

# How ICT Can Boost Lagging EU Productivity Growth and What Europe Needs To Do

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# About ITIF

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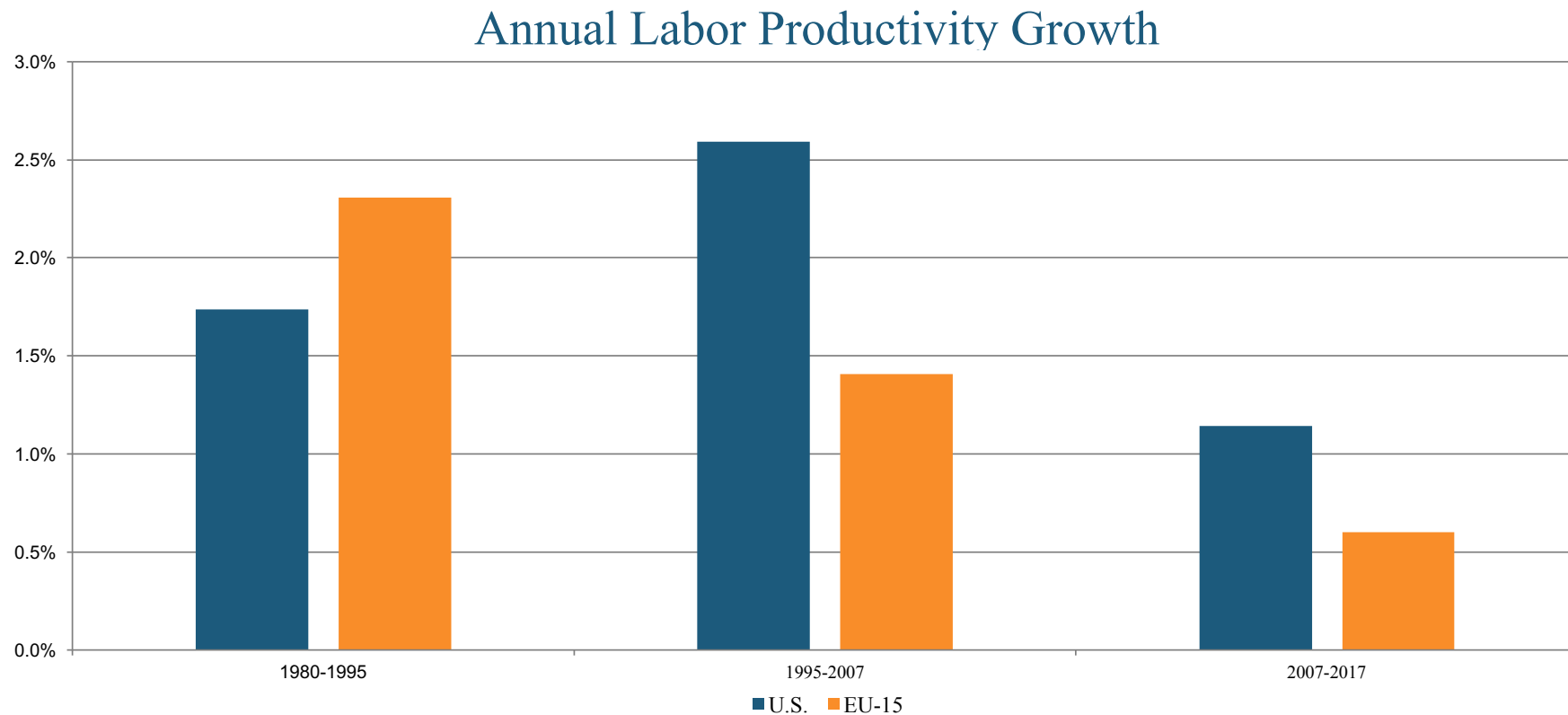
- A think tank that formulates and promotes policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress
- Focuses on a host of issues at the intersection of technology innovation and public policy:
  - Innovation processes, policy, and metrics
  - Science policy related to economic growth
  - E-commerce, e-government, e-voting, e-health
  - IT and economic productivity
  - Innovation and trade policy

# Today's Presentation

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- 1 EU Productivity Performance
- 2 Impact of ICT on EU Productivity
- 3 Why Has Europe Productivity Growth Lagged?
- 4 What Should Europe Do?

