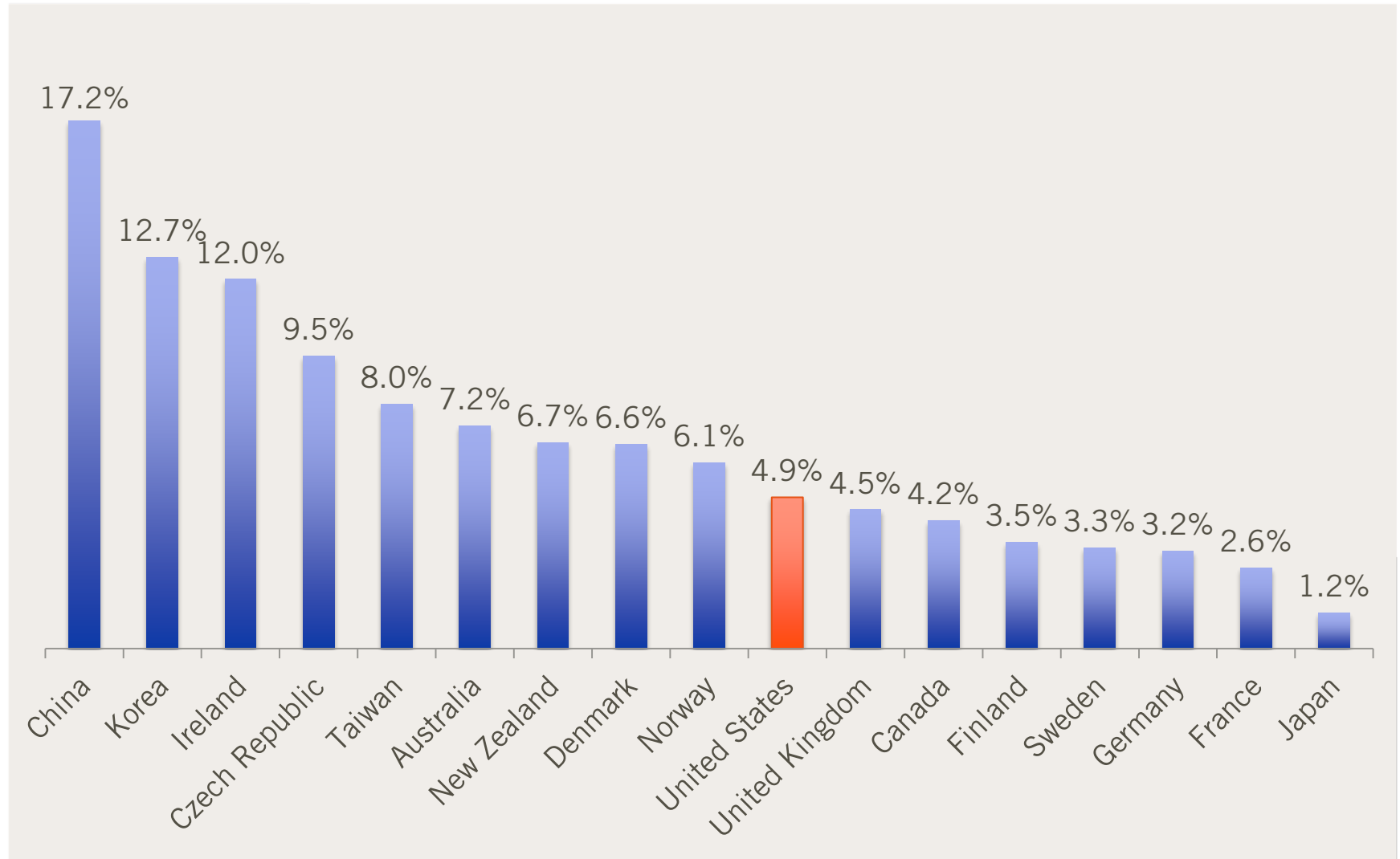
# Government Funding for University R&D as a Share of GDP, 2011



