

March 18, 2012

The State of Innovation in the States

Entrepreneurship and Innovation in Silicon Valley: Best Practices and Emerging Trends Conference

Stephen Ezell, Senior Analyst

Information Technology and Innovation Foundation

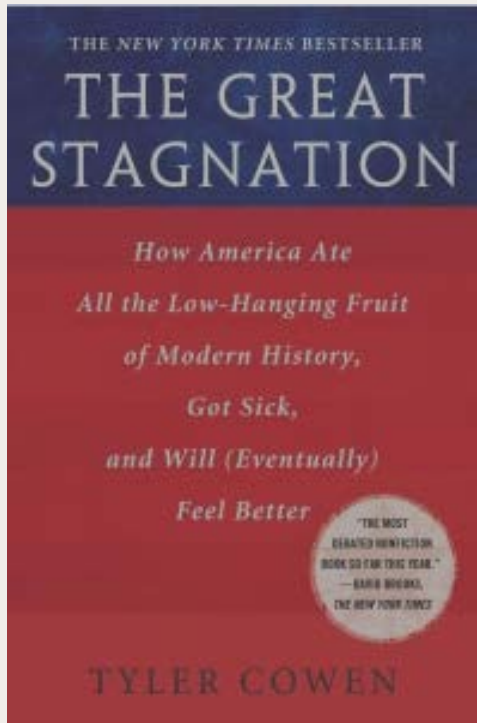
ITIF is an economic and technology policy think tank committed to articulating and advancing an unabashedly pro-productivity and pro-innovation policy agenda internationally, in Washington, and in the states.

ITIF focuses on:

- Innovation and competitiveness
- Science/technology policy
- Digital transformation (E-commerce, e-government, e-health, etc.)
- ICT and economic productivity
- Broadband/Internet tech policies
- Energy innovation/Climate change policy



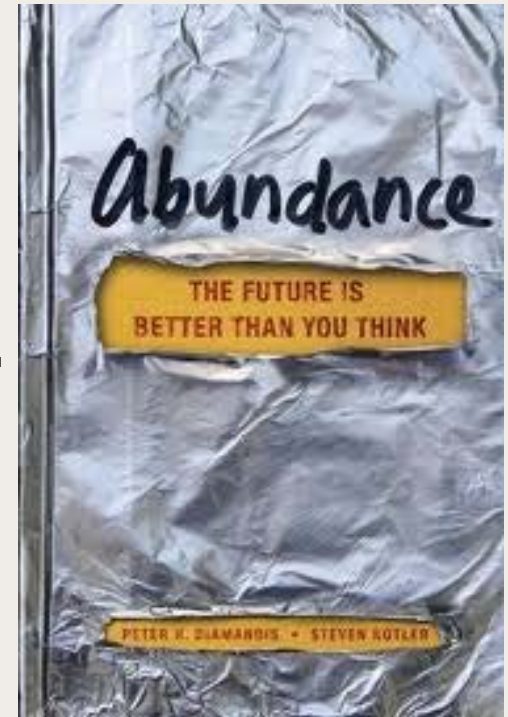
■ The Great Stagnation or An Age of Abundance?



Vs.



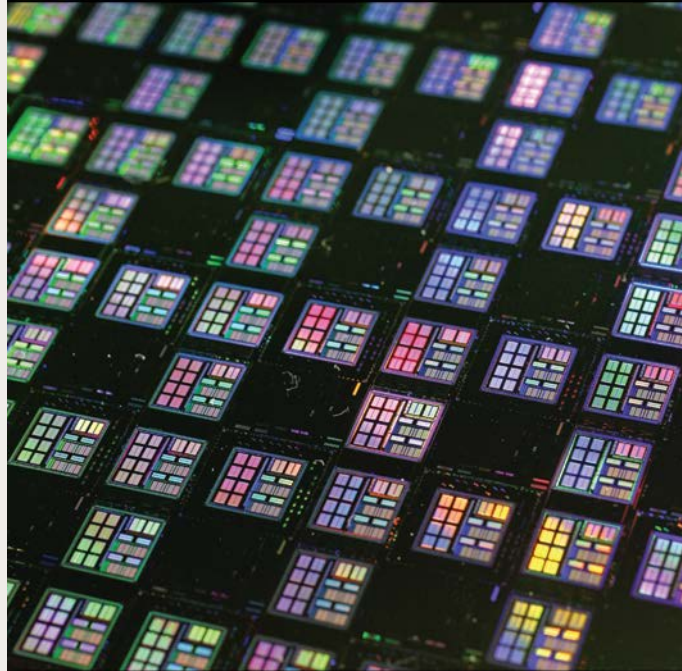
Vs.



- A Fierce Race for Global Innovation Advantage

**INNOVATION
ECONOMICS**

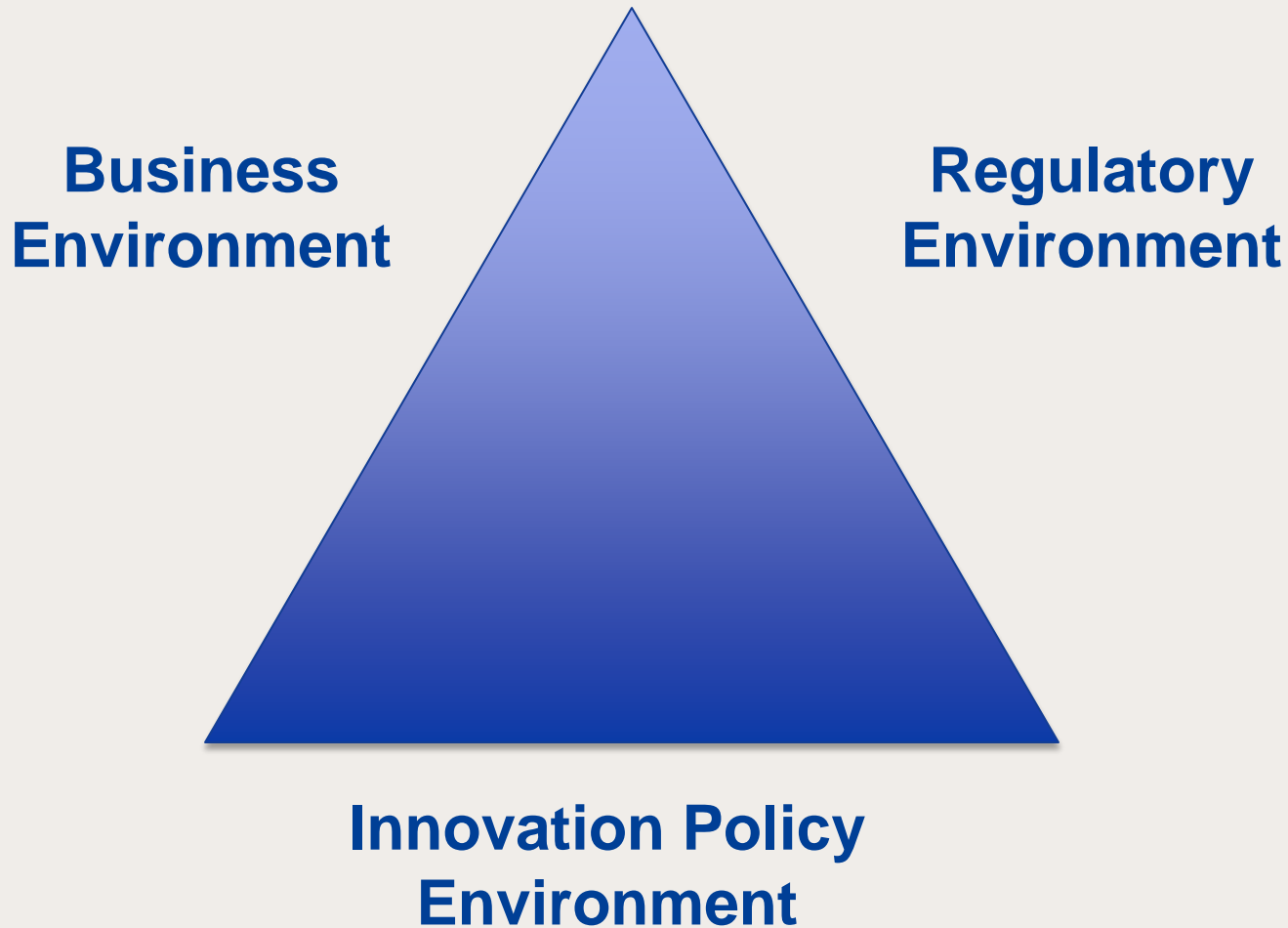
THE RACE FOR GLOBAL ADVANTAGE



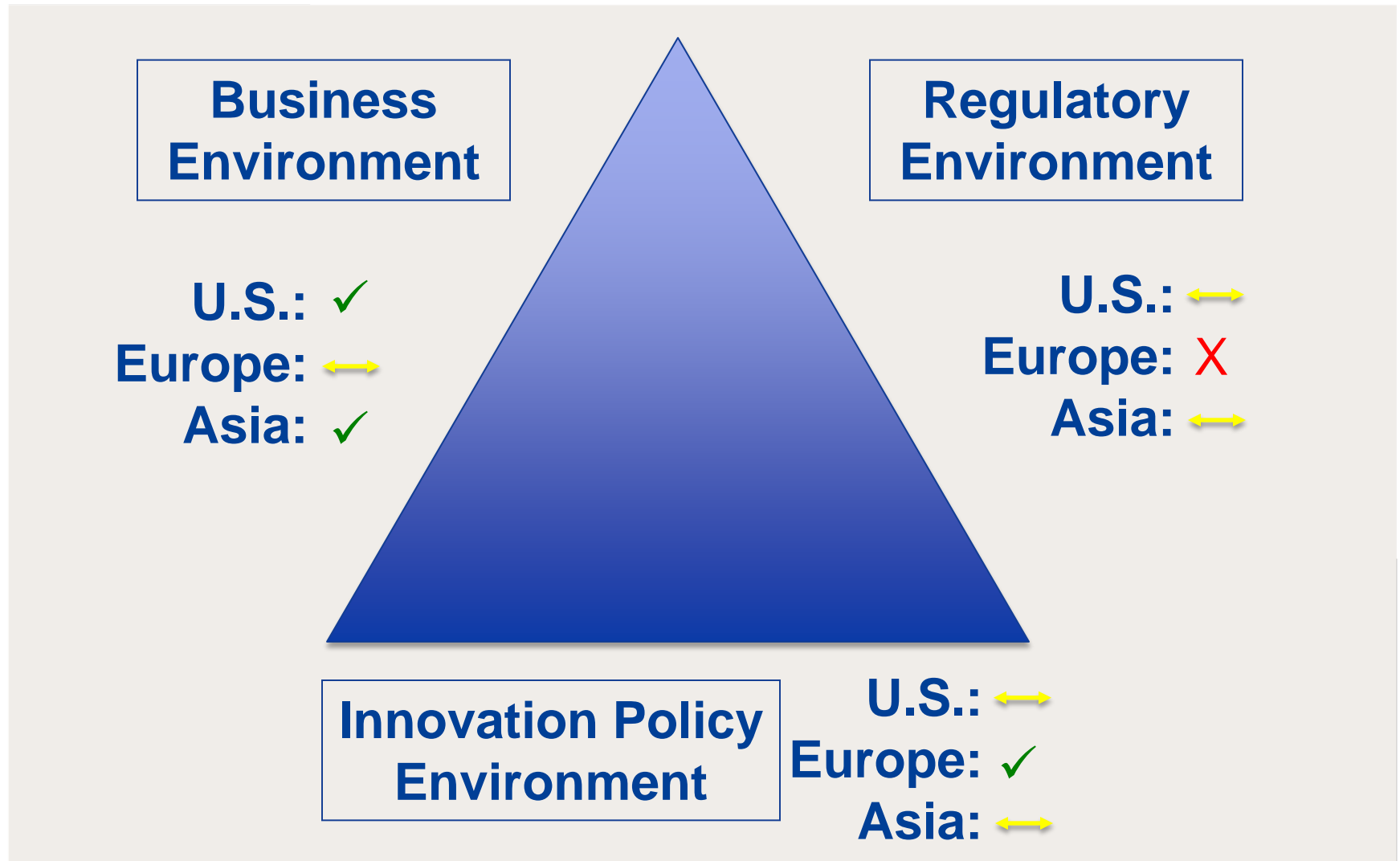
Robert D. Atkinson and Stephen J. Ezell

Yale University Press
September 2012

- Maximizing Innovation: Get the Innovation Triangle Right



■ Maximizing Innovation: Get the Innovation Triangle Right



■ **A Tale of Two Americas:**

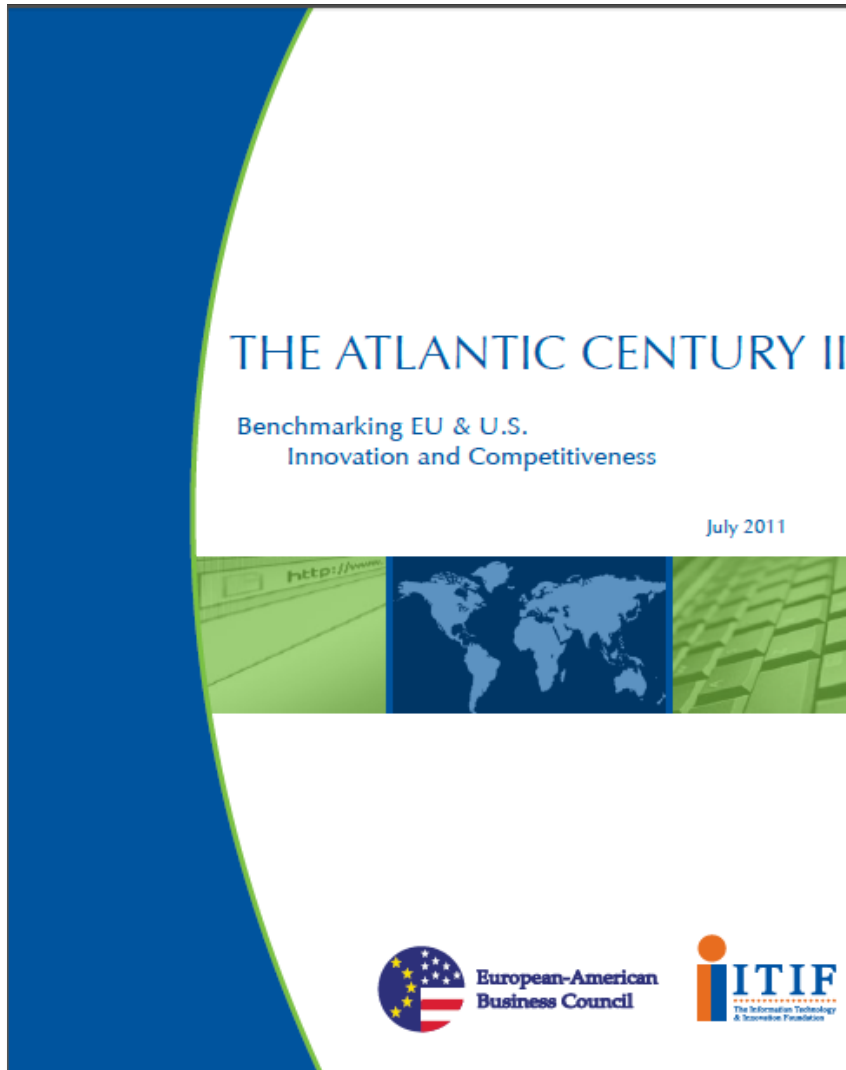
1. A Very Robust Silicon Valley/High-Tech Sector