# Catching Up and Then Falling Behind



Source: The Conference Board, Total Economy Database.

# Only Ireland Converged in Both Periods

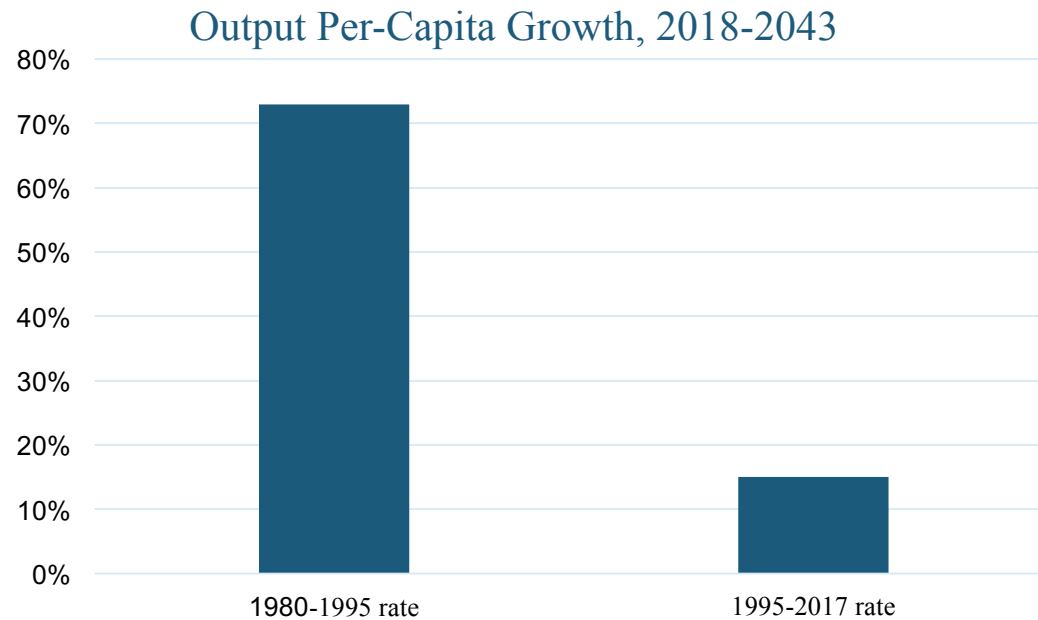
## Annual Labor Productivity Growth

		2004-2013	
		Diverging	Converging
1995-2004	Converging	Finland	Ireland
		Greece	
		Sweden	
		United Kingdom	
	Diverging	Belgium	Austria
		Denmark	Spain
		France	
		Germany	
		Italy	
		Luxembourg	
		Netherlands	
		Portugal	

# Europe Needs Faster Productivity Growth

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- By 2050 28.7% of EU population will be above 65 (20.2% in U.S.)