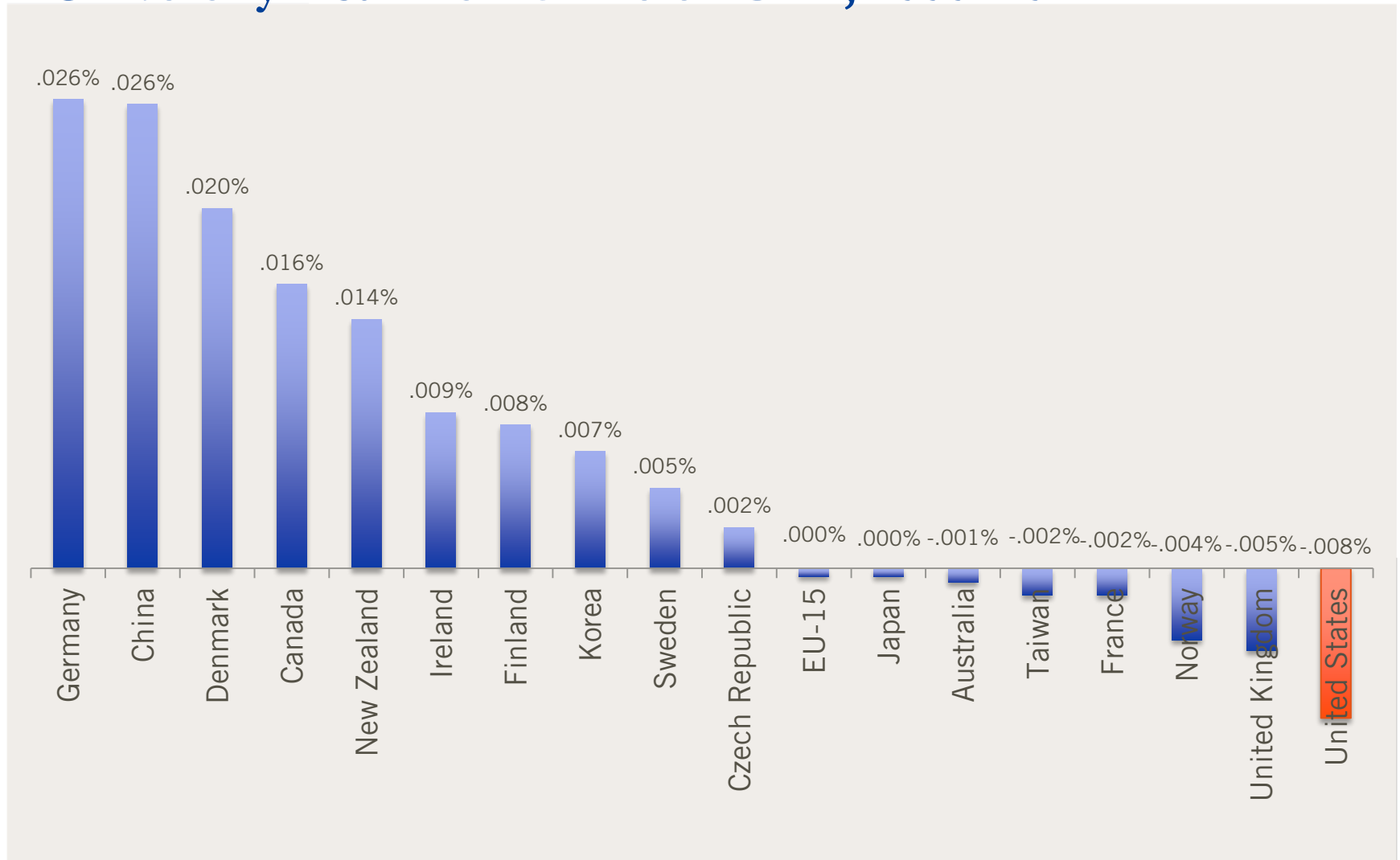
## Percentage Point Change in Government Funding for University R&D as a Share of GDP, 2000–2011



