The State of U.S. Advanced Tech Industry Competitiveness and What to do

Dr. Robert D. Atkinson
President, ITIF

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@RobAtkinsonITIF

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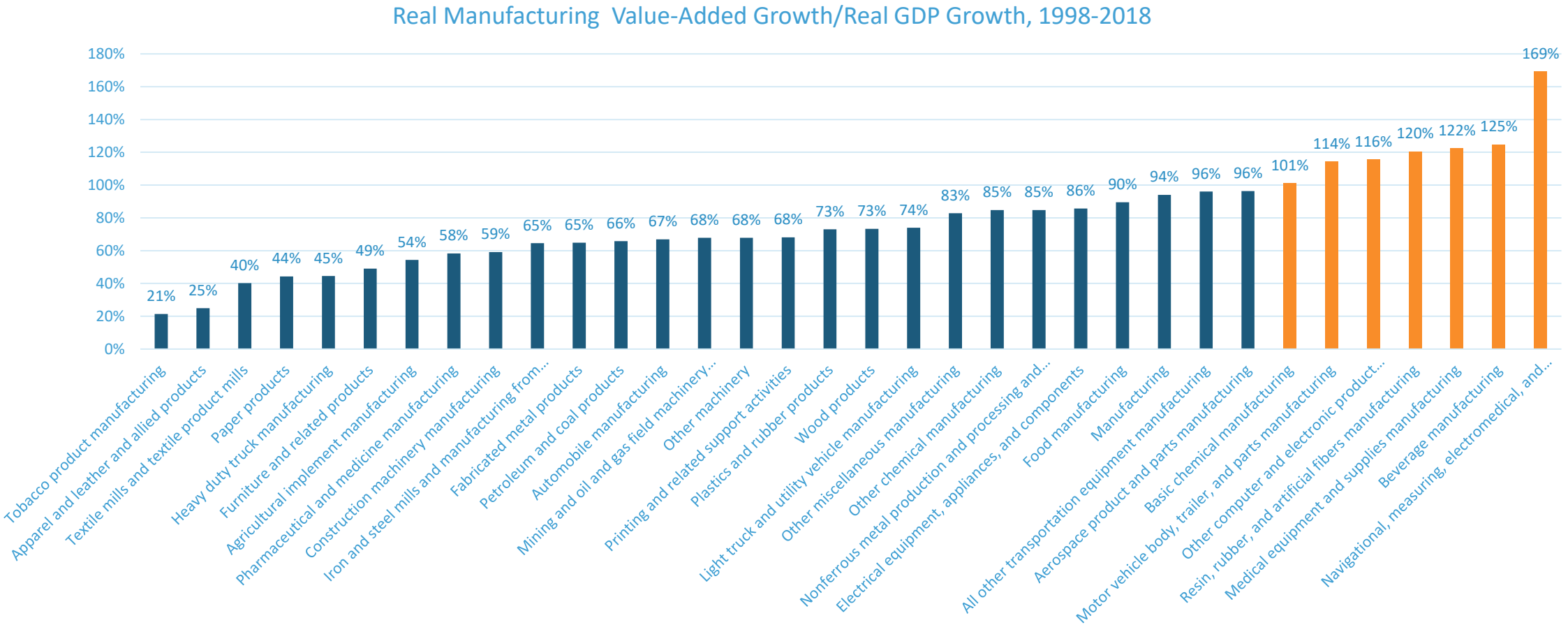
About ITIF

- The world's top ranked science and technology think tank
- Formulates and promotes policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress
- Focuses on a host of issues at the intersection of technology innovation and public policy:
  - Innovation processes, policies, and metrics
  - Science policy related to economic growth
  - Digital technology issues (e.g., e-commerce, e-government, e-health)
  - IT and economic productivity

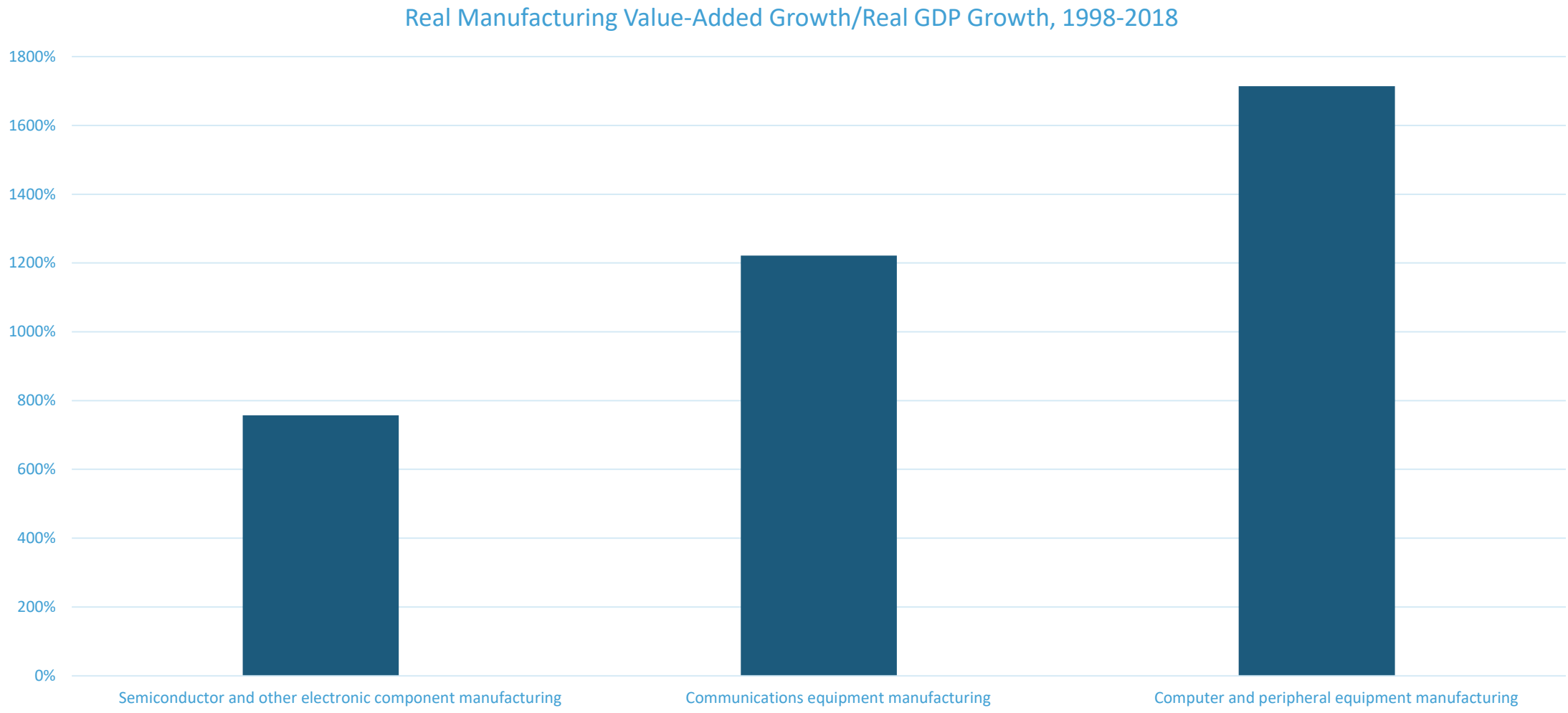
U.S. Manufacturing Productivity Growth Stagnating