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## ICT Benefits EU Firms

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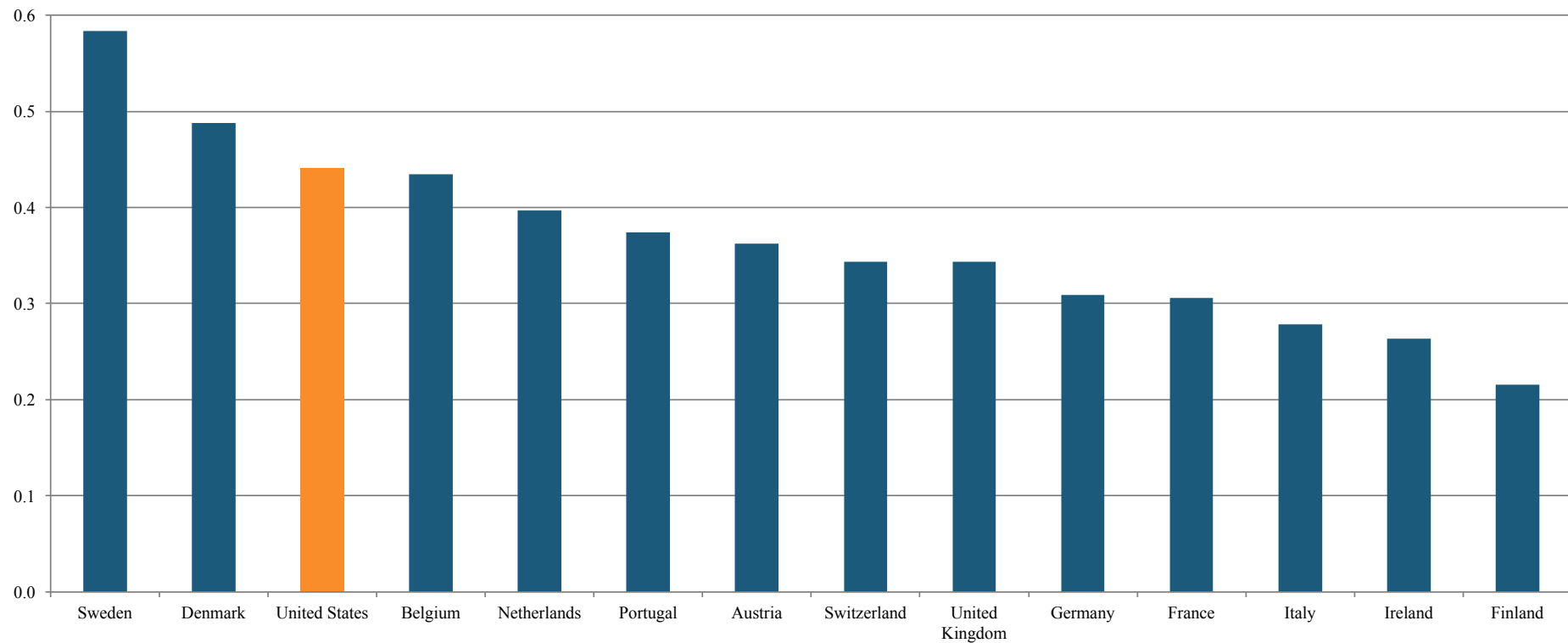
- For the top 25% most productive EU firms,
  - 0 ICT                      4.56 (log productivity)
  - 1 ICT                      4.70
  - 2 or 3 ICTs              5.03

Source: Reinhilde Veuguliers, et al, “Remaking Europe: The New Manufacturing as an Engine for Growth” Bruegel, September 2017.