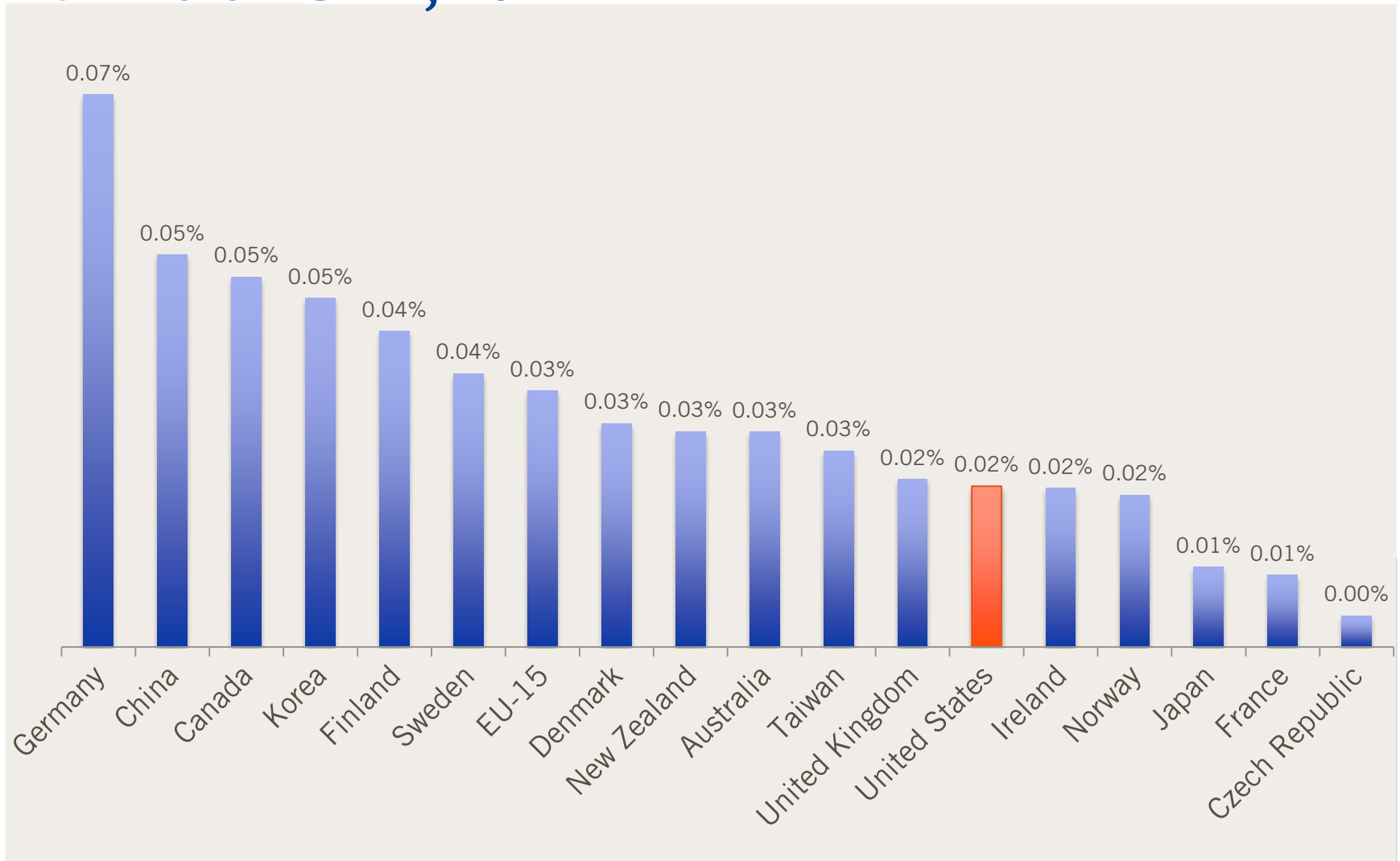
# Annual Percentage Change in Government Funding for ■ University R&D in Constant PPP Dollars, 2000–2011