- Strong in ICTs; Apps; Aerospace; Pharma;
- Still the Best Business Environment for Innovation

2. A Faltering Innovation Ecosystem

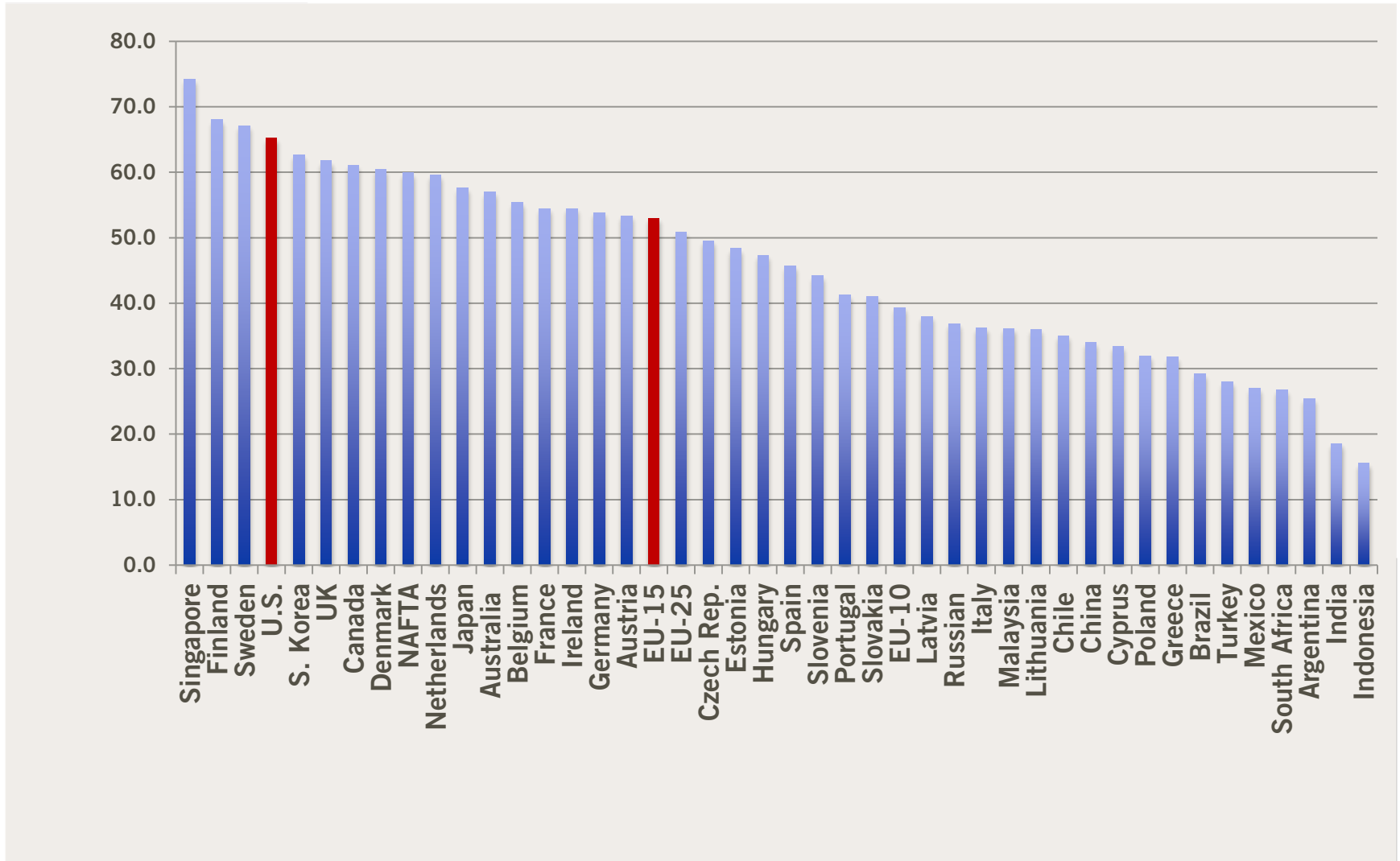
- Faltering Innovation Infrastructure
- Decimation of U.S. Manufacturing
- Lacking Political Consensus to Support Innovation

■ The Atlantic Century II



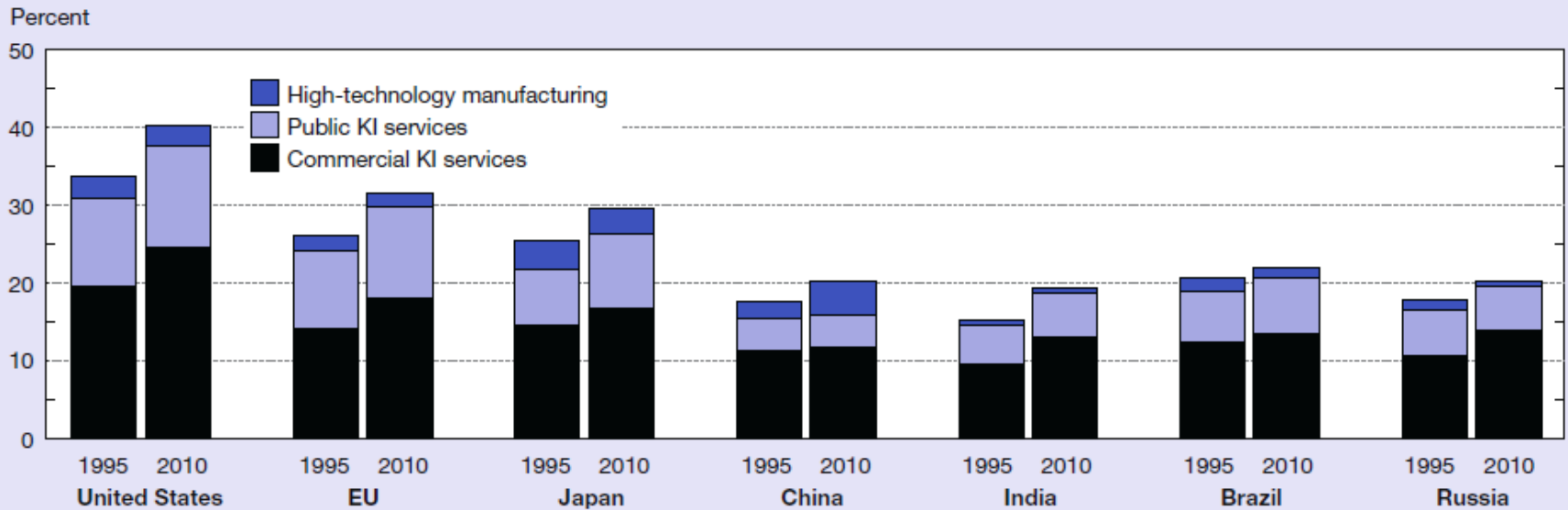
- **The Study:** Compares innovation-based competitiveness of 44 nations and regions.
- **16 indicators:** Including corporate and government R&D, scientists and engineers, new firms, corp. tax, productivity growth and others.

Overall Score for Global Competitiveness and Innovation



■ U.S. Strong in Knowledge & Tech-Intensive Industries

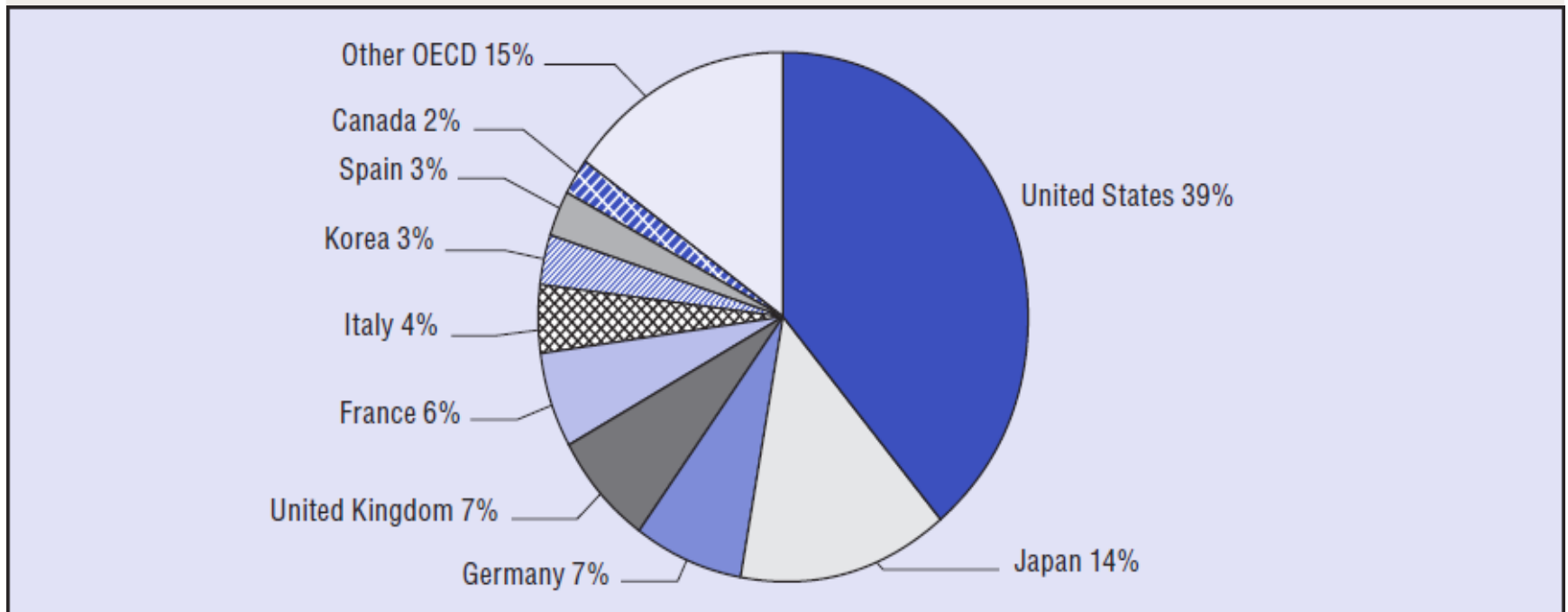
Output of knowledge- and technology-intensive industries as a share of GDP, by selected region/country: 1995 and 2010



■ U.S. Hotbed of ICT Innovation



■ Share of OECD ICT Sector Value-Added by Country, 2008

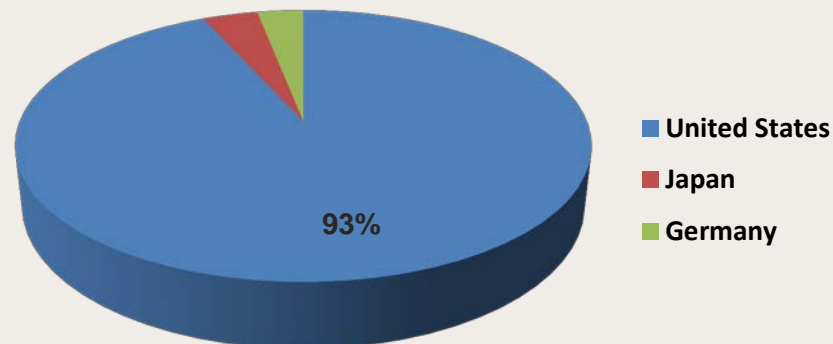


Source: OECD Information Technology Outlook, 2011

■ U.S. Dominates ICT Services Industries

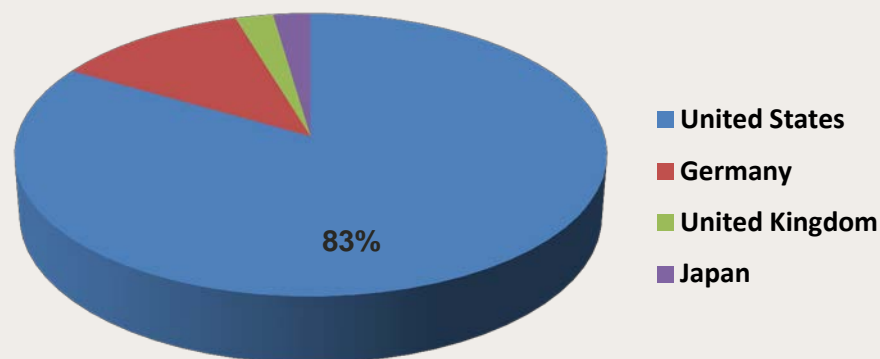
Company	Country	Revenues (\$T)
Amazon.com	United States	\$24,509
Google	United States	\$23,651
eBay	United States	\$8,727
Yahoo!	United States	\$6,460
Expedia	United States	\$2,955
E TRADE Financial	United States	\$2,878
TD Ameritrade	United States	\$2,423
IAC/InterActiveCorp	United States	\$1,376
Yahoo Japan	Japan	\$2,875
United Internet	Germany	\$2,412