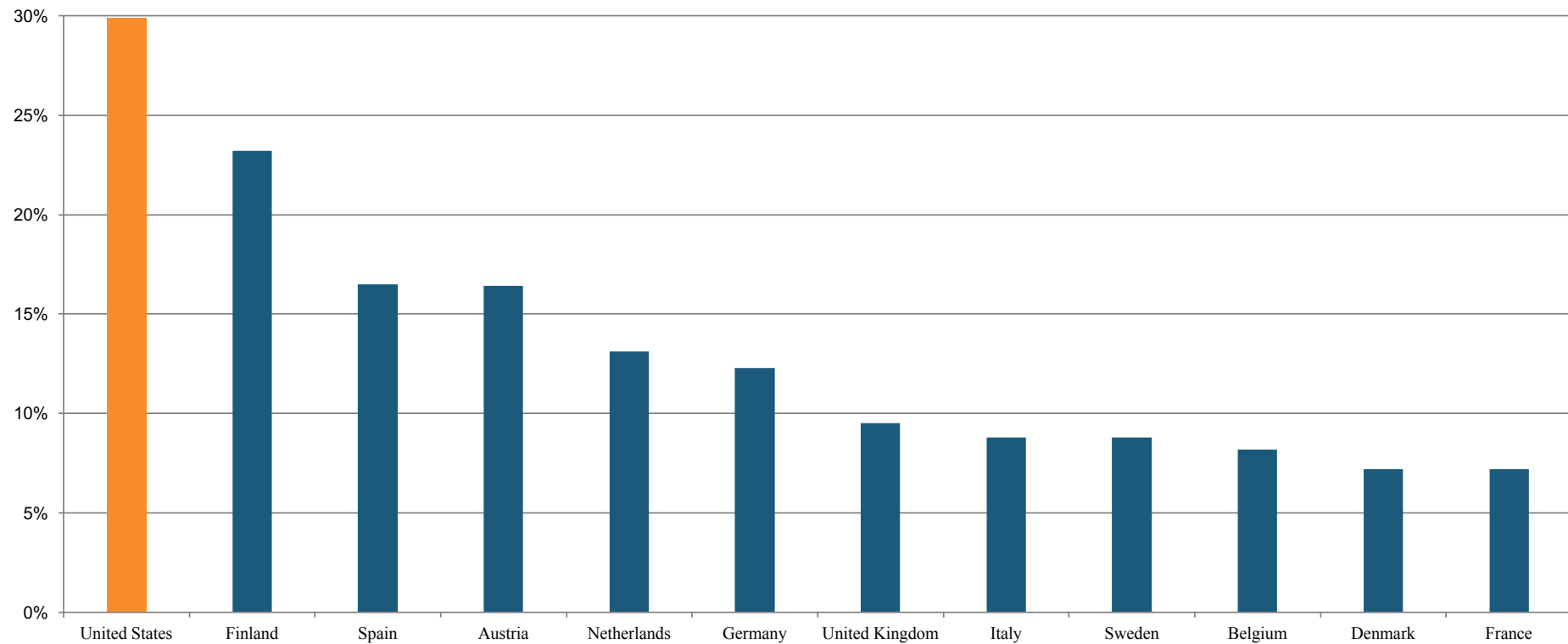
## Less ICT Contribution to GDP Growth, 1985-2016

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Source: OECD, Statistics (Productivity, contributions to GDP growth; accessed May 1, 2018).