Source: Bureau of Labor Statistics, Major Sector Productivity, Costs, and Employment

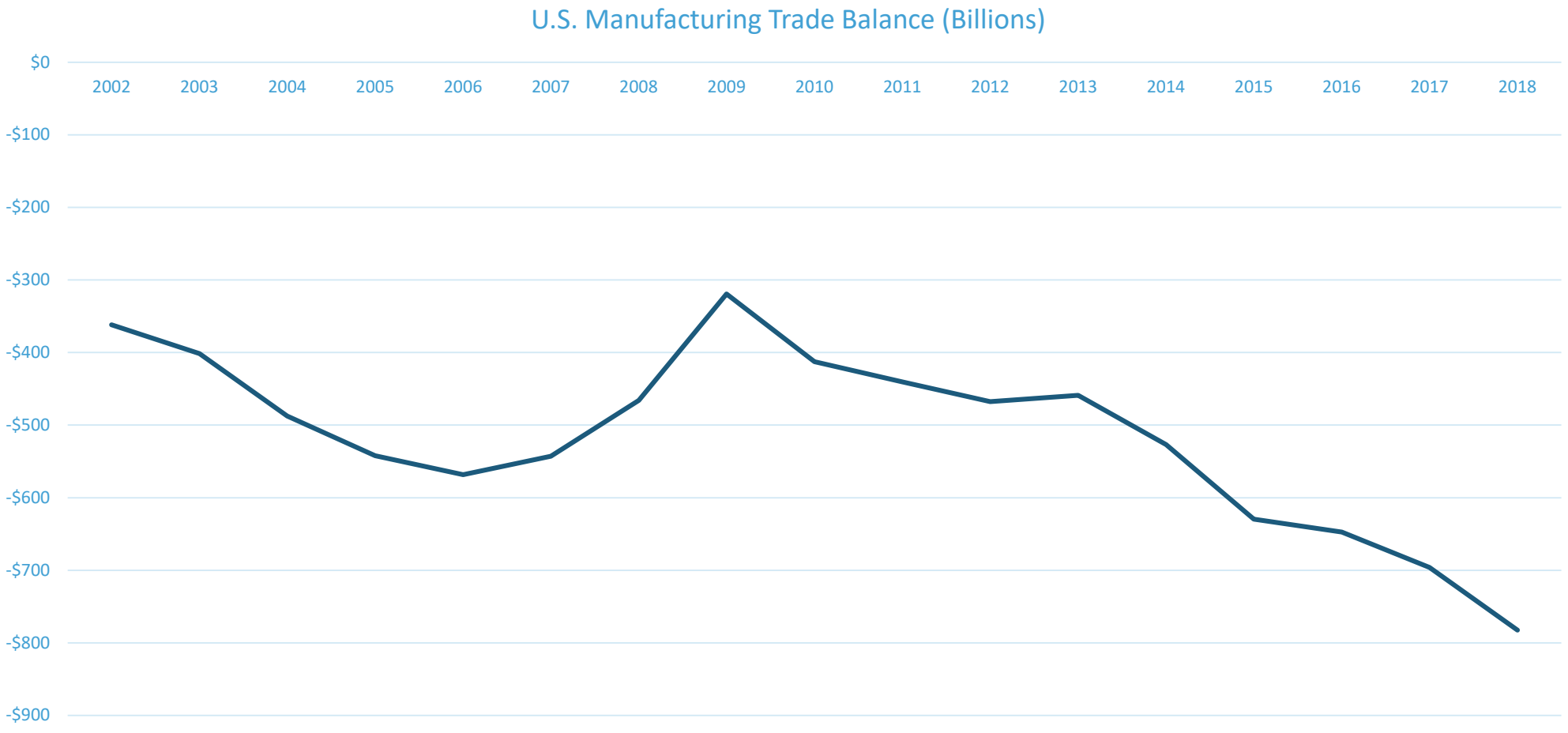
Many Manufacturing Sectors Growing More Slowly Than GDP