Share of Revenues of Top 10 Internet Firms, by Country



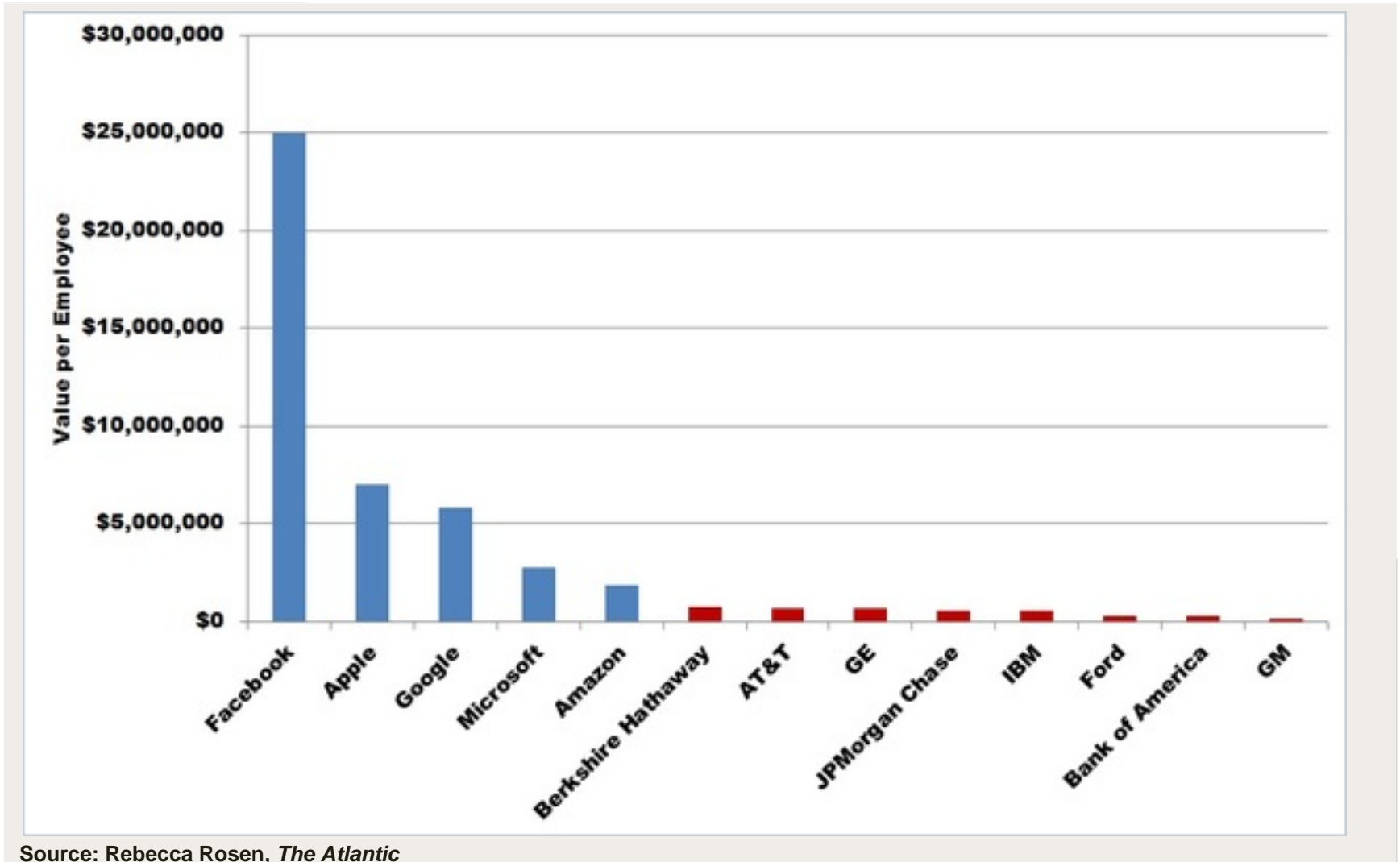
Company	Country	Revenues (\$T)
Microsoft	United States	\$58,689
Oracle	United States	\$23,226
Symantec	United States	\$5,922
CA	United States	\$4,285
Electronic Arts	United States	\$3,535
Intuit	United States	\$3,183
Adobe Systems	United States	\$2,946
Amdocs	United Kingdom	\$2,863
KONAMI ¹	Japan	\$2,826
SAP	Germany	\$14,657

Share of Revenues of Top 10 Software Firms, by Country



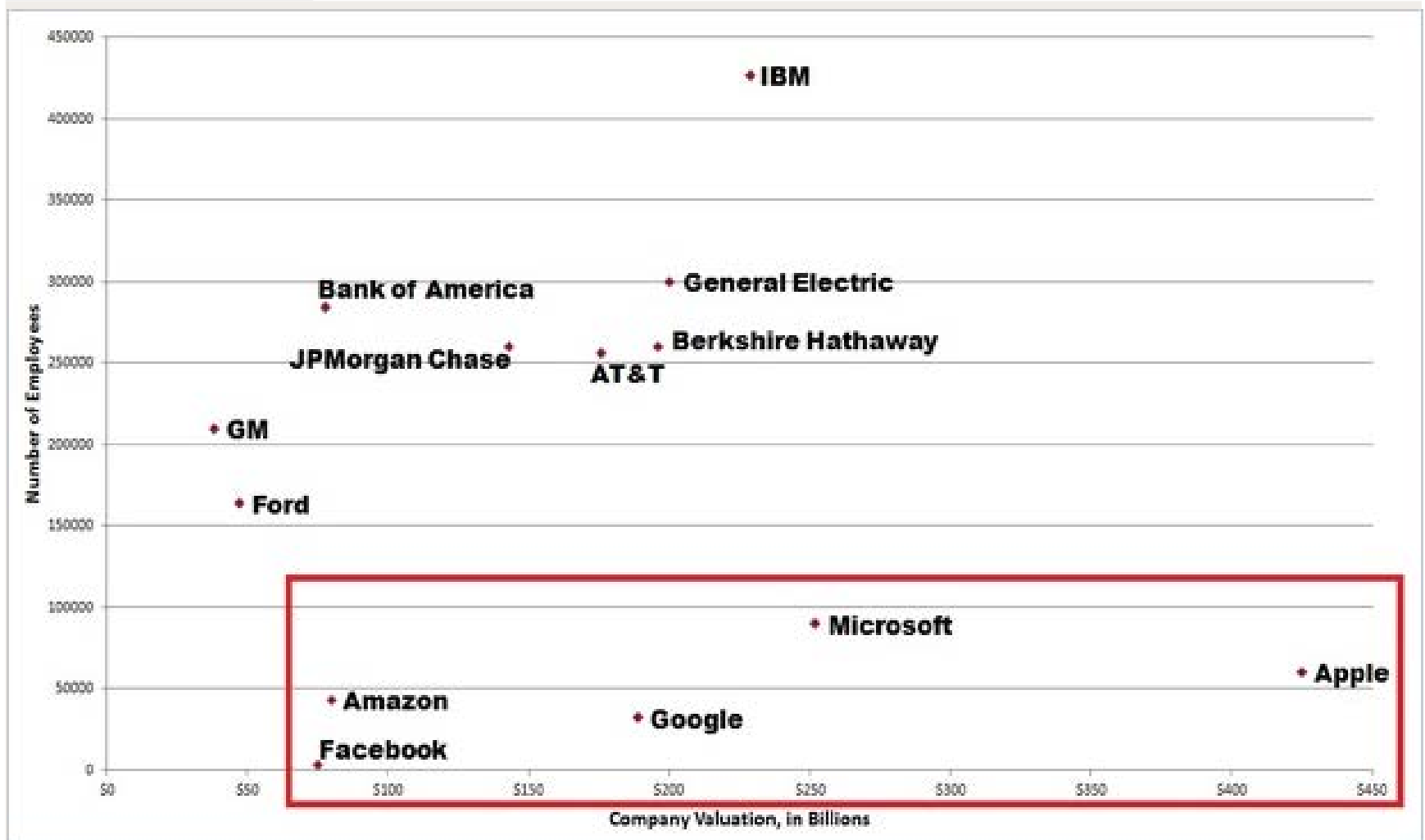
Source: OECD Information Technology Outlook, 2011

■ Leading U.S. Companies' Valuation Per Employee



Source: Rebecca Rosen, *The Atlantic*

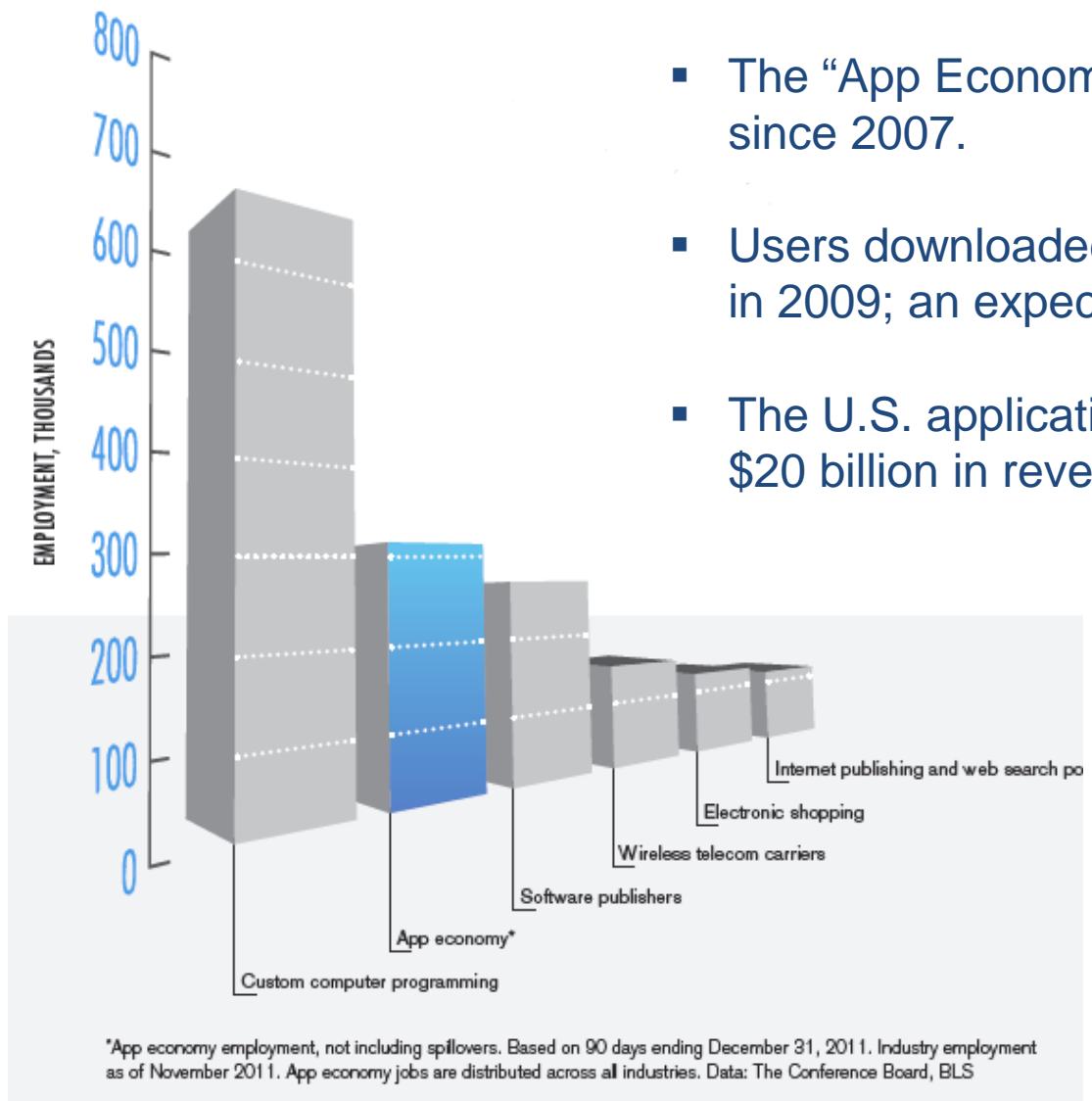
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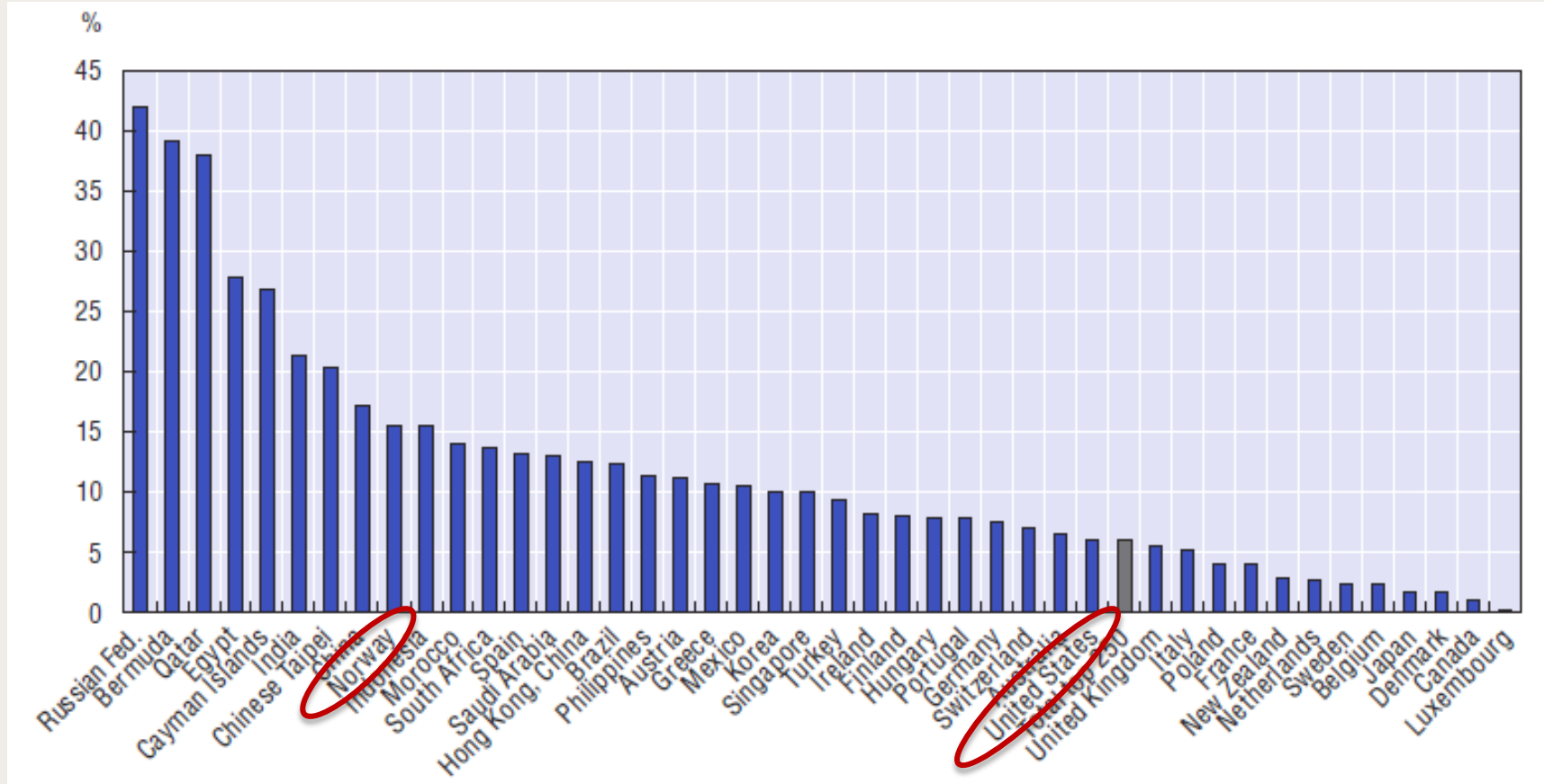
Source: Rebecca Rosen, *The Atlantic*

■ The “App Economy” Now Driving Innovation

- The “App Economy” has created 466,000 jobs since 2007.
- Users downloaded nearly 7 billion mobile apps in 2009; an expected 50 billion in 2012.
- The U.S. applications development generated \$20 billion in revenue in 2011.