## Less Productivity Growth From ICT, 2013-2015



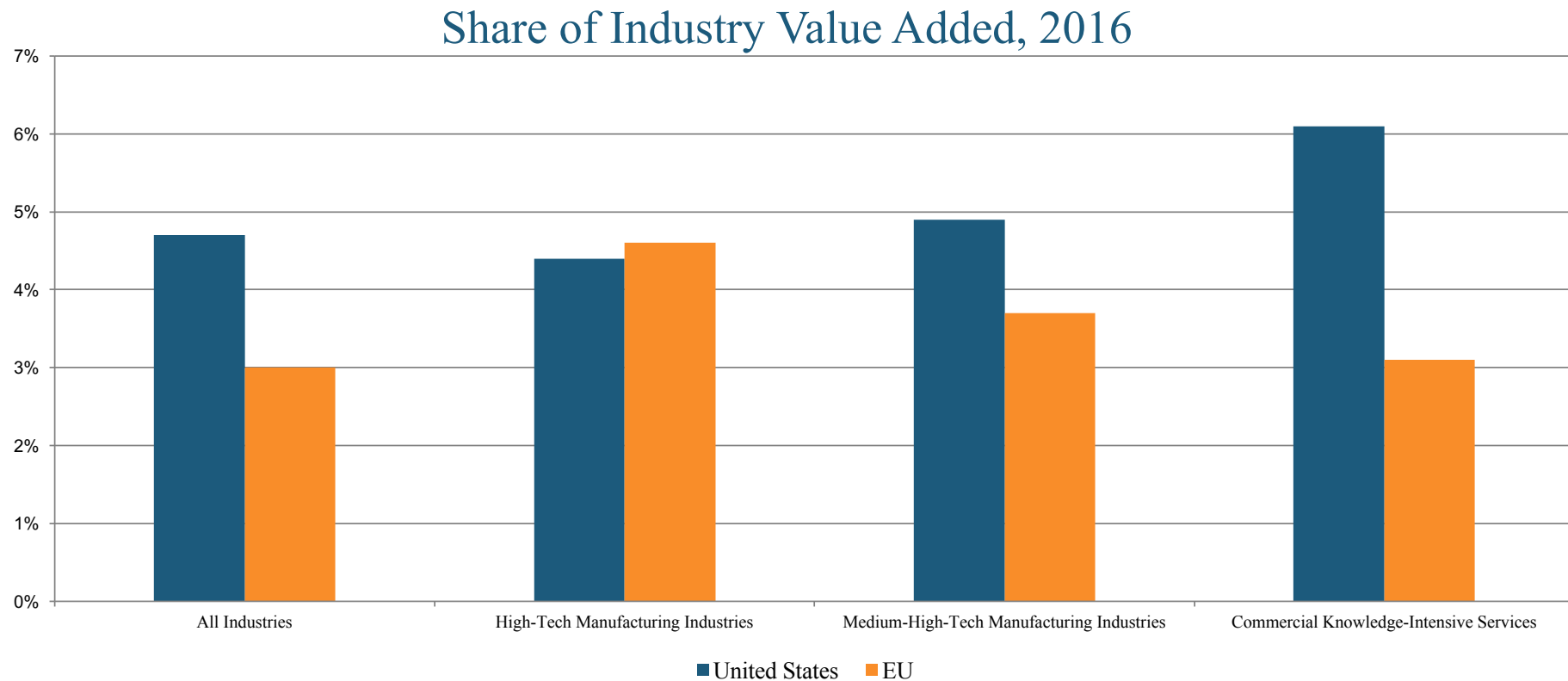
Source: EU KLEMS, "Growth and Productivity Accounts: Statistical Module, ESA 2010 and ISIC Rev. 4 Industry Classification," (2017).

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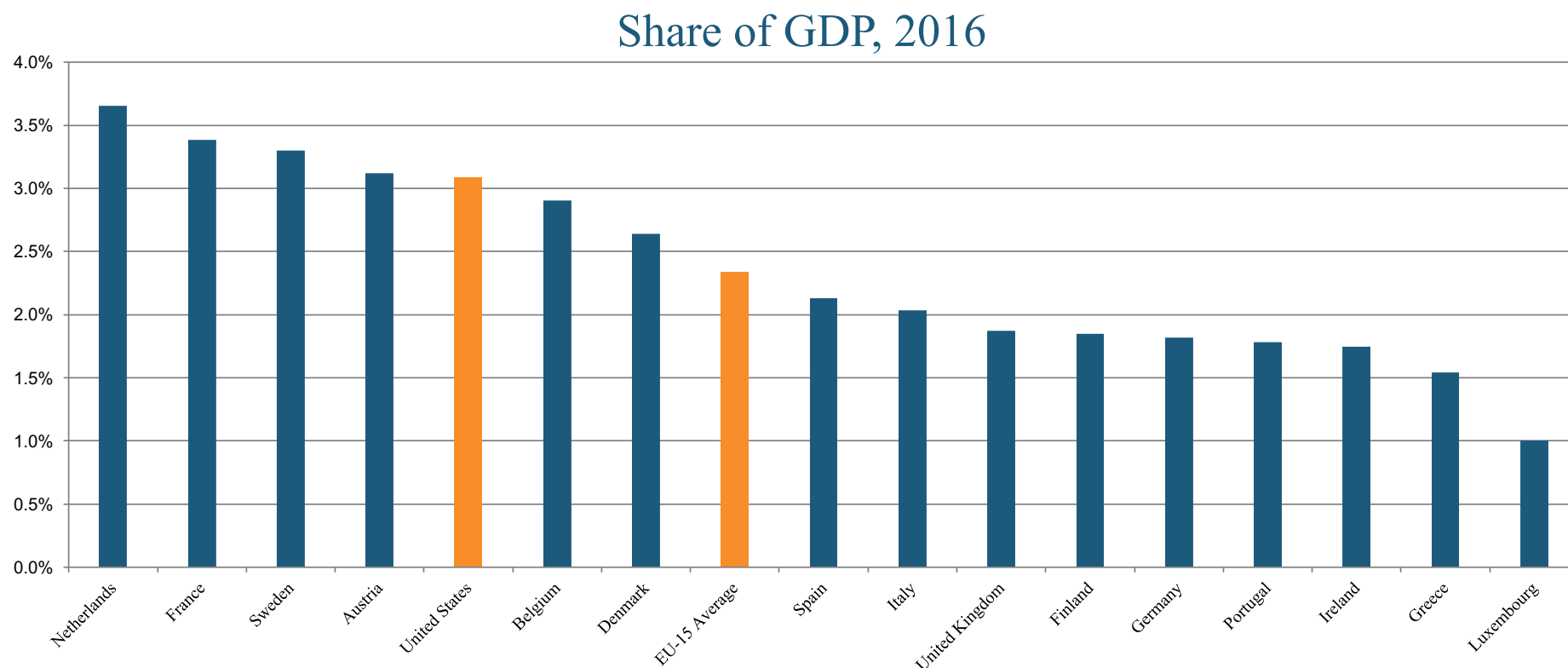
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# Less ICT Investment