Manufacturing Output Growth Distorted by Computer Sector



U.S. Manufacturing Trade Balance Worsening

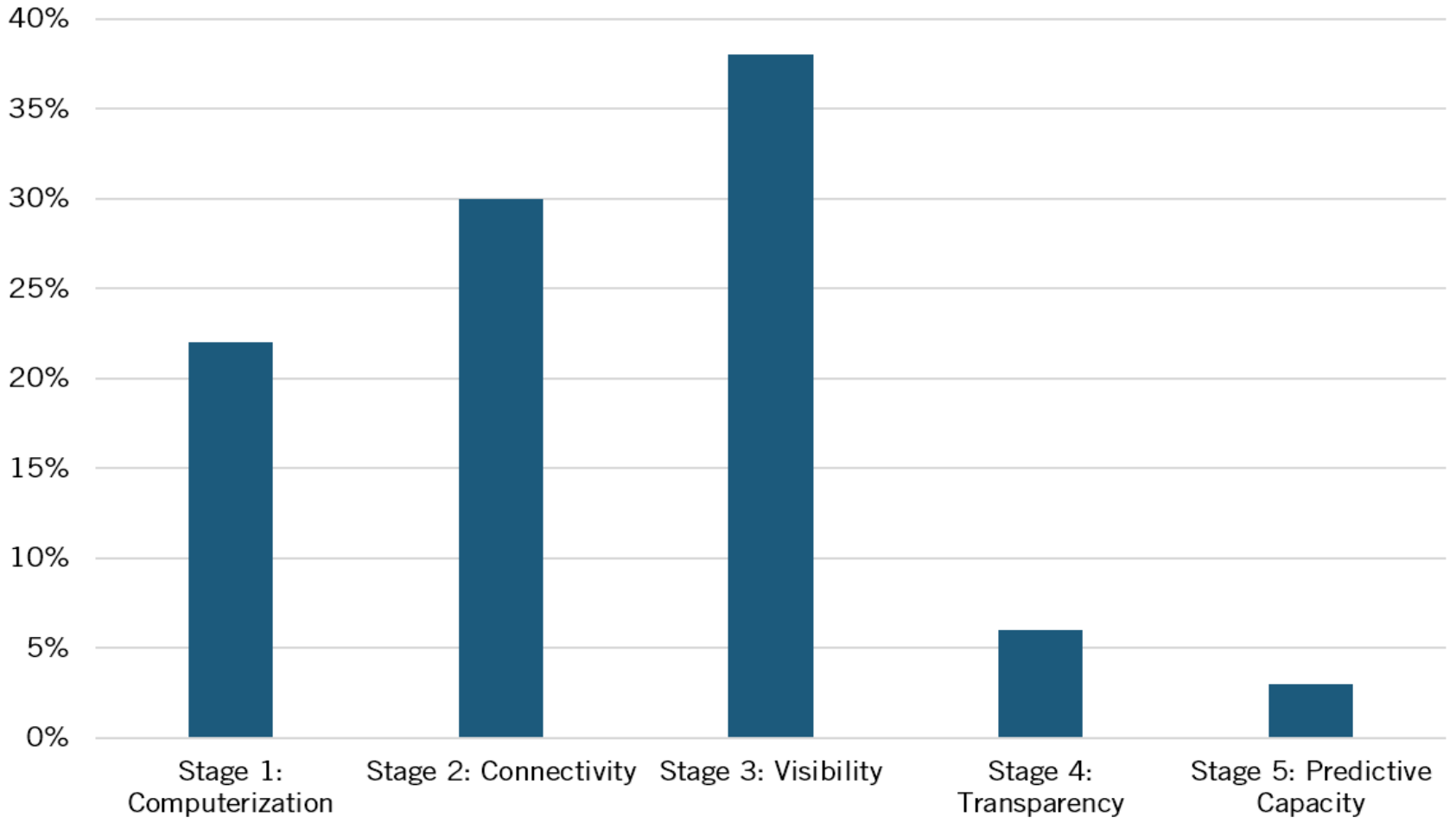


Source: U.S. Census Bureau, Exports & Imports by NAICS Commodities

Top 5 Things Countries' "Industry 4.0" Policies Are Doing

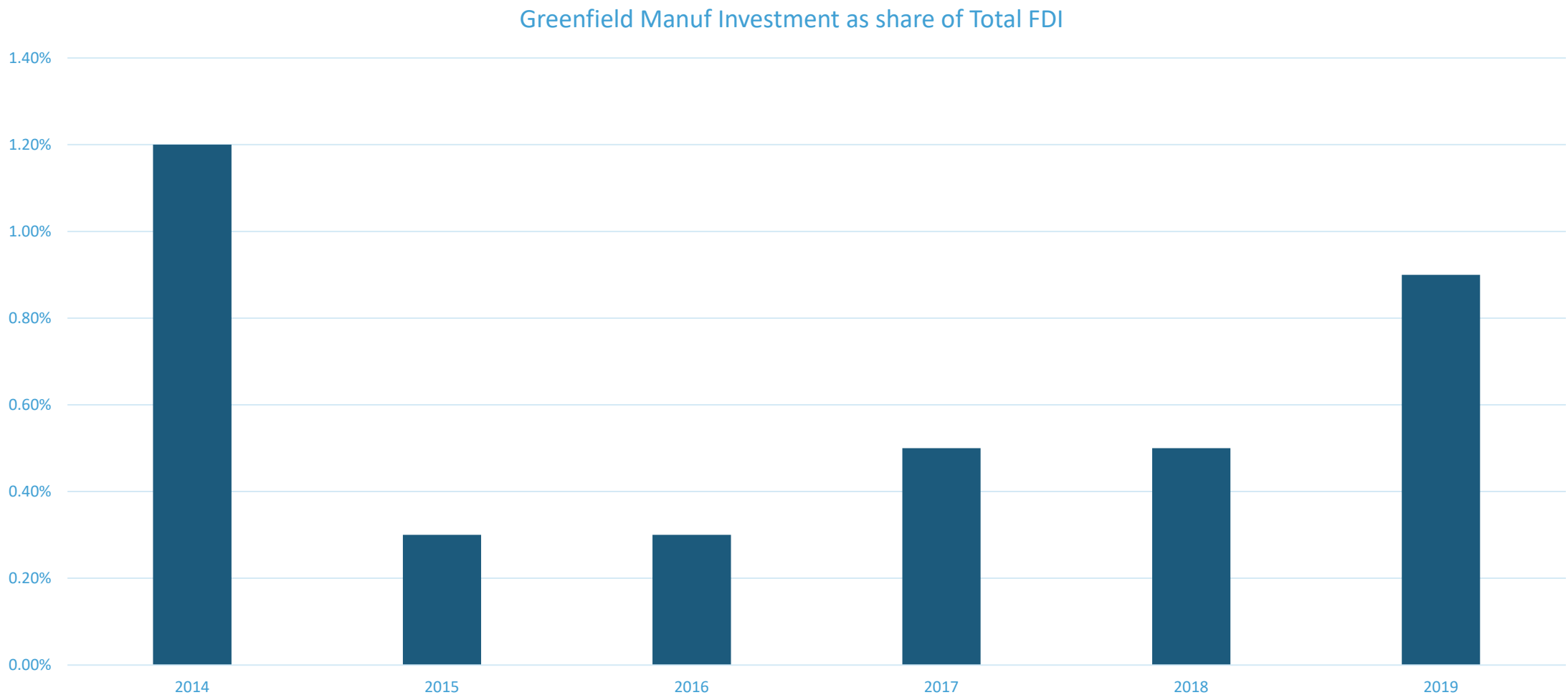
1. Recognizing that effective public/private partnerships are critical if countries, or U.S. states, are to take advantage of the digital manufacturing revolution.
2. Developing "Digital Manufacturing Maturity Indices" and providing "Self-Benchmarking Assessment Tools" for SMEs.
3. Inventorying and describing discrete, specific manufacturing digitalization use cases and processes. (e.g., Germany has documented over 300 specific use cases/sample instantiations of SME manufacturing digitalization).
4. Launching "pilot fabs" that demonstrate smart manufacturing techniques on active production lines. (Iowa/Austria/Germany/Japan/Korea)
5. Providing financial support ($ and tax credits) for manufacturing digitalization and helping industry address manufacturing workforce challenges.