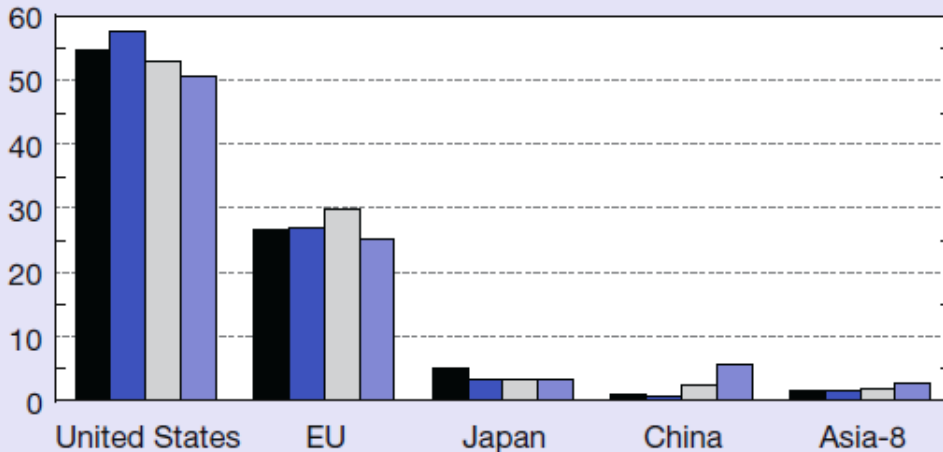
■ Top 250 ICT firm's revenue growth by country, 2000-2009



Source: OECD Information Technology Outlook, 2011

Other Sectors of U.S. Strength

Aircraft and spacecraft



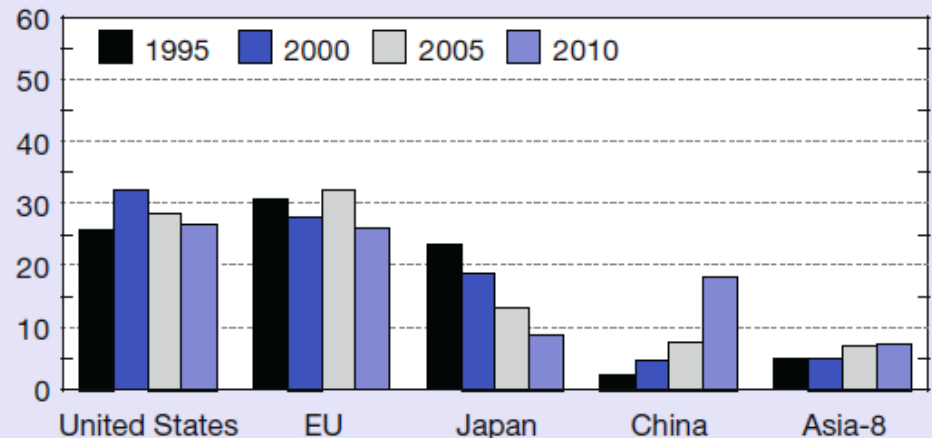
Value added for selected manufacturing industries, by global share of selected region/country/economy: 1995, 2000, 2005, and 2010

The cost of sequencing a human genome—all three billion bases of DNA—plunged from \$8.9 million in July 2007 to \$900 in 2012.

Source: U.S. National Science Board, *Science and Technology Indicators 2012*

Pharmaceuticals

Percent

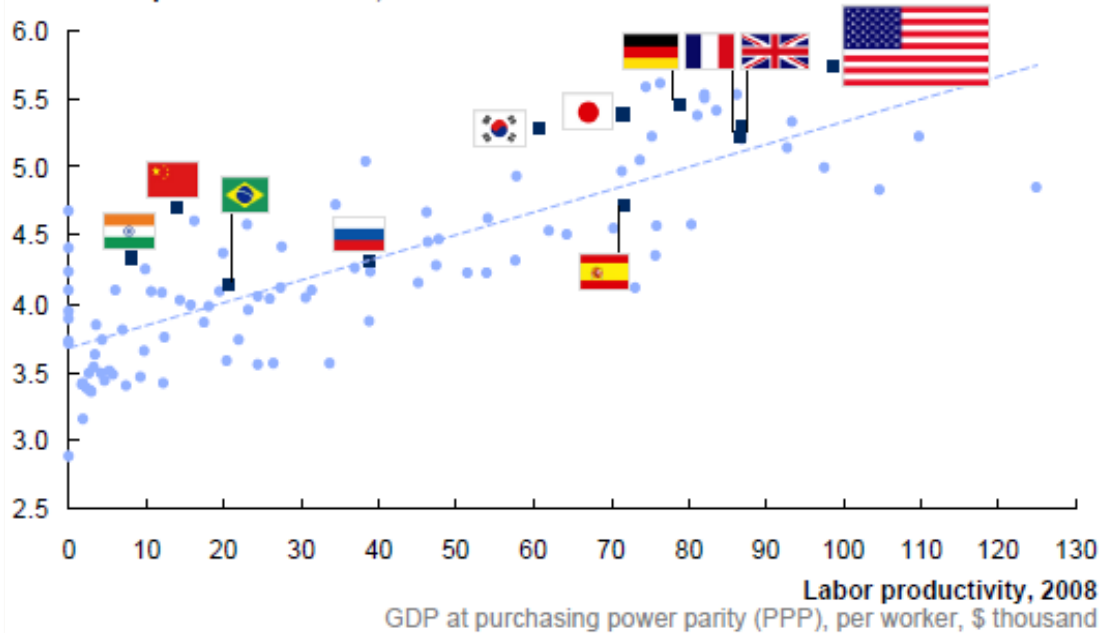


■ U.S. Leads World in Productivity

At the national level, productivity correlates closely with competitiveness

Correlation between productivity and competitiveness for a sample of countries

Global competitiveness score, 2008–09



The production and innovative use of IT has been responsible for at least 50% of the acceleration in U.S. total factor productivity between 1995 and 2008.

Source: McKinsey Global Institute, *Retooling the U.S. Economy for Growth*

■ But All is Not Well With the U.S. Innovation Economy

- Innovation Environment
- Lagging R&D Investment
 - VC Investment and IPOs Off Pace
 - Pace of Start-up Creation Falling Off
 - U.S. Firms Increasingly Investing Overseas

- Economic Environment
- Trade Deficit Enormous
 - Manufacturing Decimated
 - Unemployment High

- Innovation Policy Environment
- Poor Tax Environment
 - Education and Infrastructure Faltering
 - Poor Immigration Policies

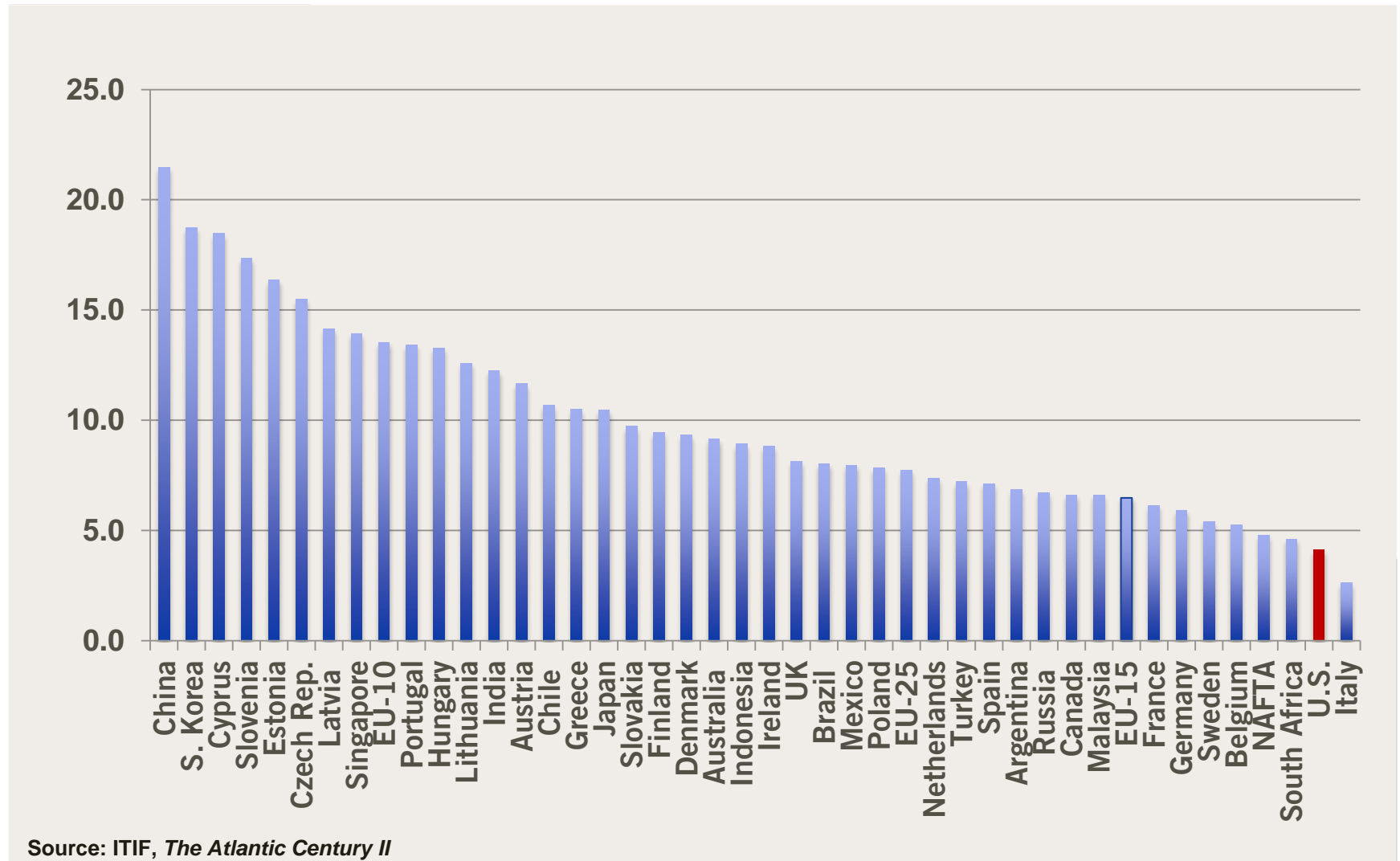
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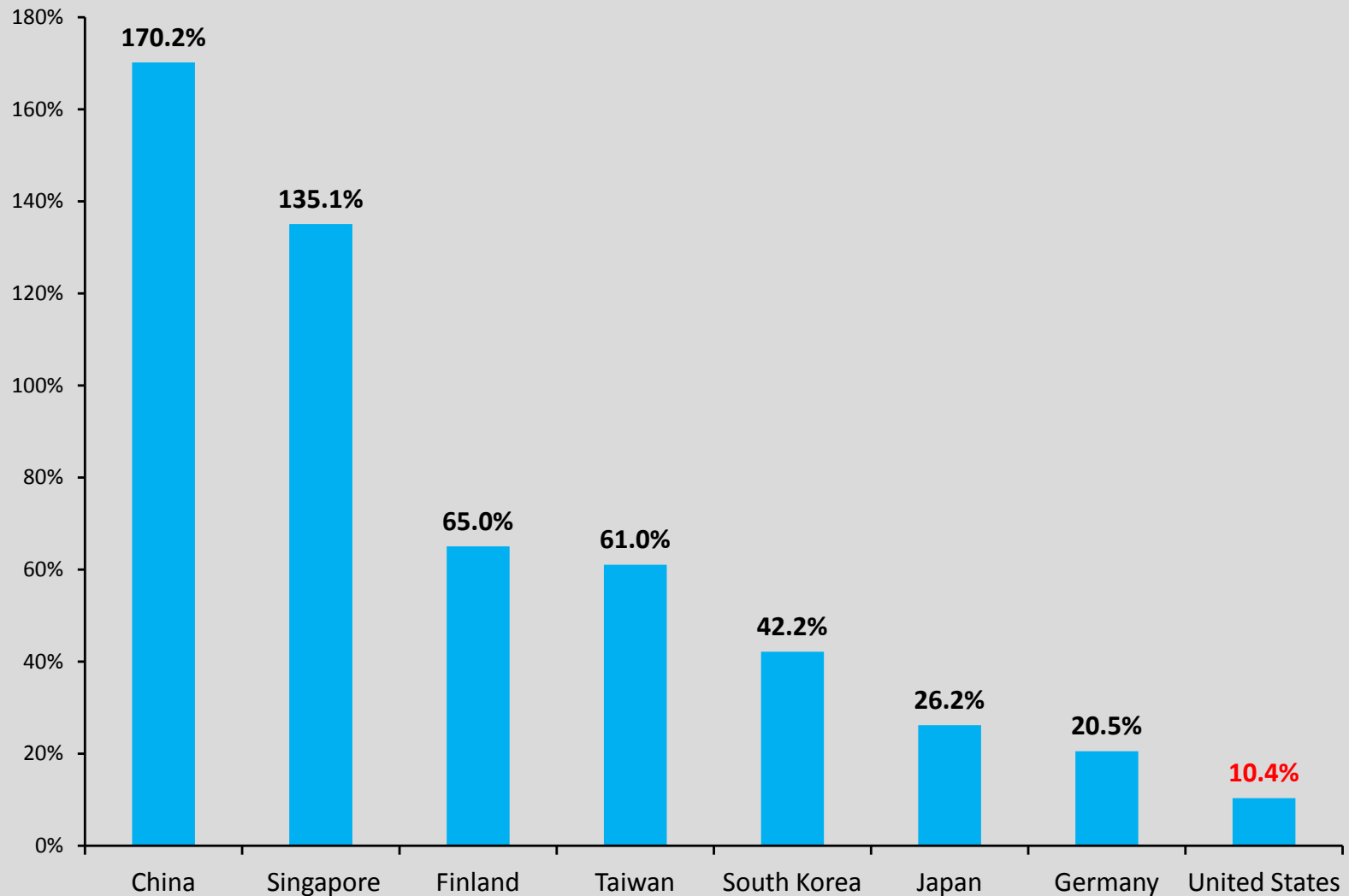
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■ U.S. Second to Last at Improving Innovation Capacity