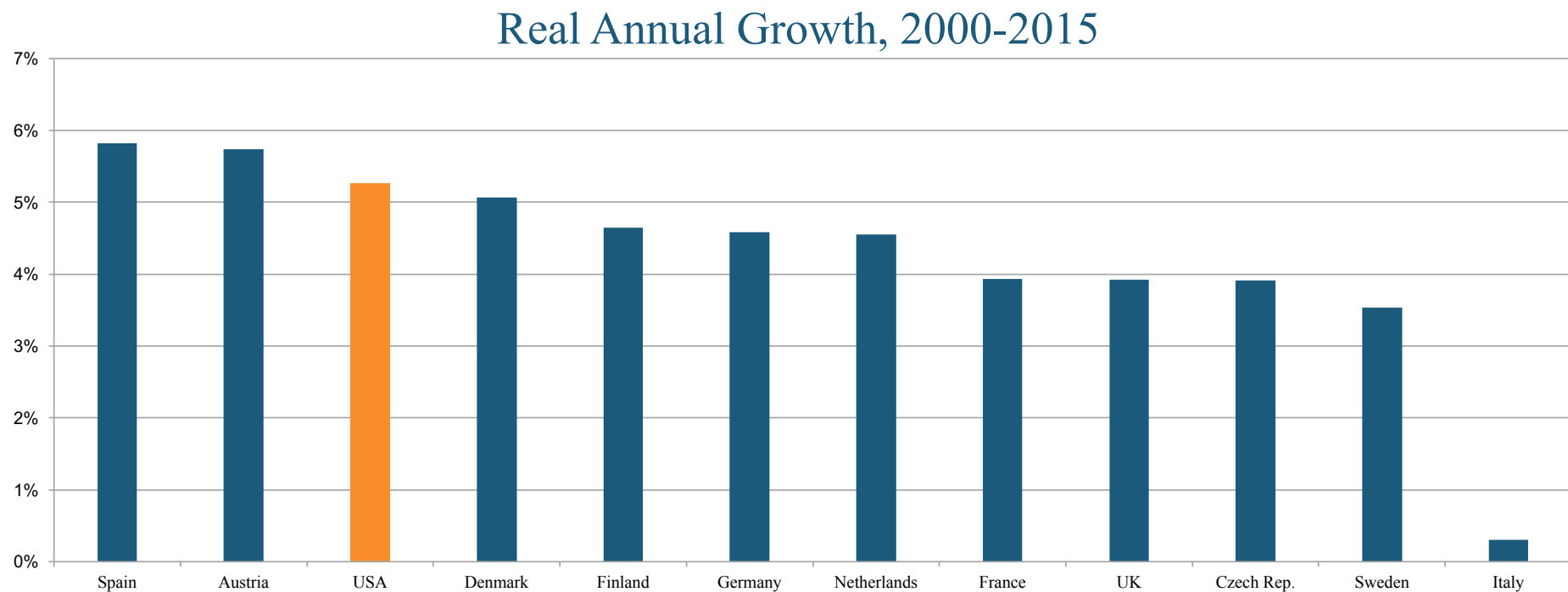
Source: National Science Board Science & Engineering Indicators, "ICT Business Spending as a Share of Selected Industry Categories for Selected Countries or Economies: 2016."