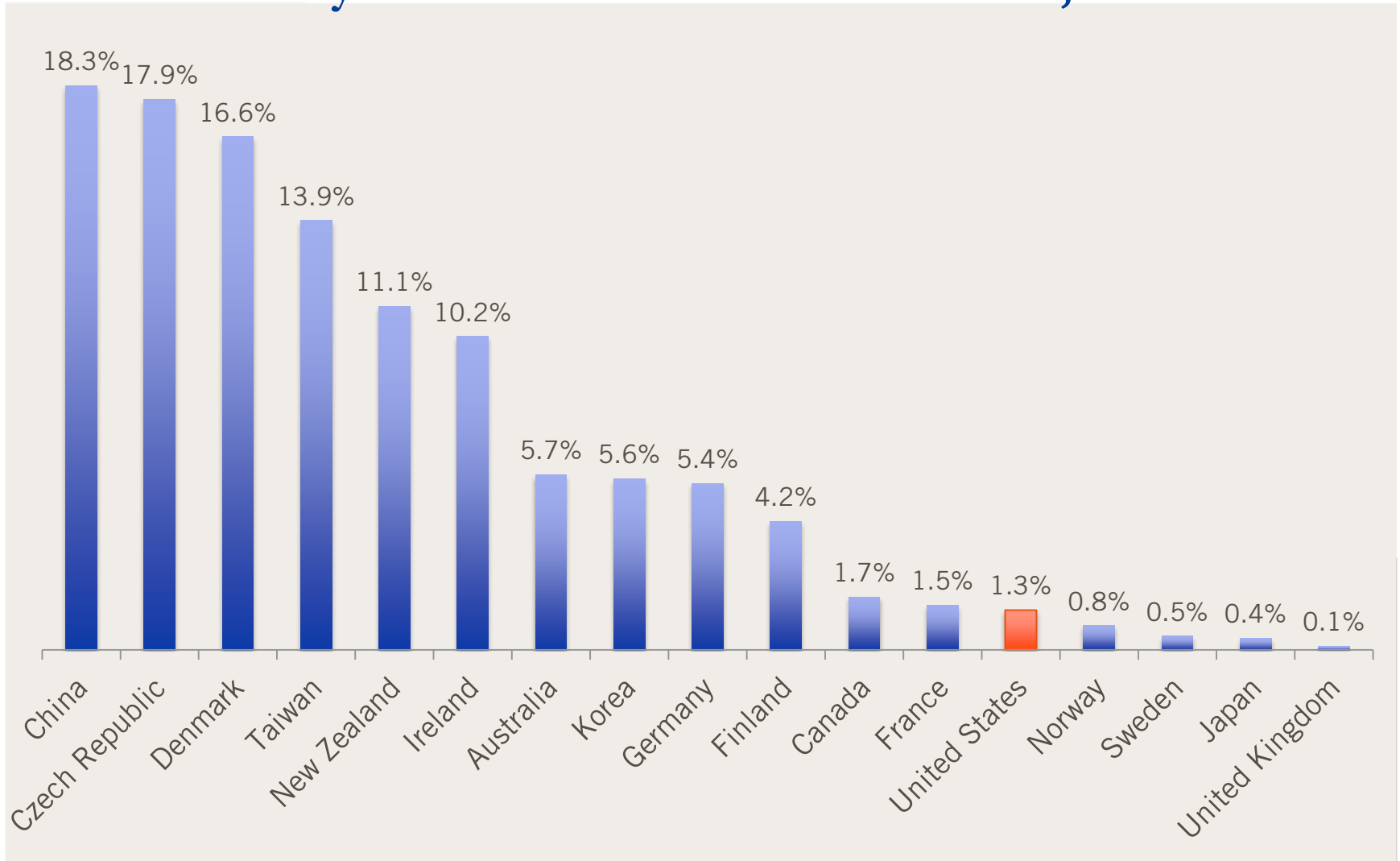
# Percentage Point Change in Business Funding for University R&D as a Share of GDP, 2000–2011