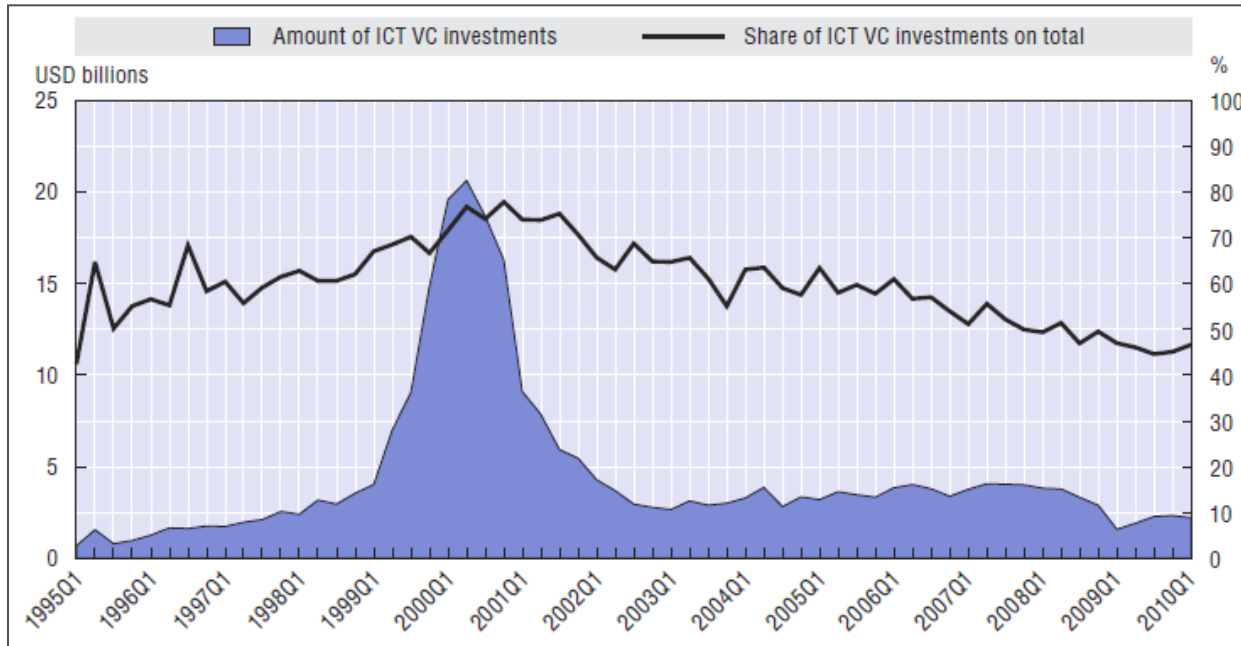
Source: ITIF, *The Atlantic Century II*

■ Change in National R&D Intensity, 1995-2008

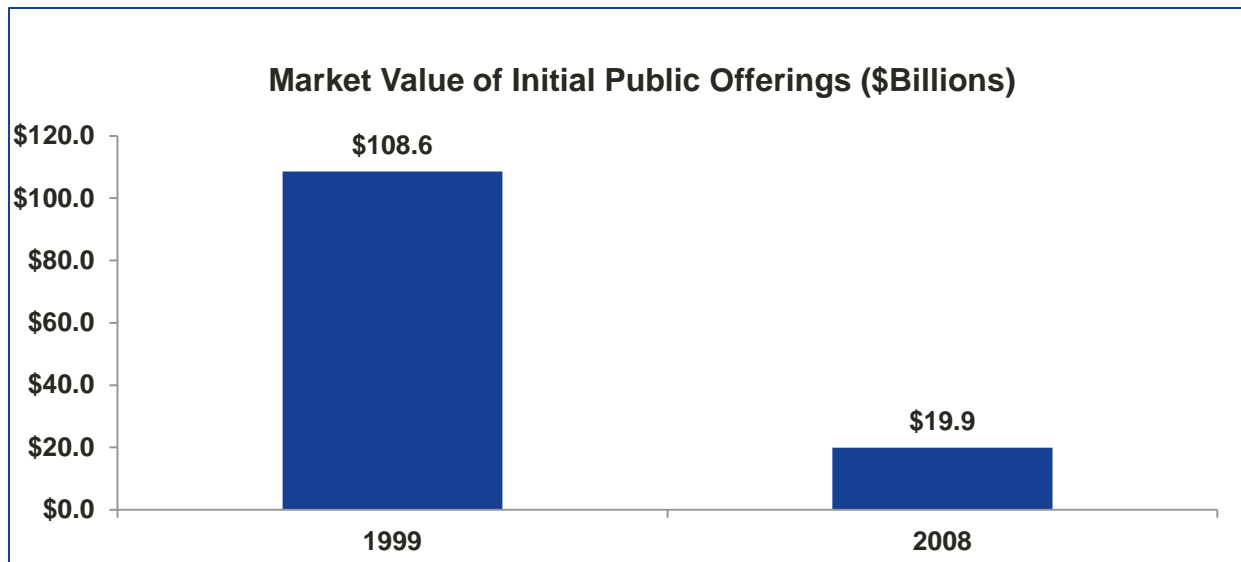


Source: Gregory Tasse, "Beyond the Business Cycle: The Need for a Technology-Based Growth Strategy," forthcoming. Data from OECD, *Main Science and Technology Indicators*, 2010/1.

80% Declines in VC Investments and IPOs, 1999-2009



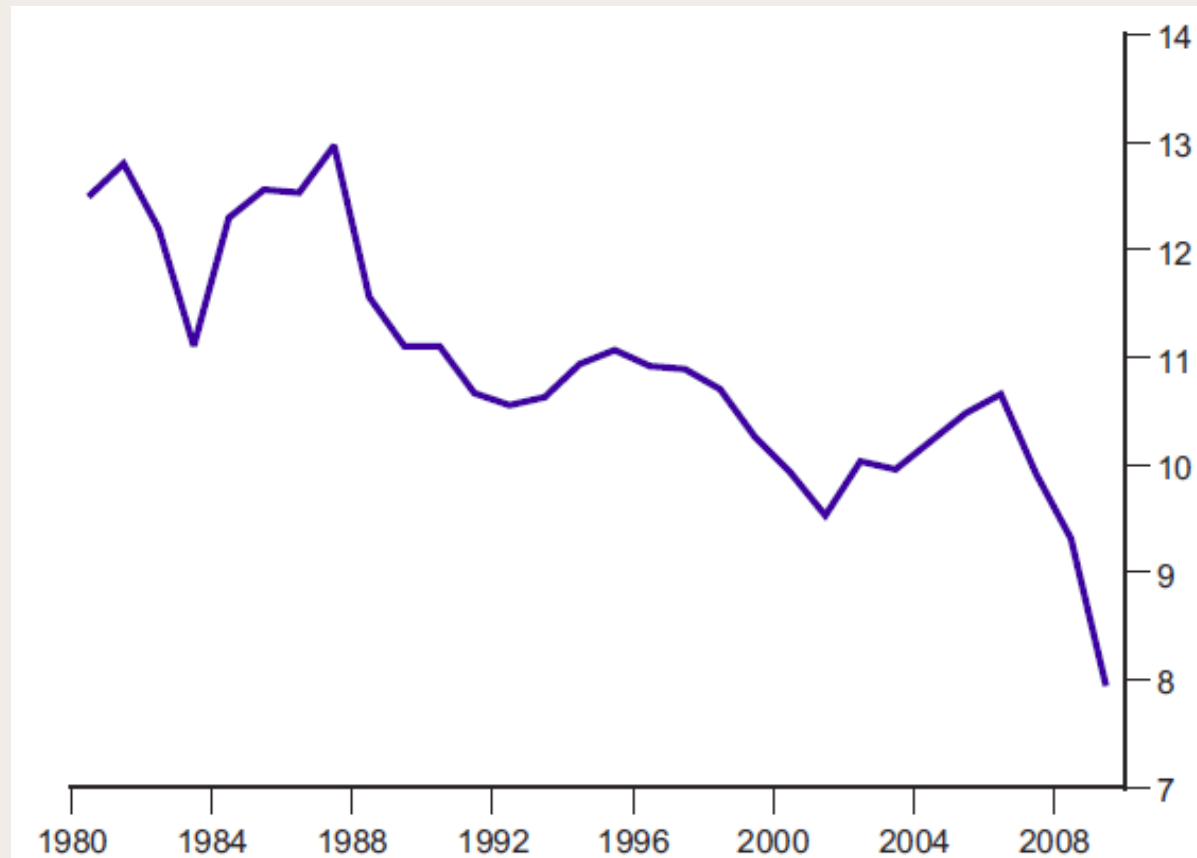
From 2000-2008, U.S. VC investment fell by 78%.



From 1999-2009, U.S. IPOs fell by 82%.

■ Pace of U.S. Entrepreneurship Slowing

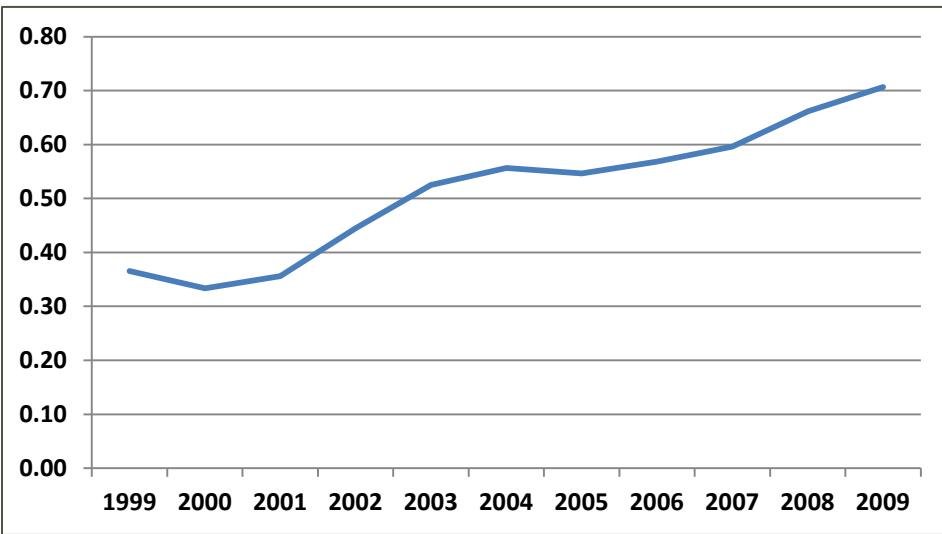
U.S. Private Business Startup Rate, 1980-2009



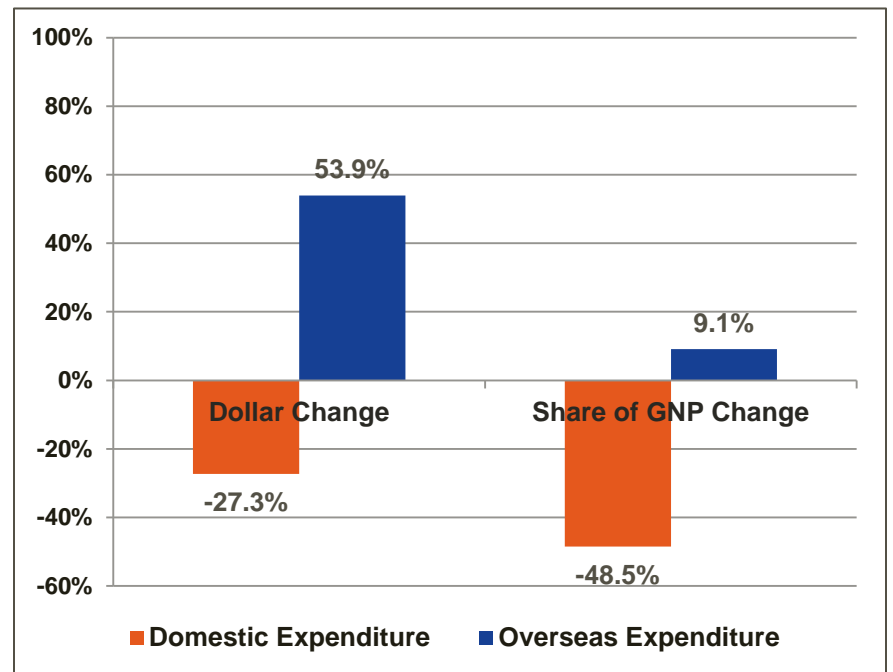
Source: U.S. Census Bureau, Center for Economic Studies, Business Dynamics Statistics.

■ U.S. MNCs Increasingly Investing Overseas

Ratio of U.S. MNCs' Foreign to Domestic Capital Expenditure



Percentage Change in U.S. Multinational Corporation Capital Expenditure, 2000-2009