Most Manufacturers in Early Stages of the Manufacturing Digitalization Journey

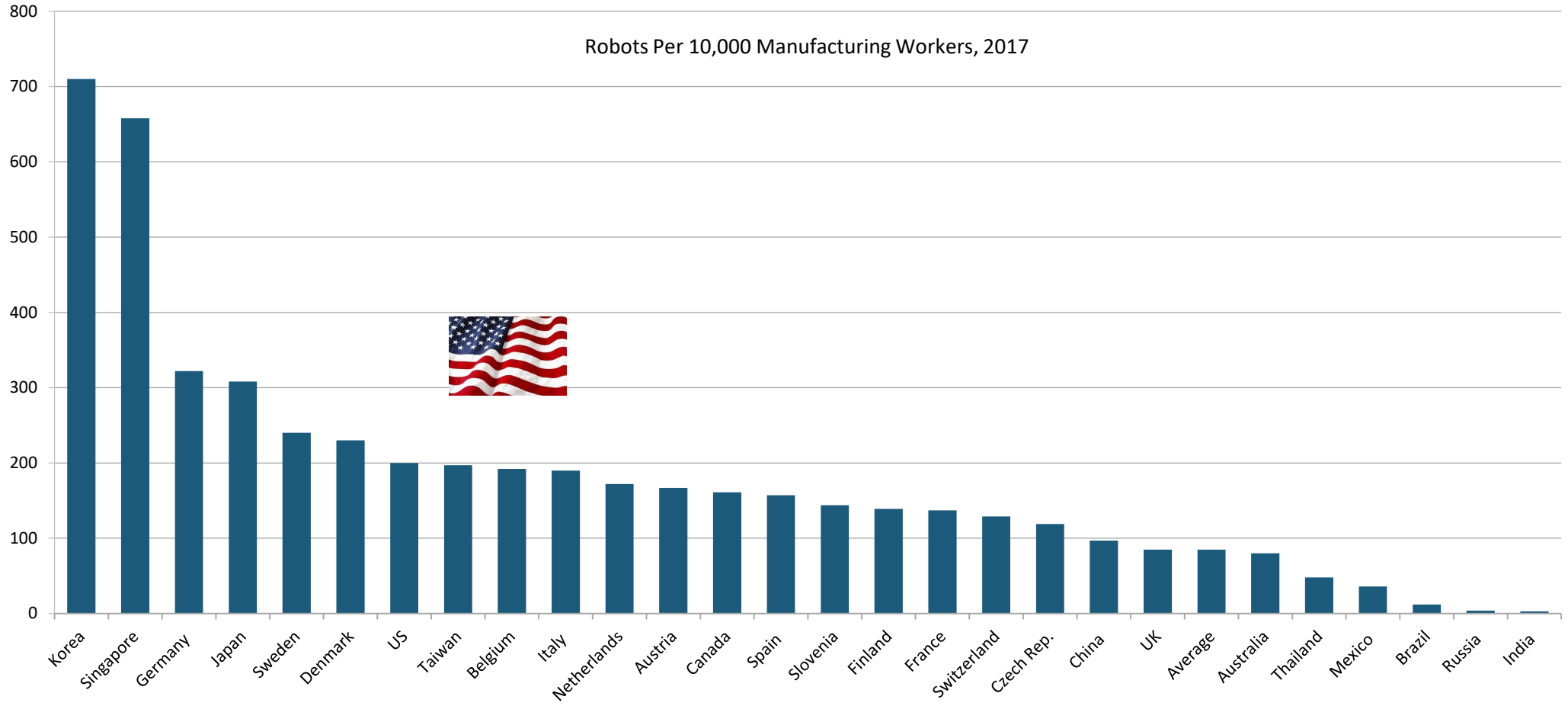


Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

U.S. Receives Little Greenfield Manufacturing FDI

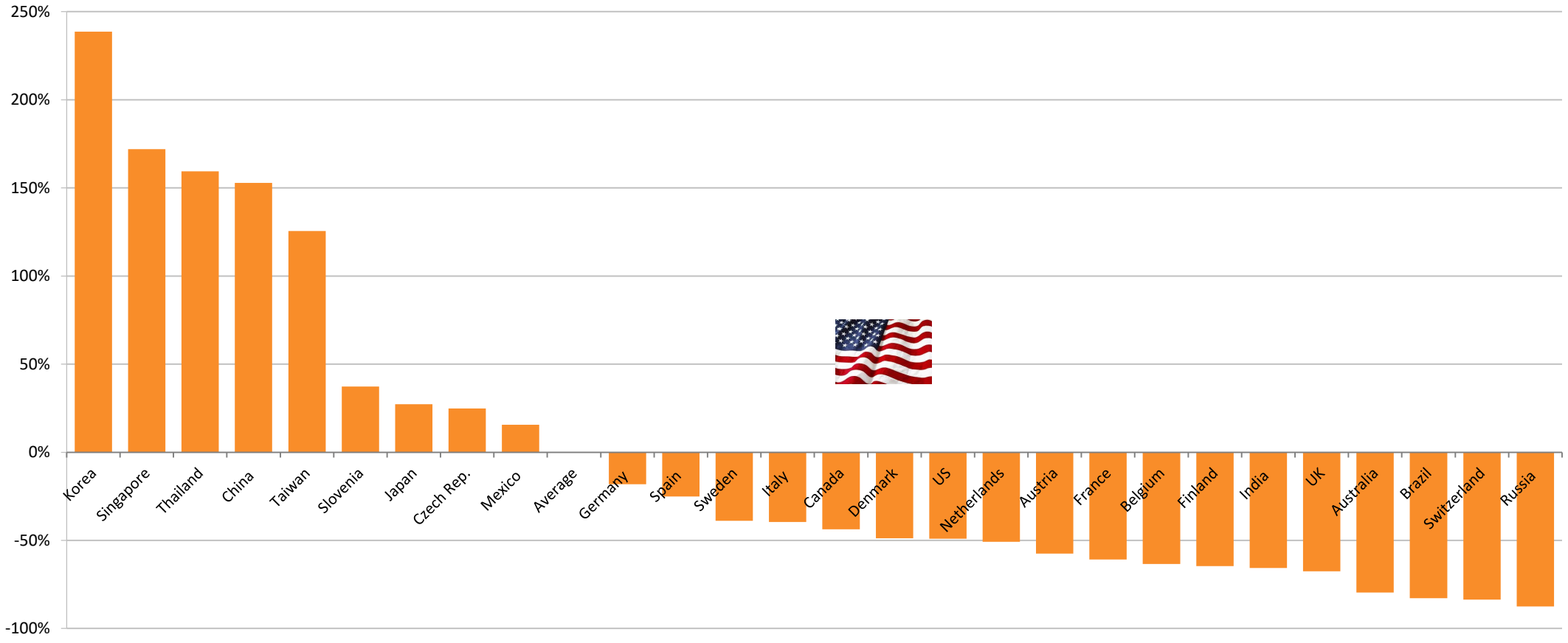