# Business Funding for University R&D as a Share of GDP, 2011

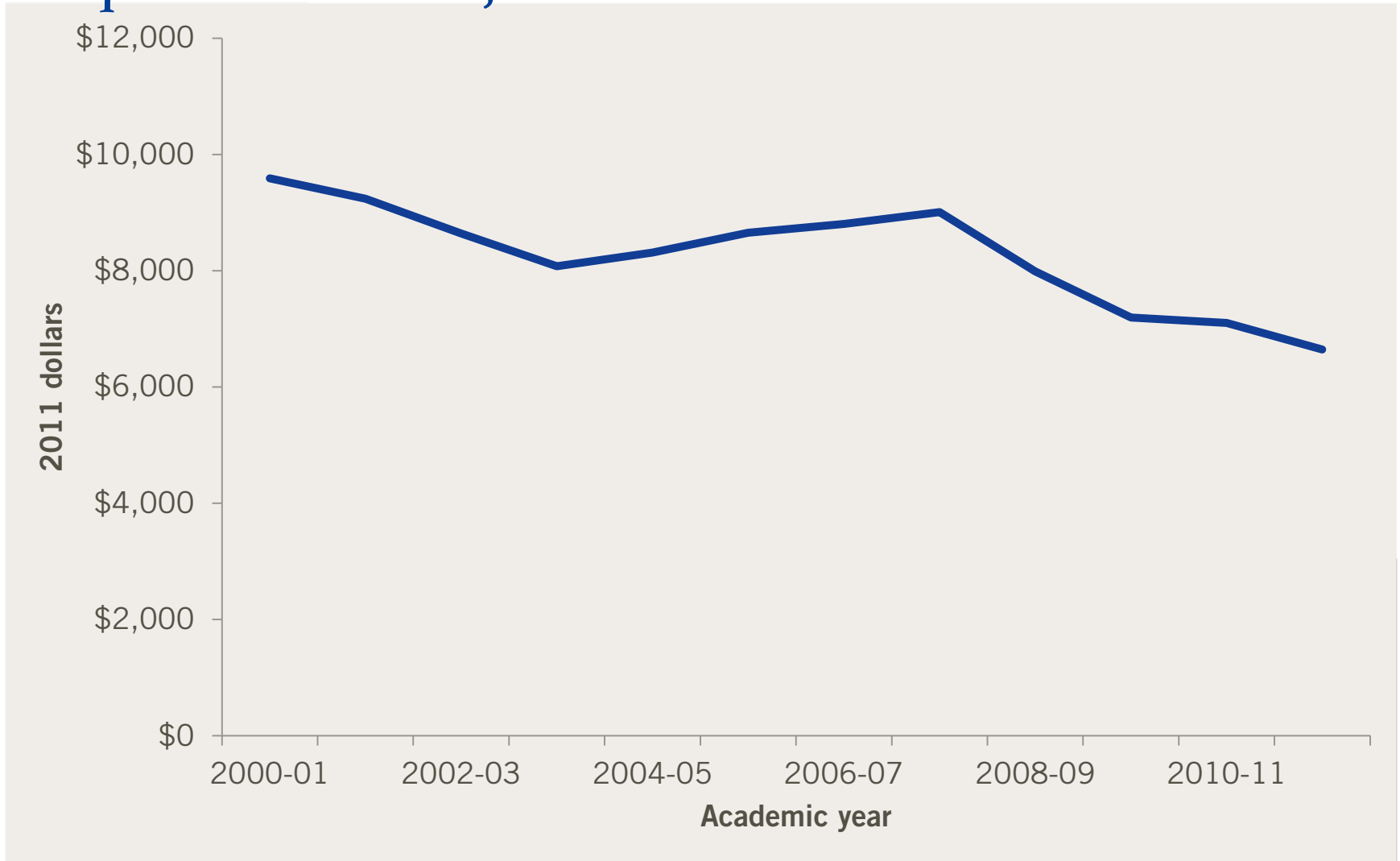


# Average Annual Percentage Change in Business Funding for University R&D in Constant PPP Dollars, 2000–2011





# State Appropriations for Higher Education per