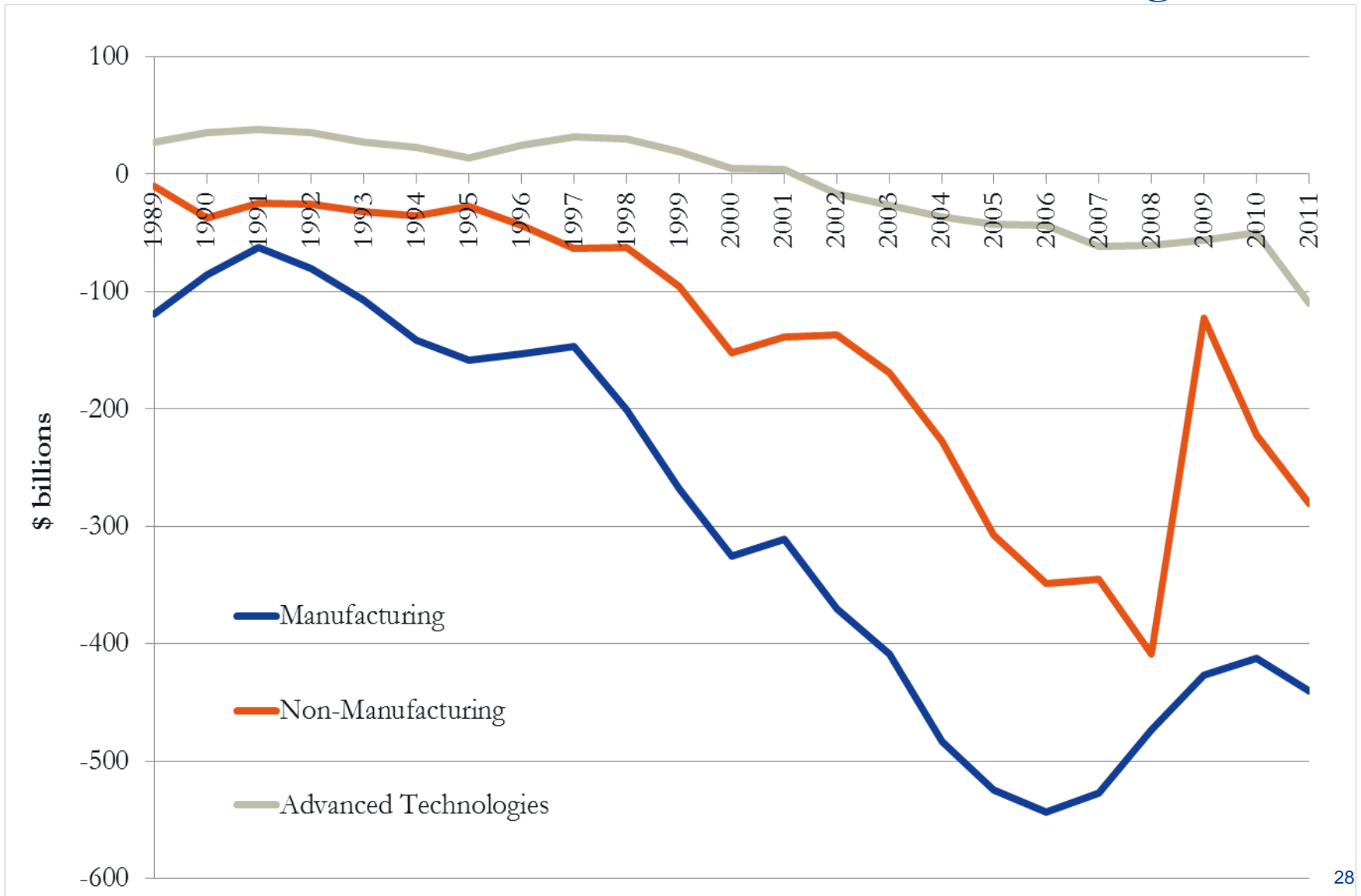
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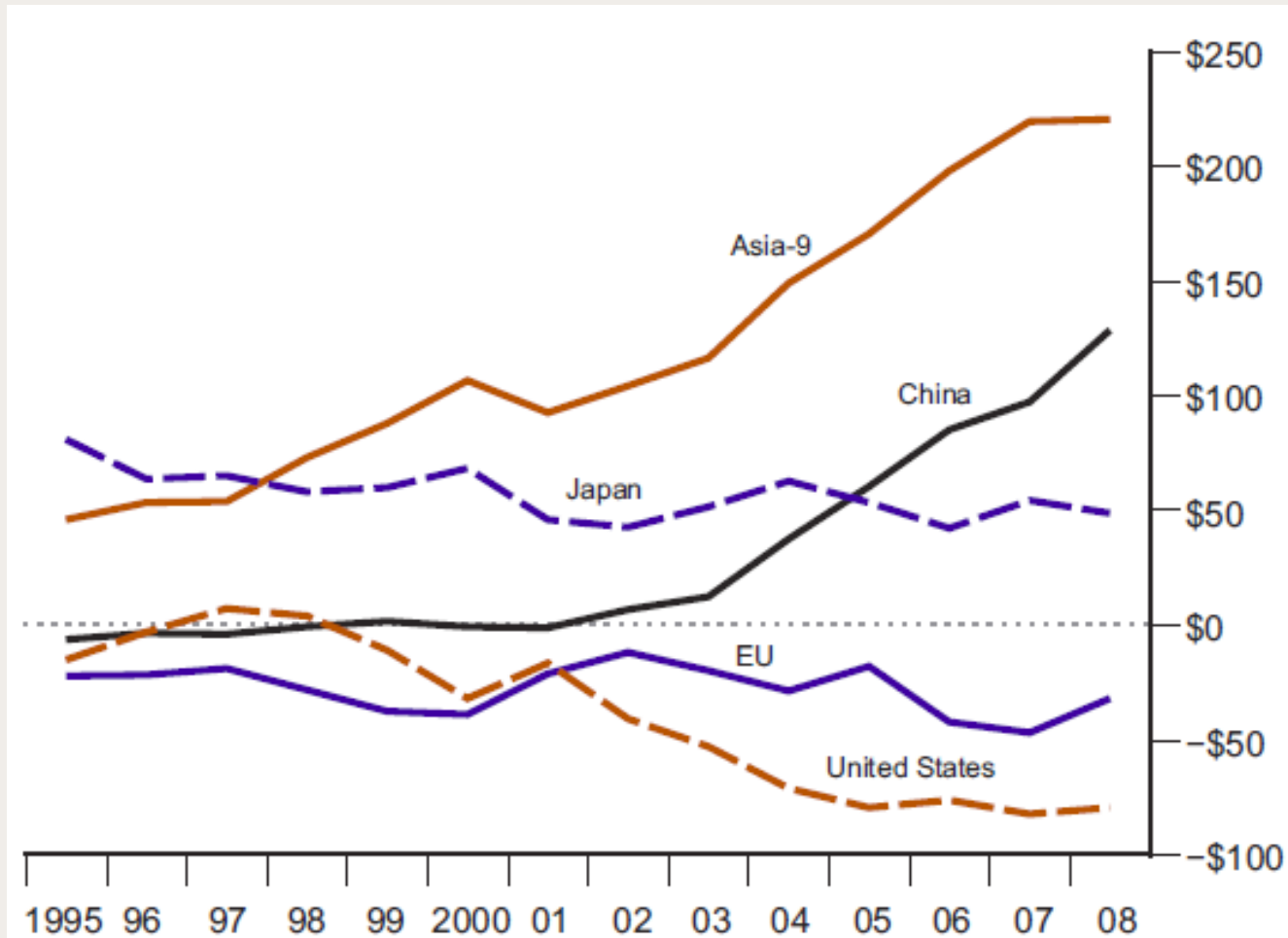
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■ U.S. Trade Deficits Have Reached Astounding Levels

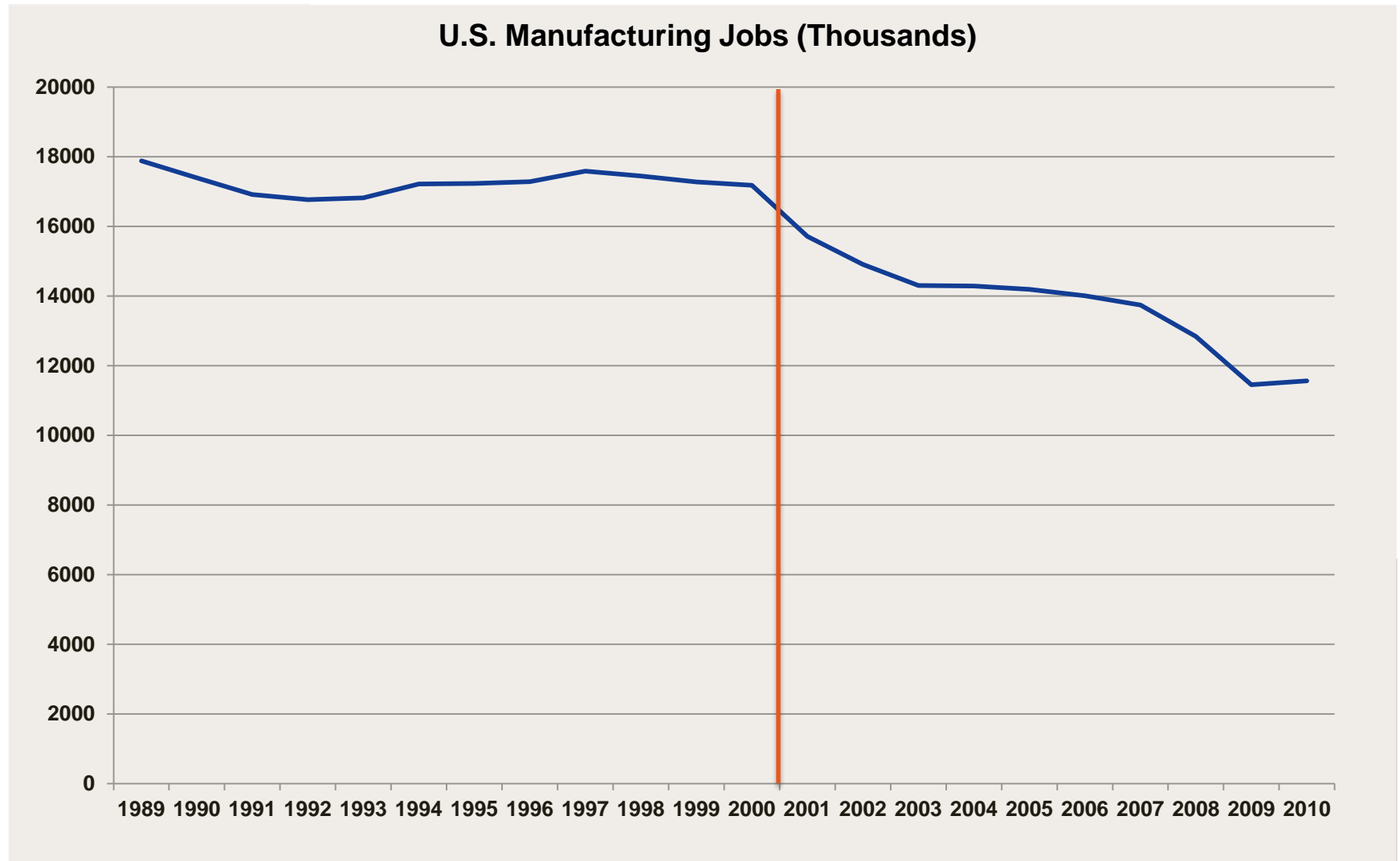


■ U.S. Even Runs Trade Deficit in High-Tech Goods

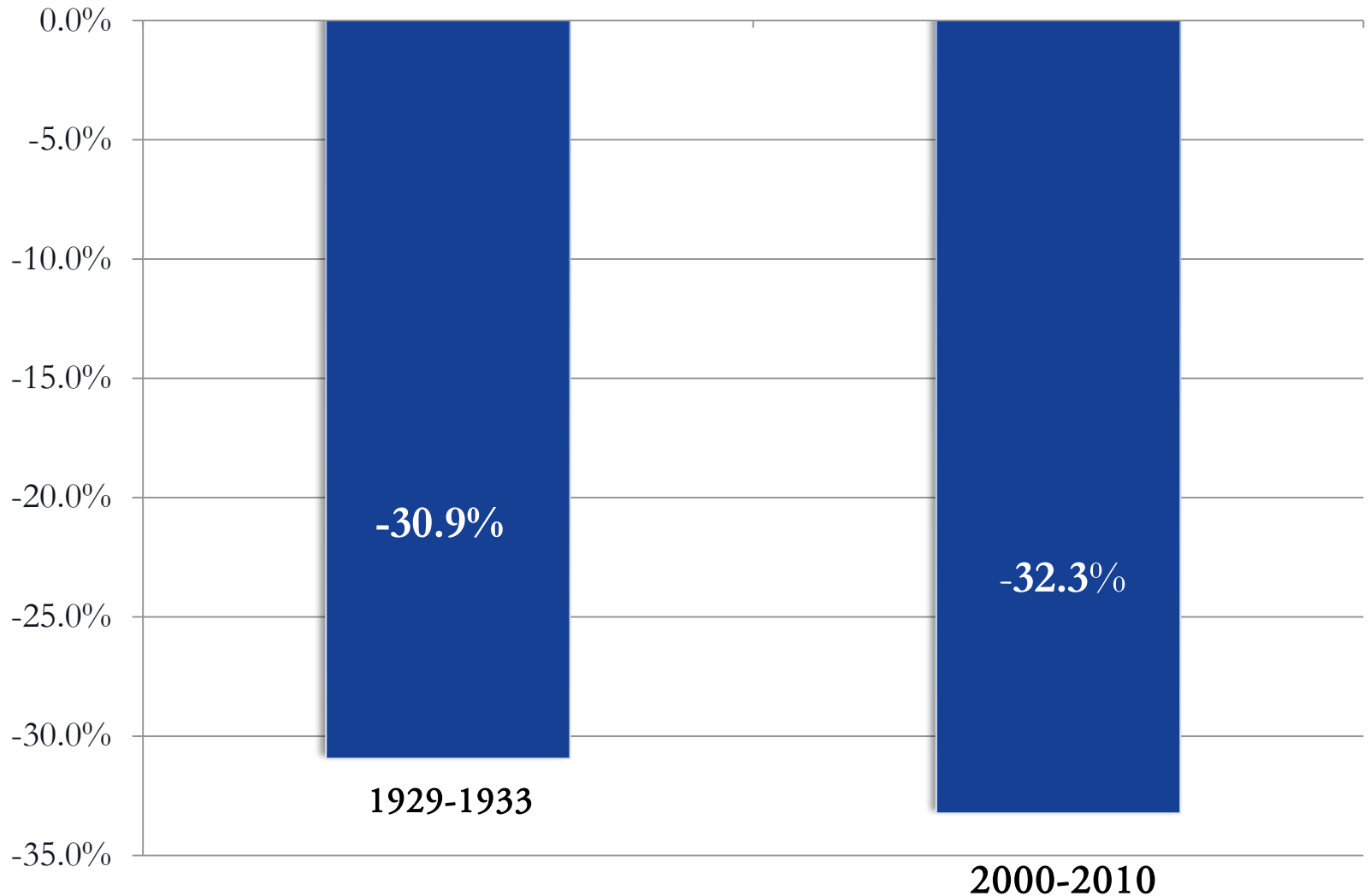
Trade Balance of High-Tech Goods, 1995-2008