U.S. Lags on Robot Adoption



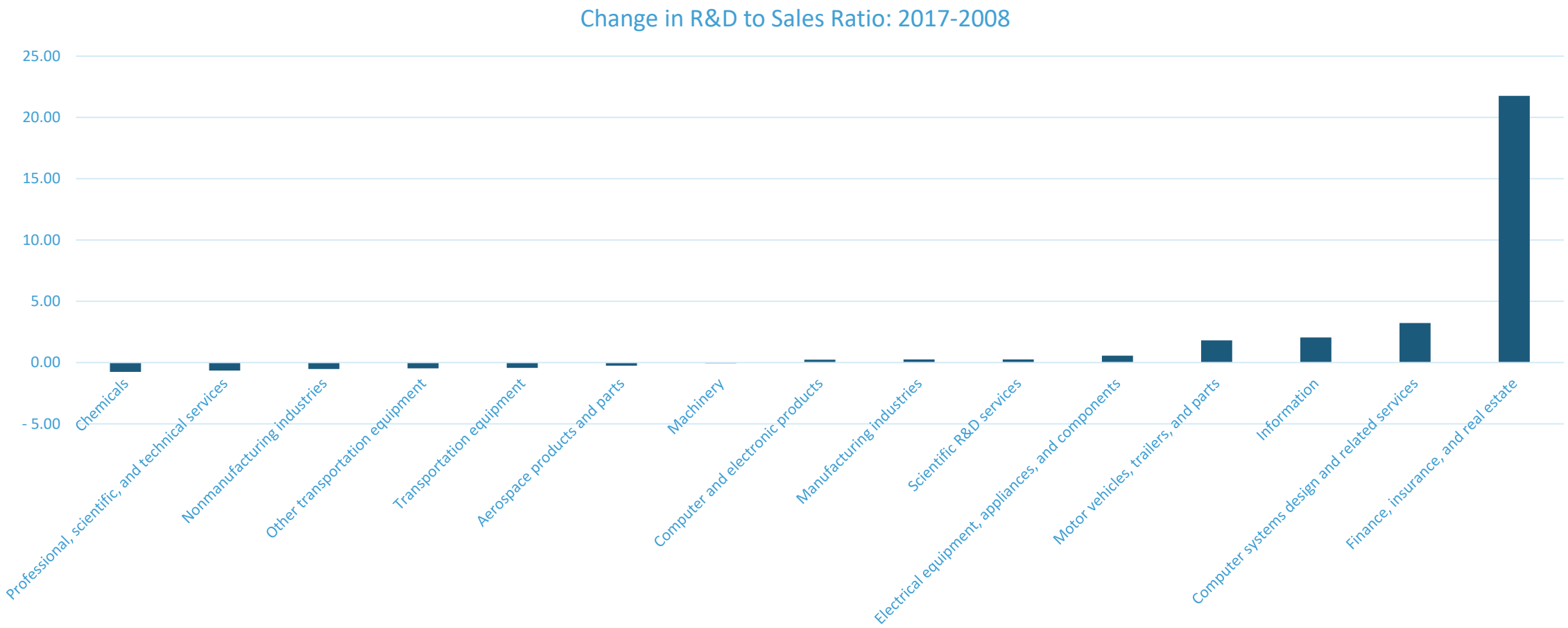
Source: International Federation of Robotics, "Robot Density Rises Globally," news release, February 7, 2018, https://ifr.org/ifr-press-releases/news/robot-density-rises-globally.