Full-Time Equivalent Student, 2000–2012



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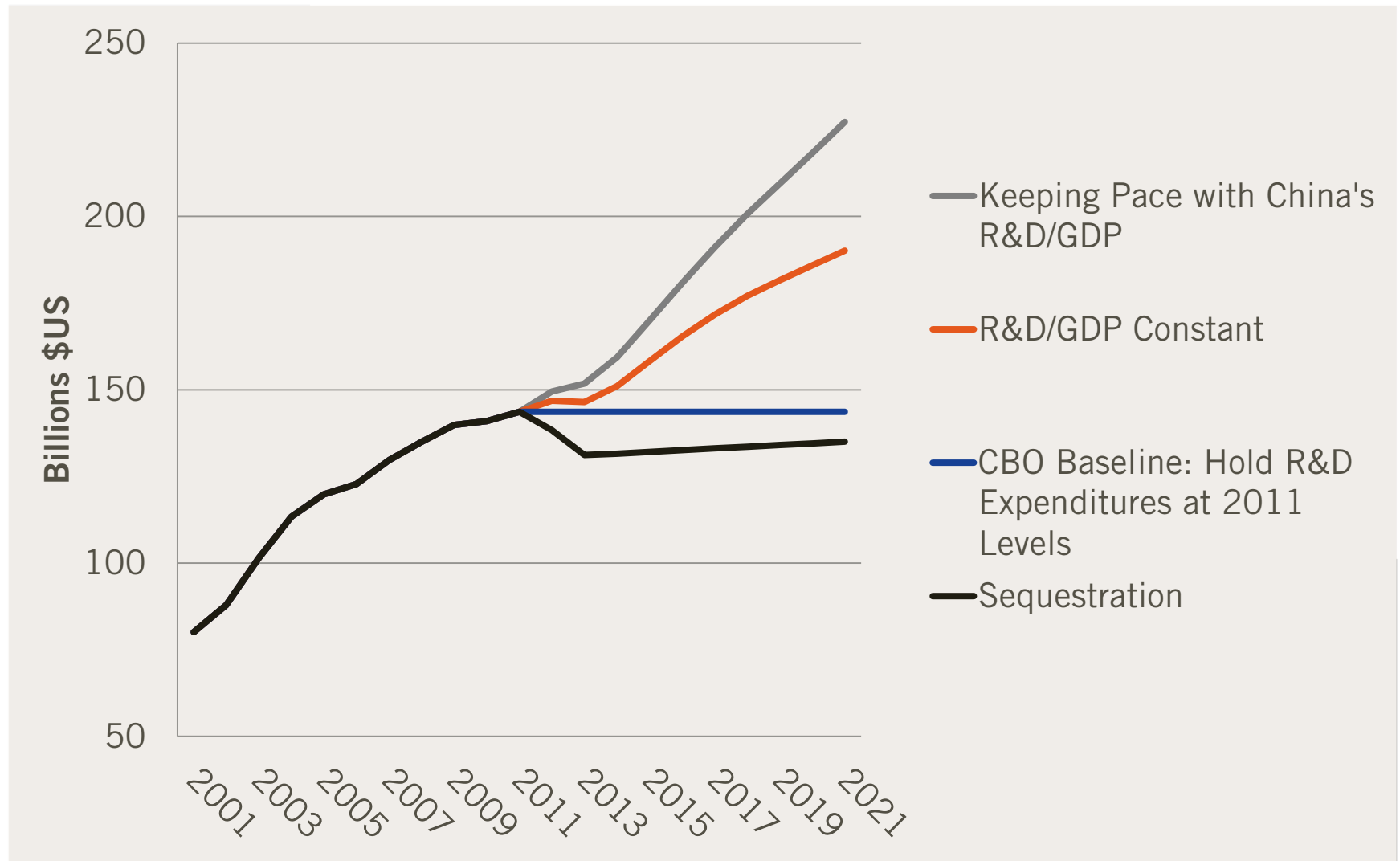
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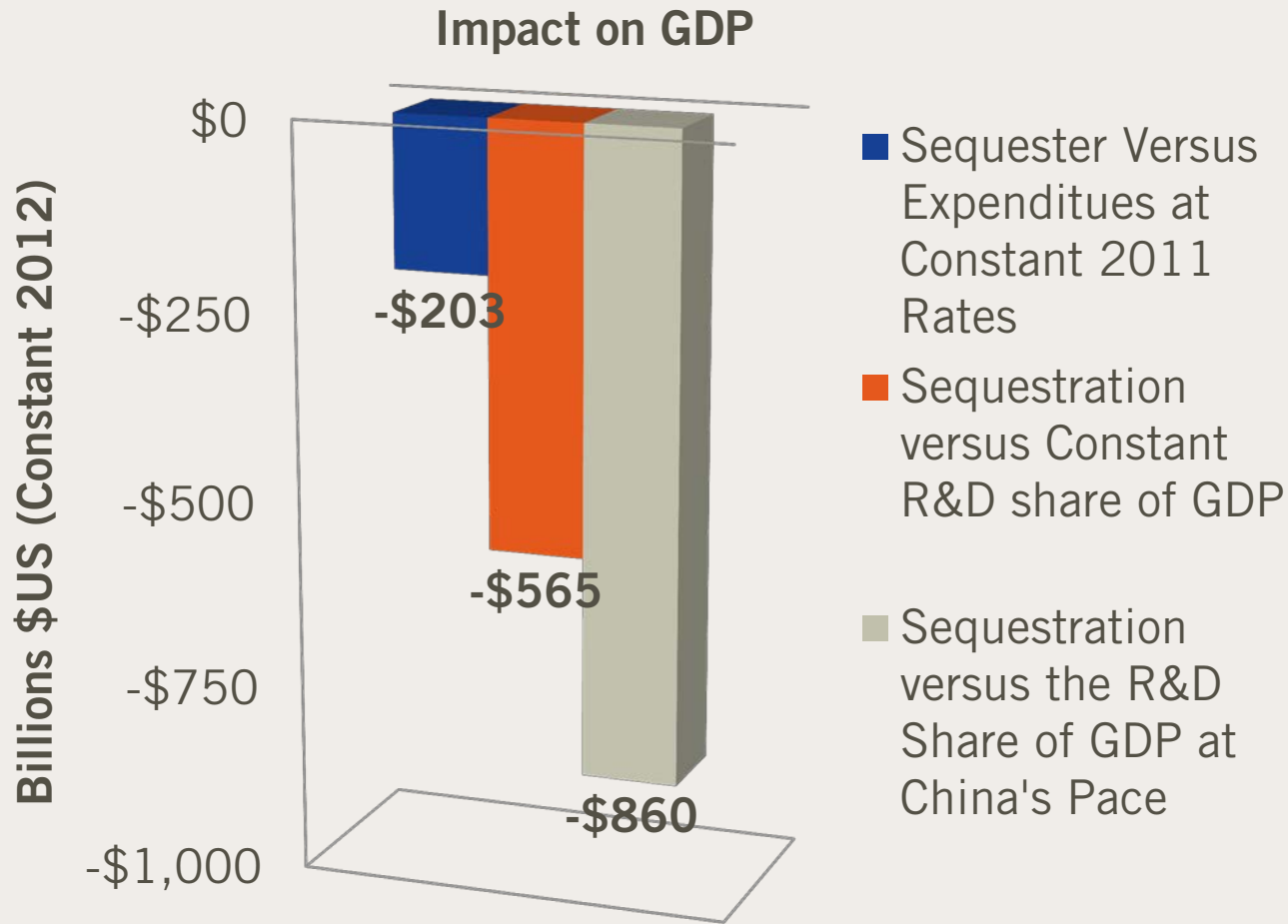
# ■ U.S. Federal R&D Expenditure Paths