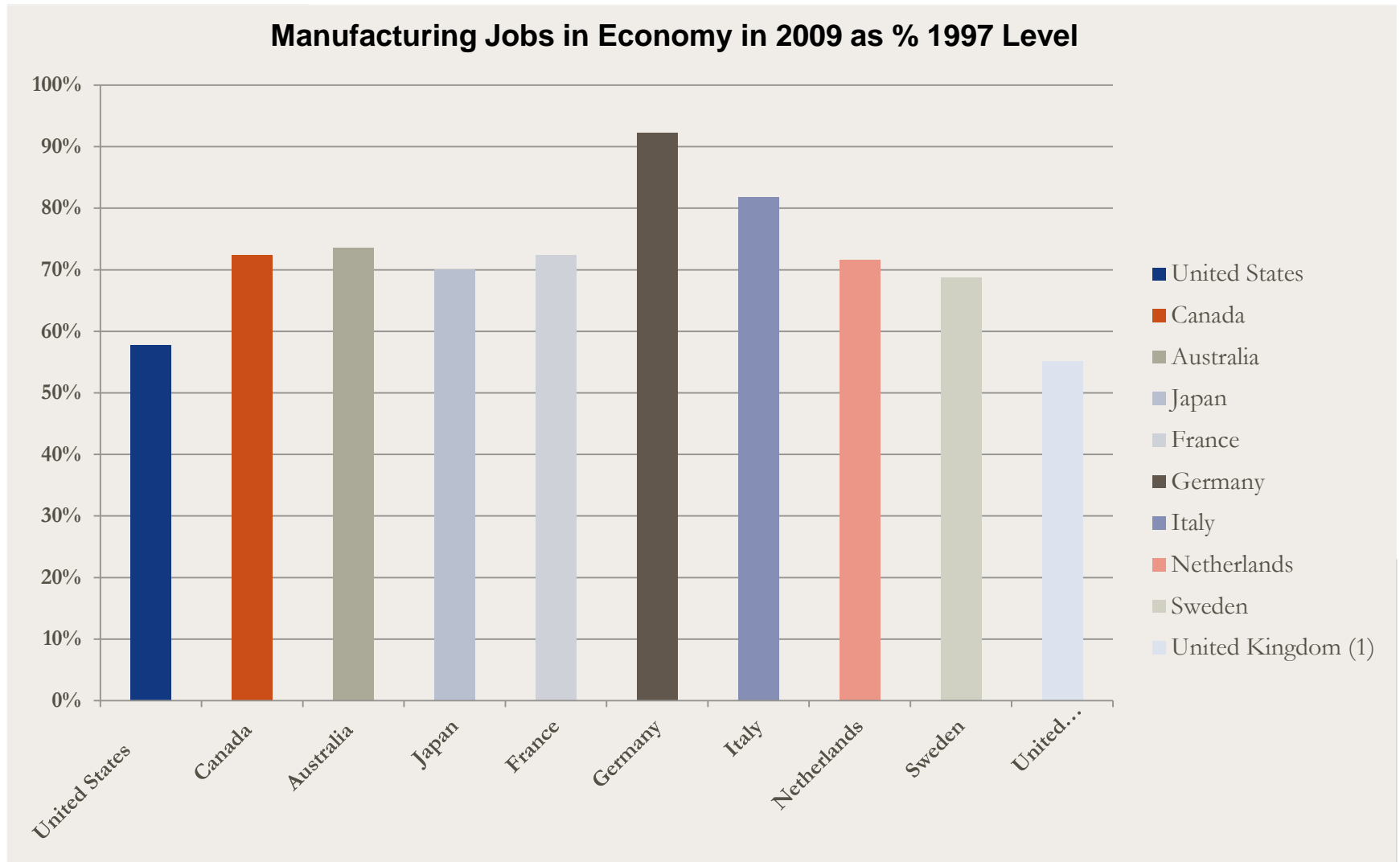
■ U.S. Manufacturing Jobs Fell Precipitously in the Last Decade



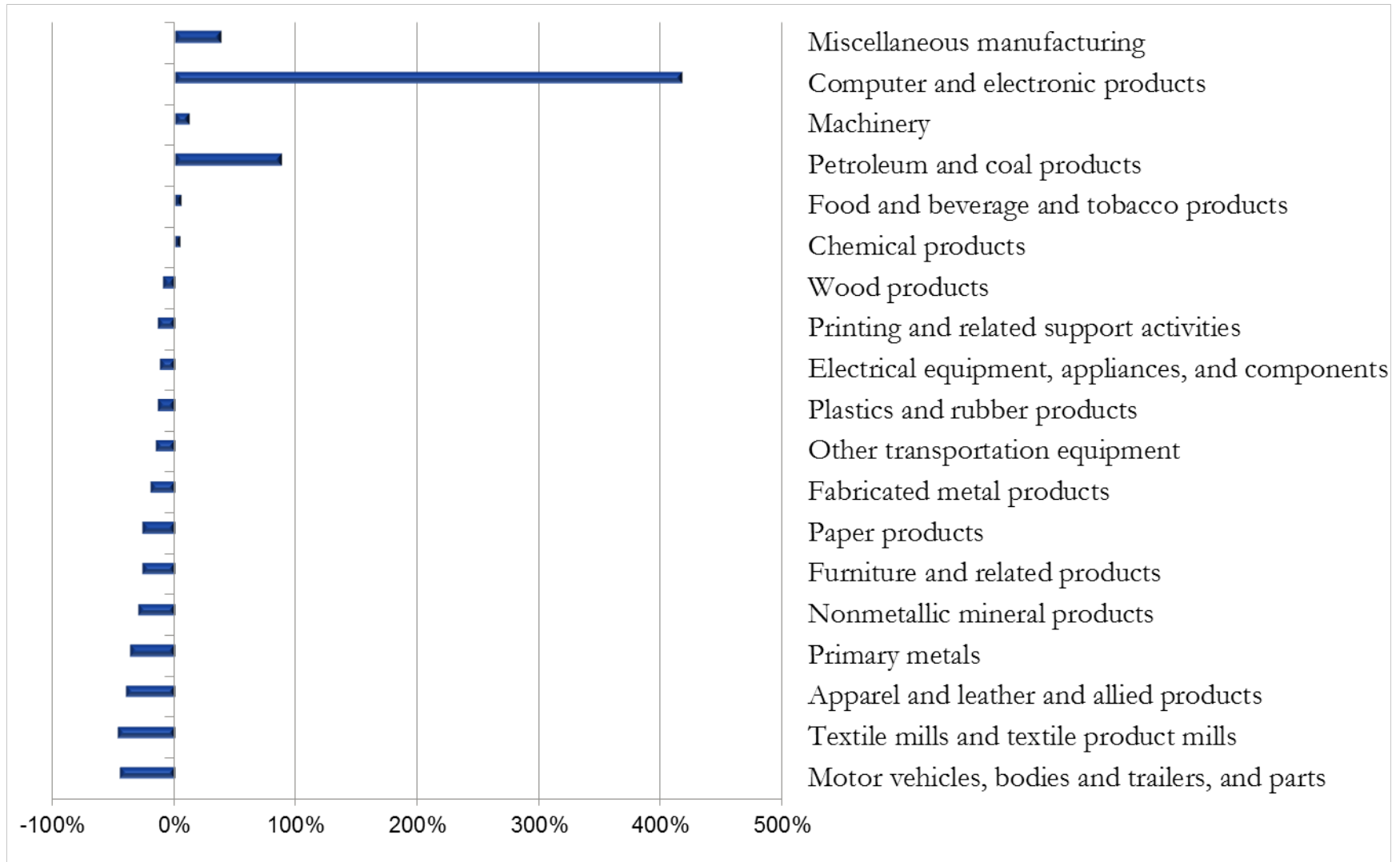
■ Worse Manufacturing Job Loss than the Great Depression



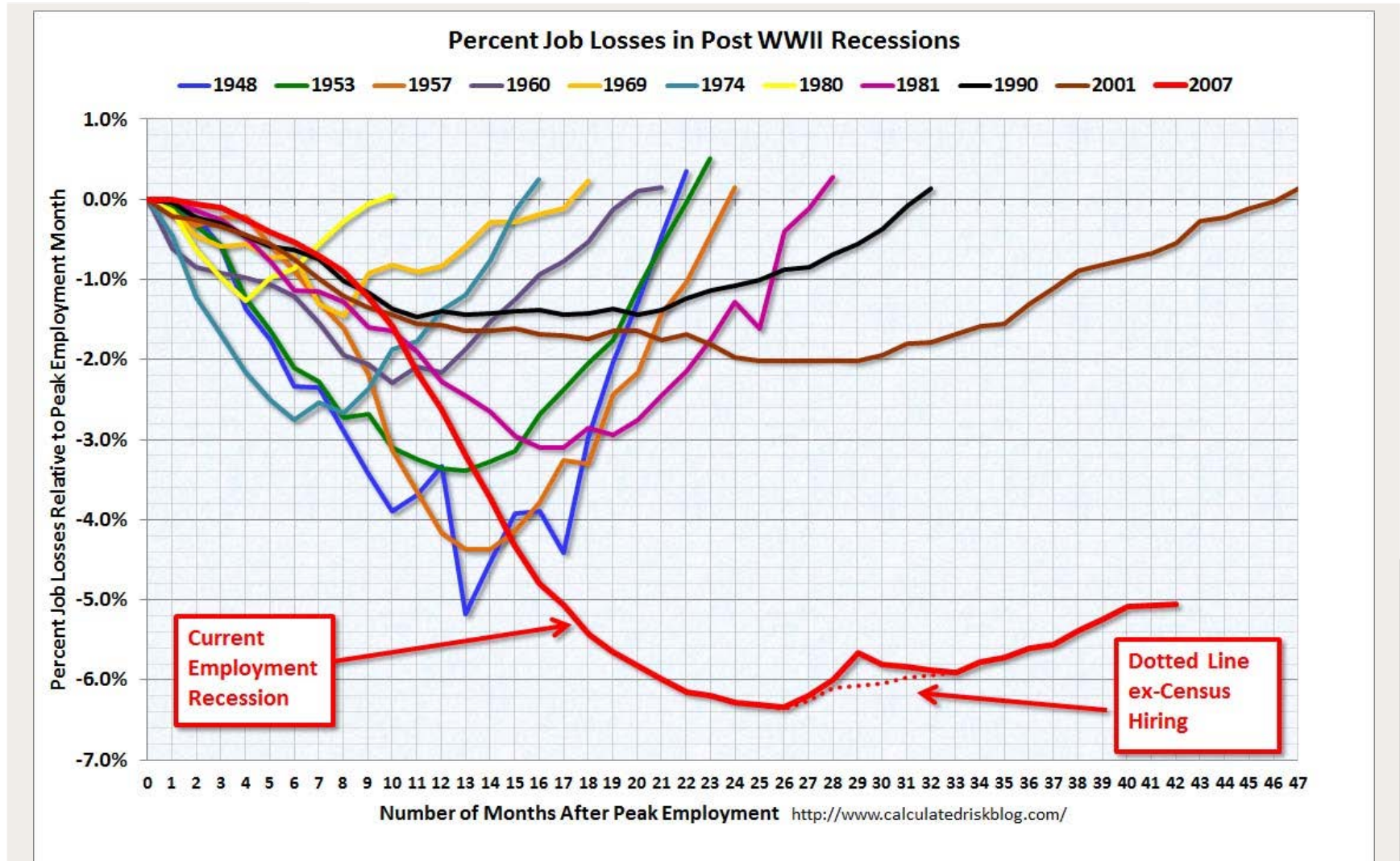
■ U.S. Manufacturing Job Growth Was the Worst of A Sample of OECD Nations



■ 13 of 19 U.S. Manufacturing Industries Produced Less in 2010 than 2000



■ Persistent Unemployment; Slow Recovery



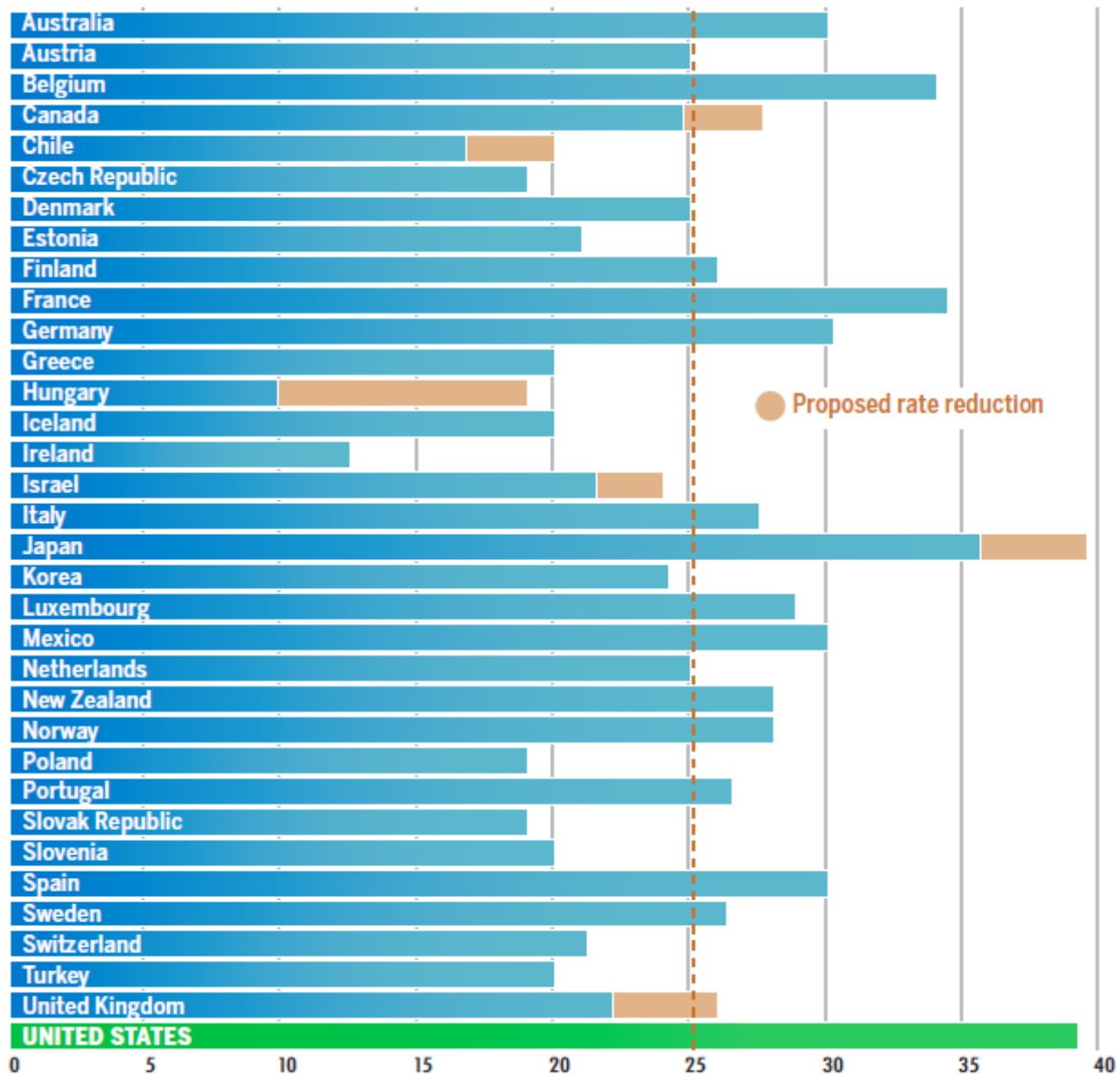
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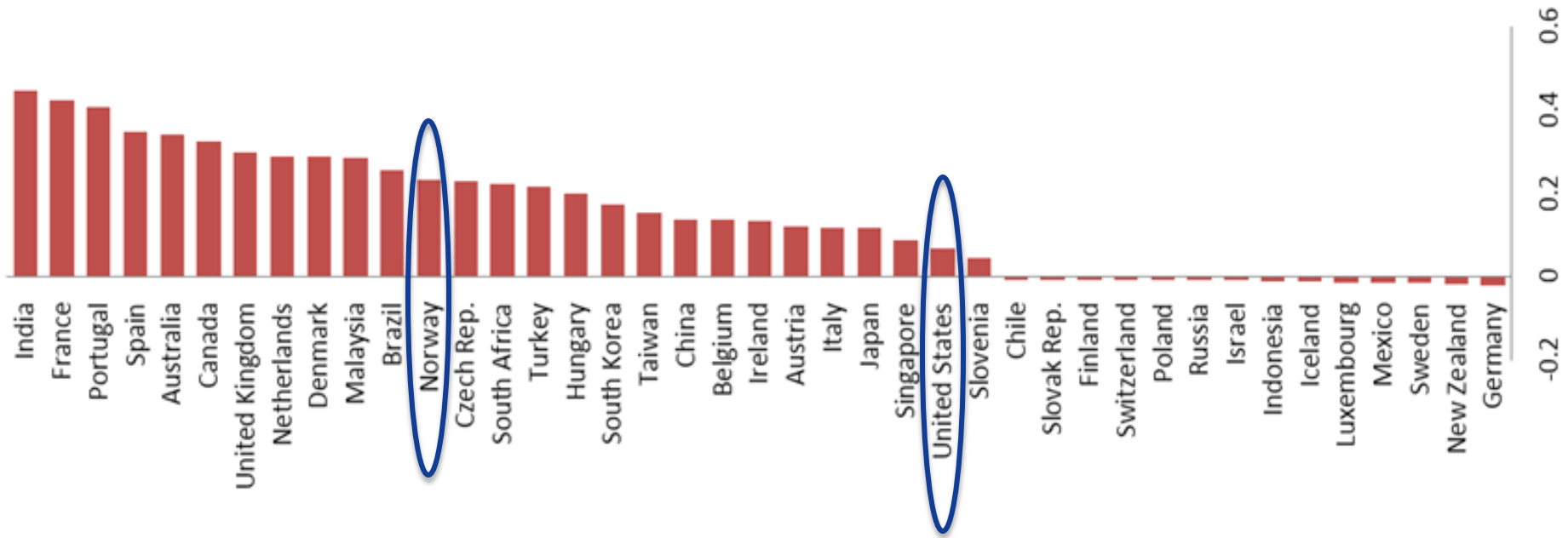
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■ U.S. Will Have OECD's Highest Corporate Tax Rate