Especially Compared to Expected Robot Adoption Rate

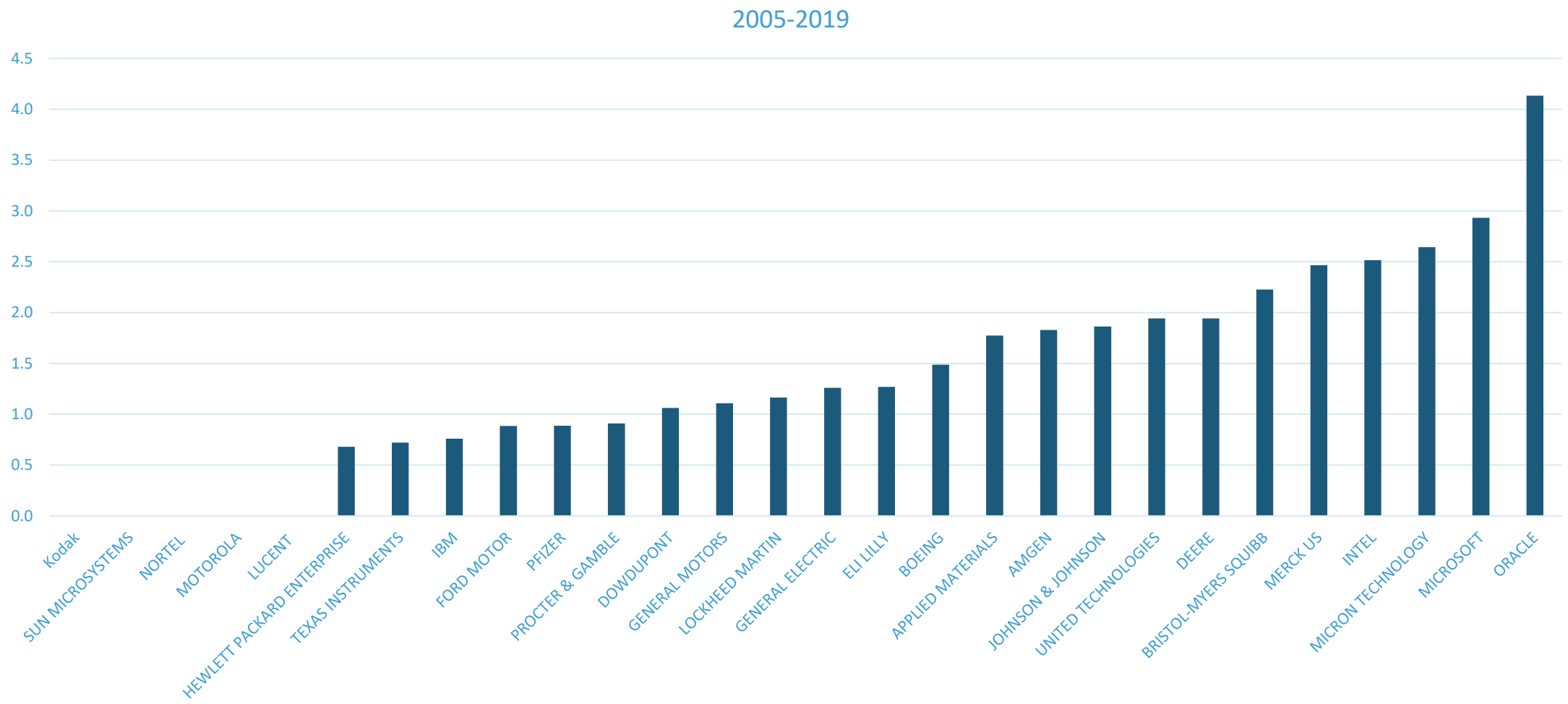


Source: ITIF calculations

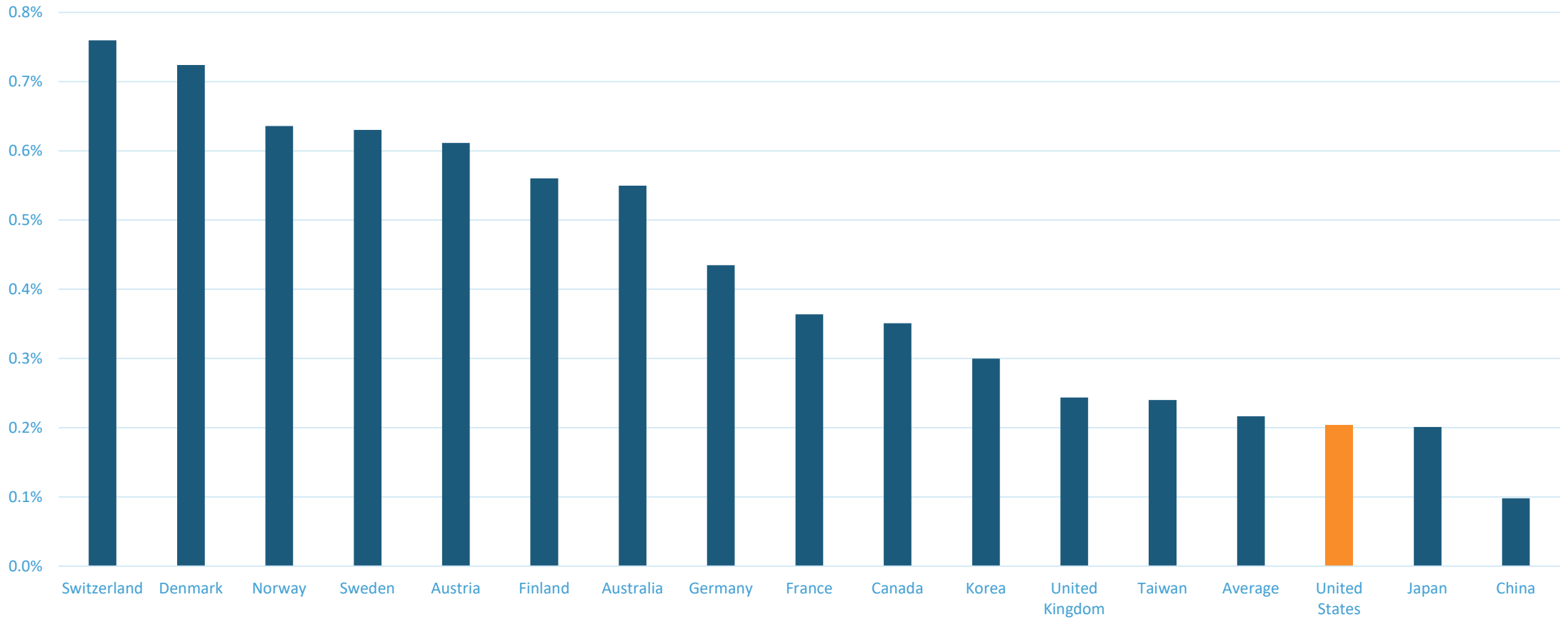
Many Sectors Reduced Their R&D



Many Firms Invest Less in R&D



Other Nations Invest More in University Research

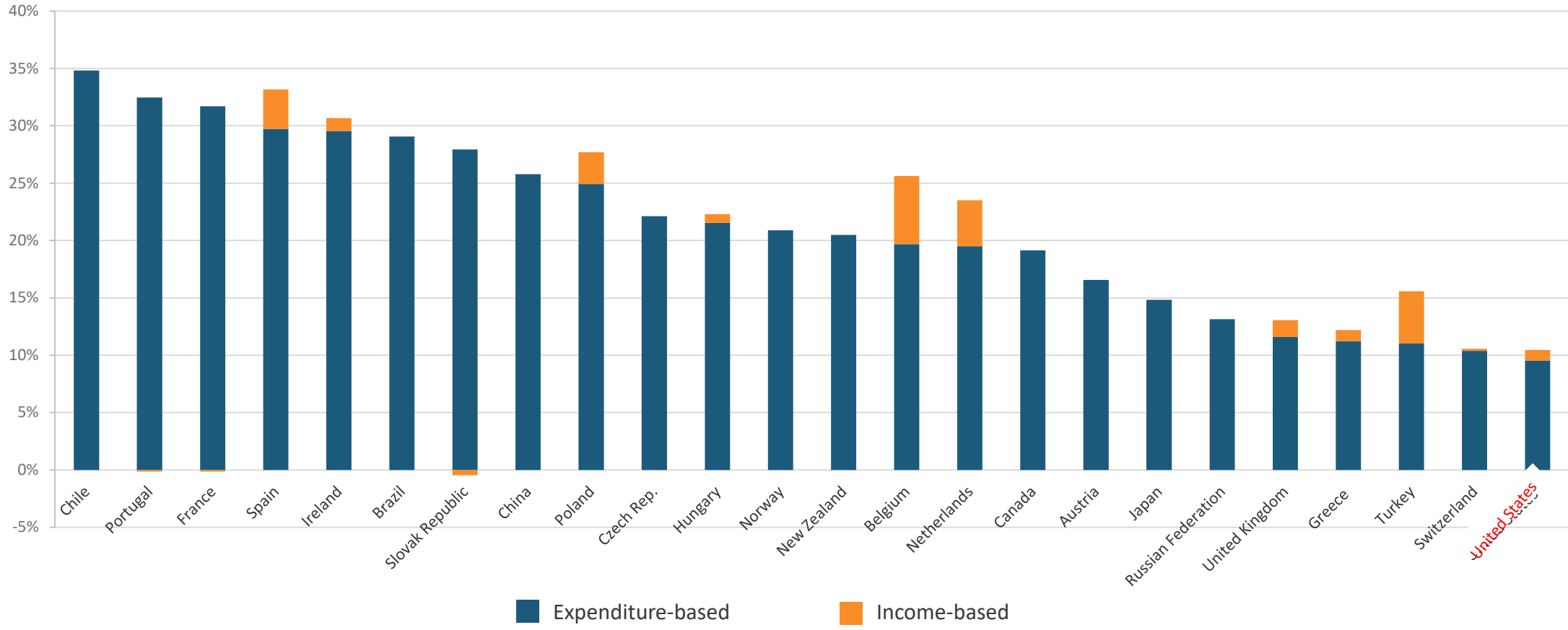


Source: ITIF Report: *University Research Funding: The United States is Behind and Falling*, forthcoming (as share of GDP)