## ■ R&D Expenditure Shortfalls(\$2012 Millions)

Year	Sequestration vs. R&D at 2011 Level	Sequestration vs. Stable R&D Share of GDP	Sequestration vs. Expanding R&D Share of GDP at China's Rate
2013	-\$12,484	-\$15,326	-\$20,646
<b>Cumulative: 2013-2021</b>	<b>-\$94,976</b>	<b>-\$329,856</b>	<b>-\$510,930</b>

# R&D Cuts Reduce GDP



R&D Funding Shortfalls and the Related Losses in Real GDP 2013-2021 Cumulative Effect, Sources: NSF, OMB, CBO, BEA, ITIF

# ■ R&D Cuts Reduce New Knowledge

	Journal Publications	Patents
<b>2013</b>	<b>-9.2%</b>	<b>-3.3%</b>
<b>2013-2021</b>	<b>-7.8%</b>	<b>-2.8%</b>

(Sequestration Compared to CBO Baseline)

## ■ R&D Cuts Reduce Jobs

	“Keynesian” Effect	“Schumpeterian” Effect	Net Effect
<b>2013</b>	-124,837	-94,472	-219,308
<b>Average Annual Losses: (2013-2016)</b>	-117,771	-81,453	-199,224

(Sequestration Compared to CBO Baseline)

# Thank You

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