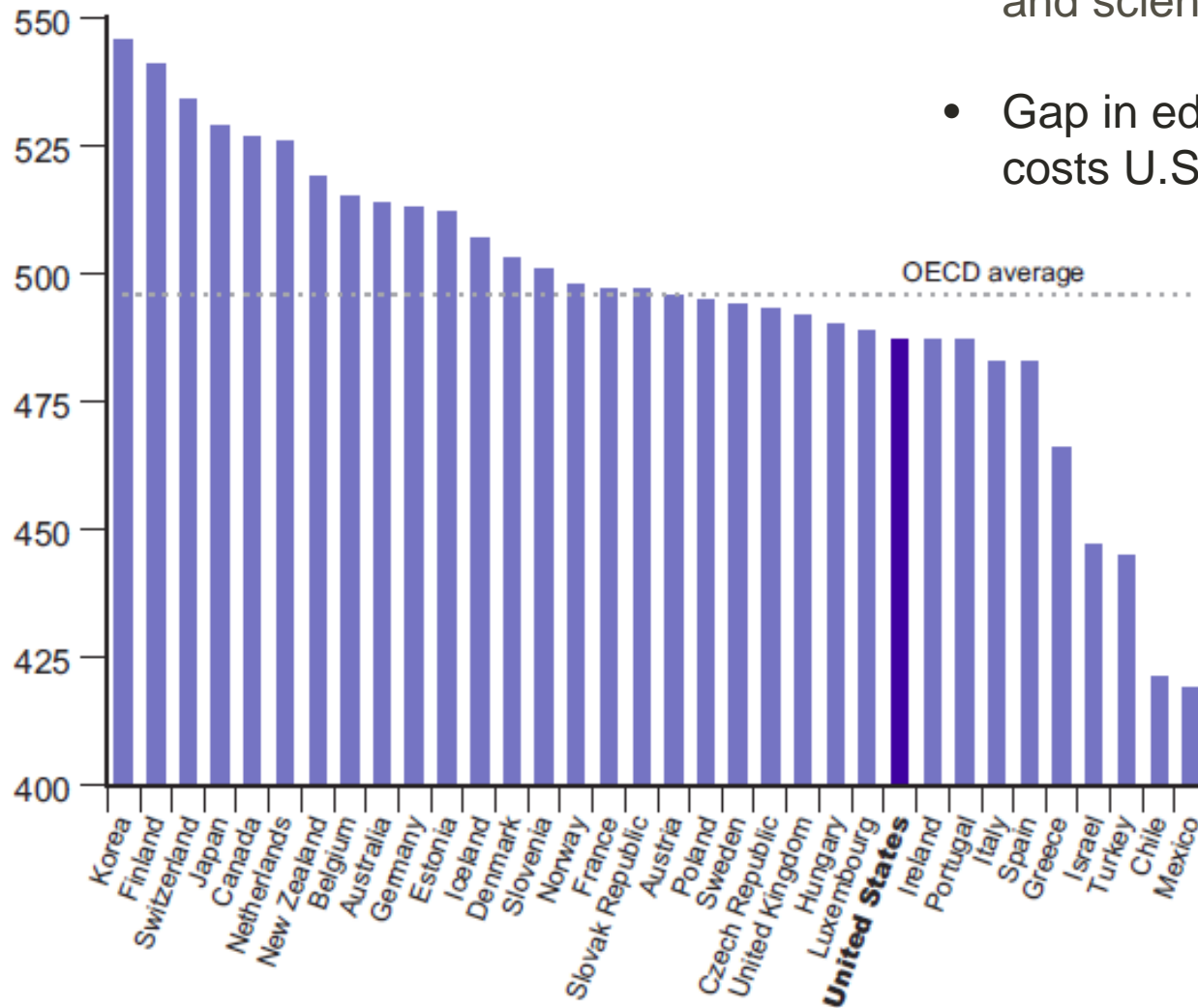


■ U.S. Is 26th in R&D Tax Credit Generosity



■ U.S. Education System Faltering

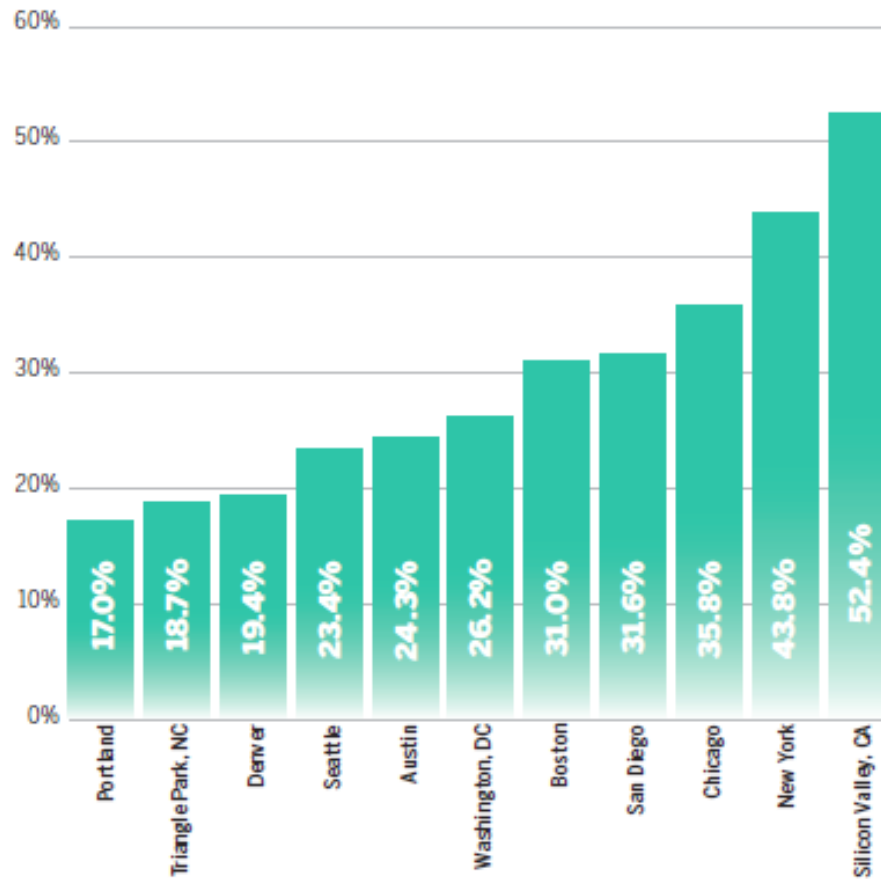
8th Grade PISA Math Scores



- U.S. 48th in quality of mathematics and science education.
- Gap in education achievement costs U.S. \$2.3 trillion annually.

■ U.S. Not as Welcoming to High-Skill Immigrants

**IMMIGRANT-FOUNDED START-UPS AS
A PERCENT OF TOTAL START-UPS IN TECH CENTERS**



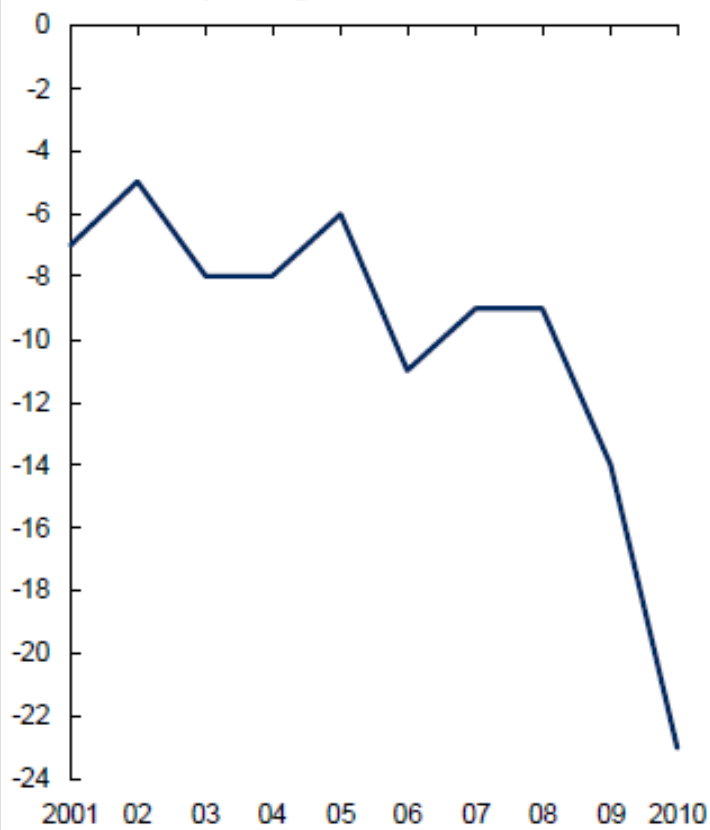
Source: Wadhwa, V. (2008). *Foreign-Born Entrepreneurs: An Underestimated American Resource*. Ewing Marion Kauffman Foundation.

■ U.S. Infrastructure Crumbling

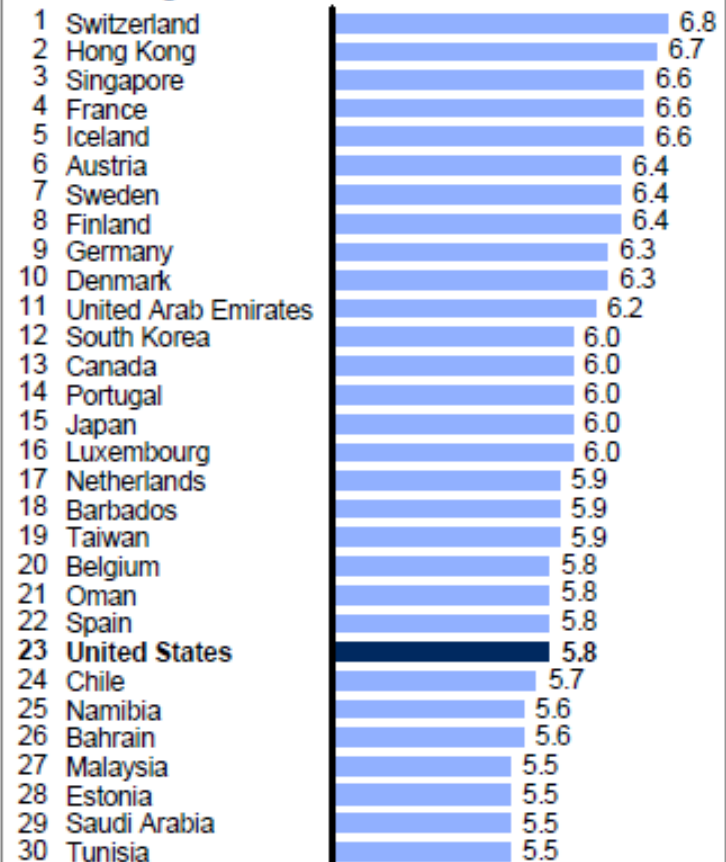
Quality of overall infrastructure

Evolution of rank for United States

Distance from top ranking



2010 ranking



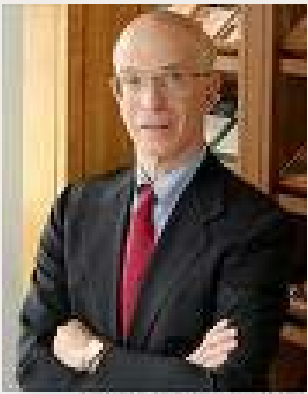
SOURCE: World Economic Forum, *Global competitiveness report 2010–2011*

■ Overcoming the Advice of Neoclassical Economists



Paul Krugman: “The notion that countries compete is a myth. Nations are not to any significant degree in economic competition with one another.”

“It doesn’t make any sense to view our current woes as stemming from a lack of competitiveness.” NYT, Jan 24, 2011



Alan Blinder: “Nothing—repeat, nothing—that economists know about growth gives us a recipe for adding a percentage point or more to the nation’s growth on a sustained basis.”

■ The Message:

- Companies have moved from being price makers to price takers in global markets.
 - U.S. loses 2 out of 3 competitions.
- The U.S. has become a less attractive investment environment for globally mobile capital.
- The U.S. is riding too much on its strength in just a few key sectors.

■ Weaknesses of U.S. Innovation System

1. We lack a political consensus that technology and innovation drive economic growth.
2. Any kind of strategy is demeaned as industrial policy.
3. We have become a risk averse society that views innovation and progress with fear and loathing.
4. Believe we'll always be #1 without having to do anything about it.
5. We don't do a good job commercializing and producing our technological innovations.

■ Strengths of U.S. Innovation System

1. Strong embrace of innovation/use of IT by our private sector.
2. Best university system in the world.
3. Can place a lot of bets across a range of emerging technology areas.
4. Fair amount of residual bench strength. (E.g. National Labs/DARPA).
5. Entrepreneurs and innovators still want to come here.

So: Is Churchill still right?



Tusen Takk!

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