Other Nations Have National Innovation Agencies

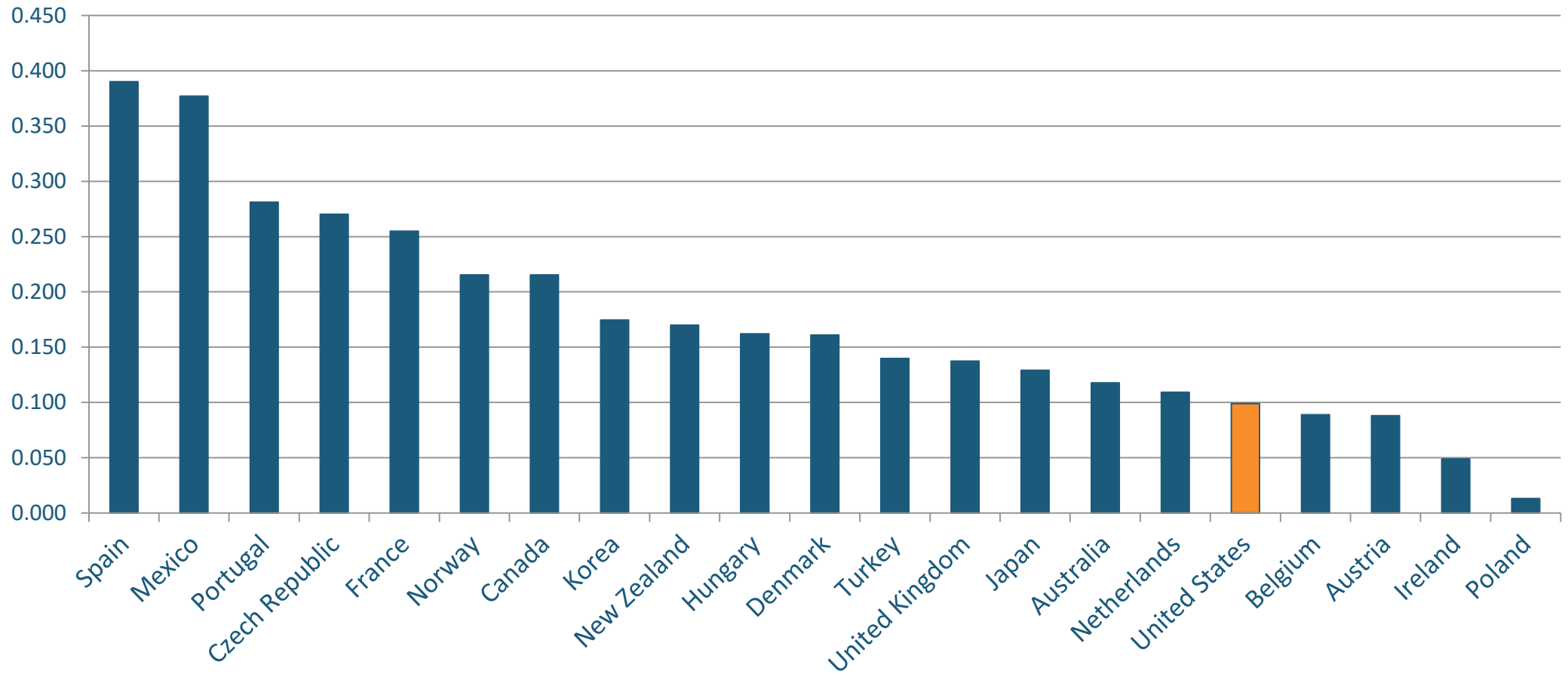
Country	Has Articulated a National Innovation Strategy?	National Innovation Agency/Foundation	Year Agency Introduced
Brazil	Yes	Brazil Innovation Agency	1967
China	Yes	Ministry of Science and Technology	1998
Denmark	Yes	Danish Agency for Science, Technology, and Innovation	2006
Finland	Yes	Tekes	1983
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

Other Nations Have More Generous R&D Tax Incentives



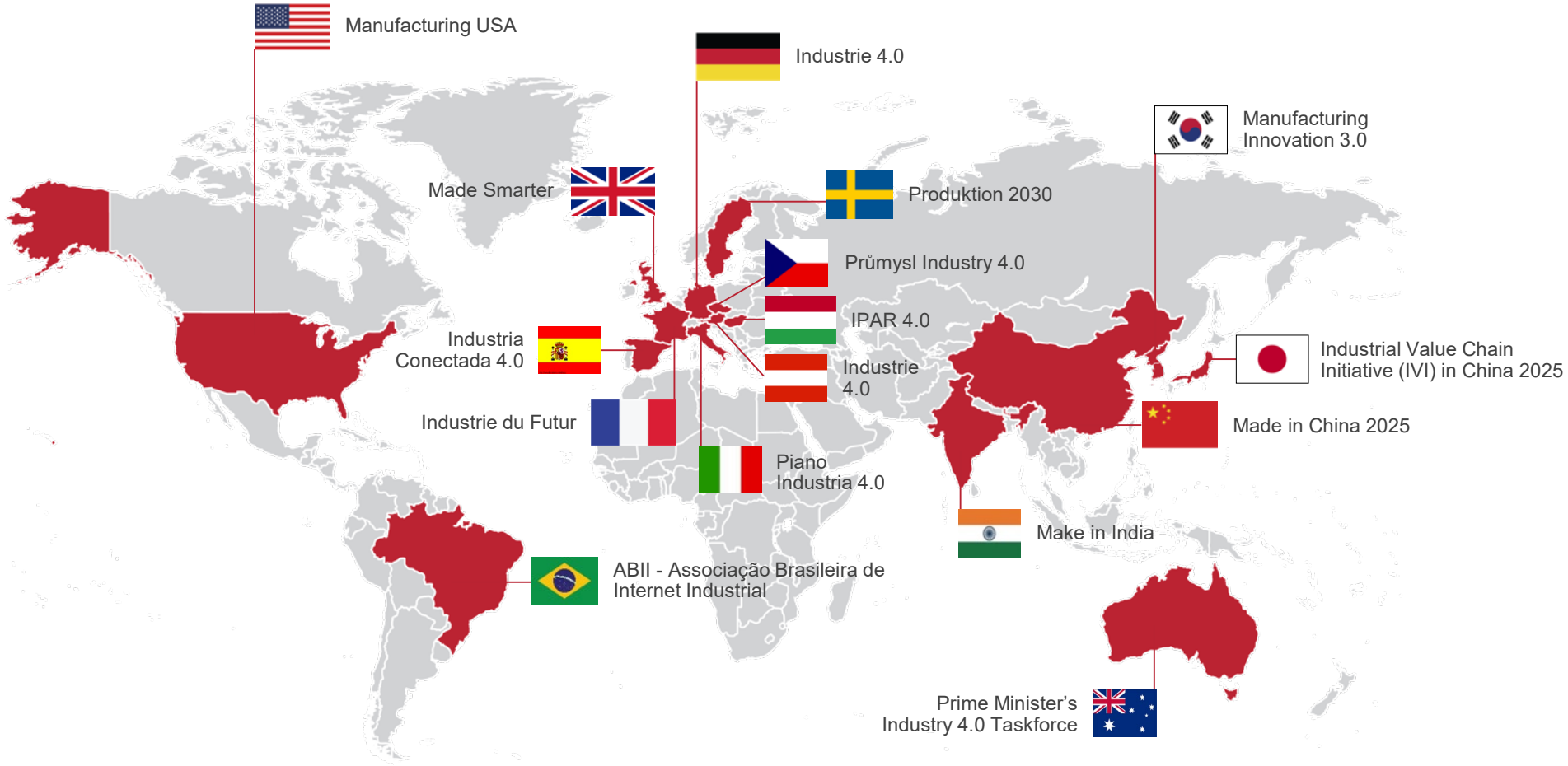
Source: Enhanced Tax Incentives for R&D Would Make Americans Richer, ITIF 2020

Other Nations Have 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

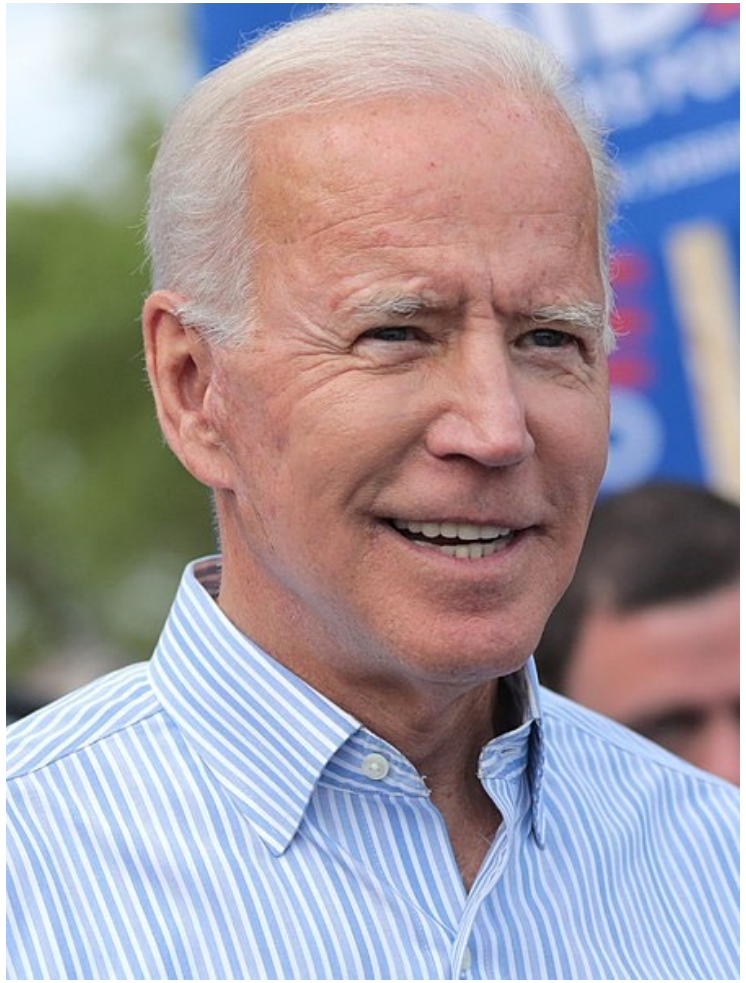
Manufacturing Digitalization Becoming a Priority For Many Nations



- Netherlands: Smart Industry
- Belgium: Made Different
- Portugal: Industria 4.0
- Denmark: M.A.D.E.
- Mexico: Industry 4.0 Roadmap
- Slovakia: Smart Industry
- Wallonia: Marshall 4.0

Courtesy: Dave Vasko, Rockwell Automation

Trump v. Biden



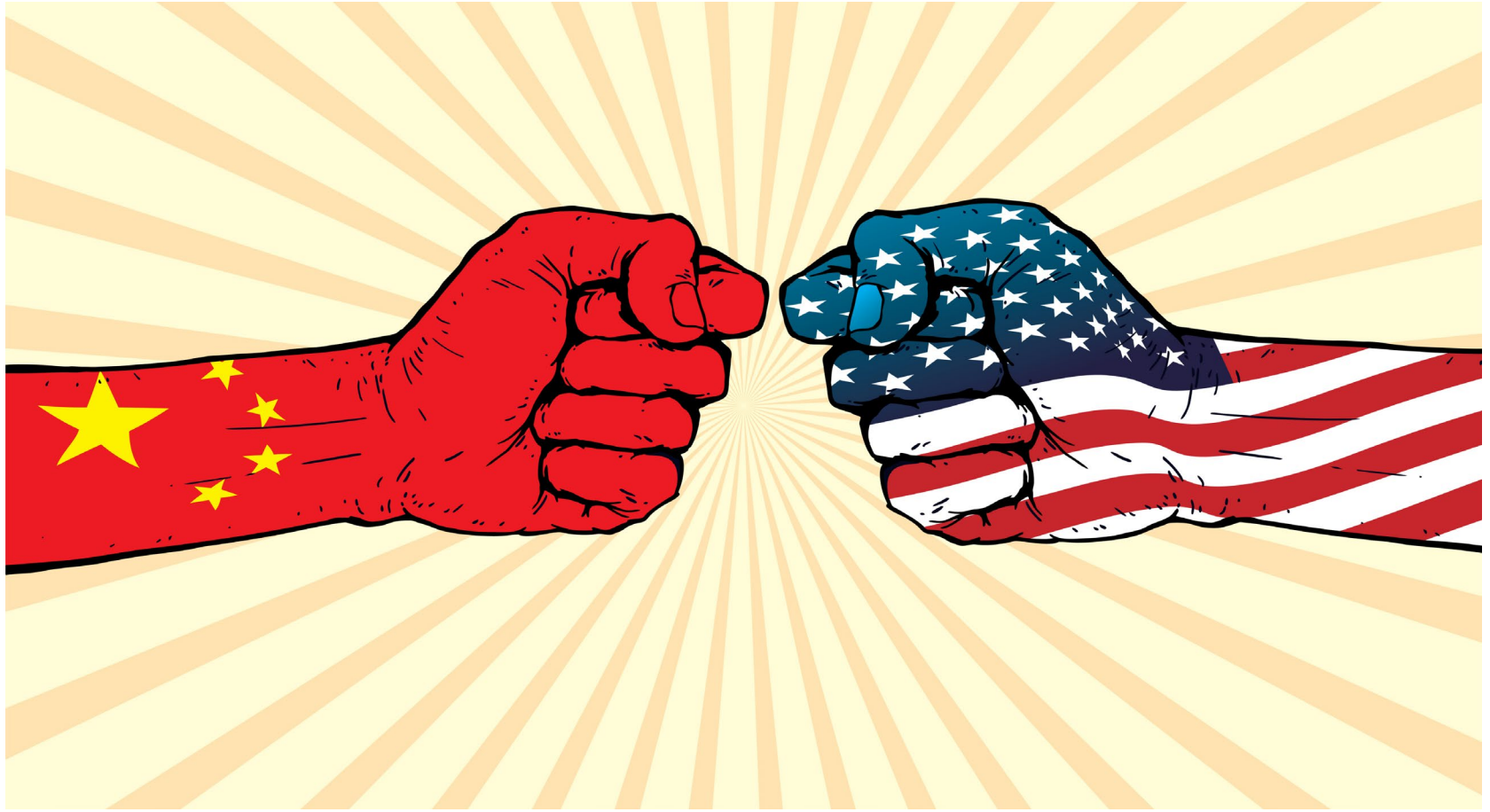
What Should U.S. Do? Fix the Data/Analysis Problem

1. Data Gaps. Productivity performance of SME manufacturers, foreign investment overseas by NAICs code, overseas comparative economic performance, machinery investment by state, adoption of smart manufacturing technologies, etc.
2. Analysis gaps. Is anyone in federal government analyzing this data through a competitiveness lens?
3. We don’t know or do analysis because we don’t care about sectors/technologies. Market decides so government doesn’t need capabilities.

What Should the U.S. Do?

- Respond to China Standards 2035.
- Reestablish NIST Advanced Technology Program.
- Craft Fed-State TBED Partnership.
- Expand Manufacturing USA Institutes, but more industry-led, with greater diversity of sizes/models.

Can We Respond?



Thank You!

Robert D. Atkinson | ratkinson@itif.org | @RobAtkinsonITIF