# Less ICT Investment



Source: OECD, Statistics (National Accounts, 8A. Capital Formation by Activity ISIC Rev. 4; accessed May 1, 2018).

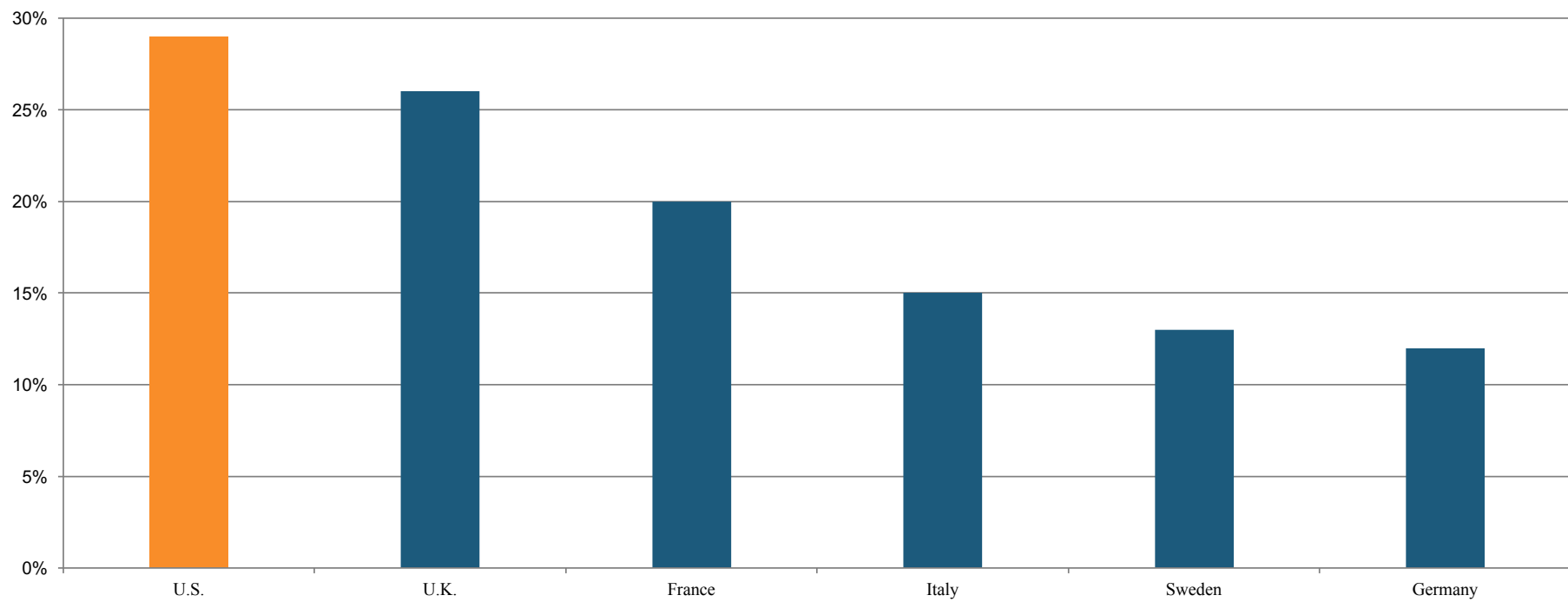
# Less Software Investment



Source: EU KLEMS, "Growth and Productivity Accounts: September 2017 release."

## Fewer (large) Companies Adopting AI

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Source: McKinsey Global Institute, 2017

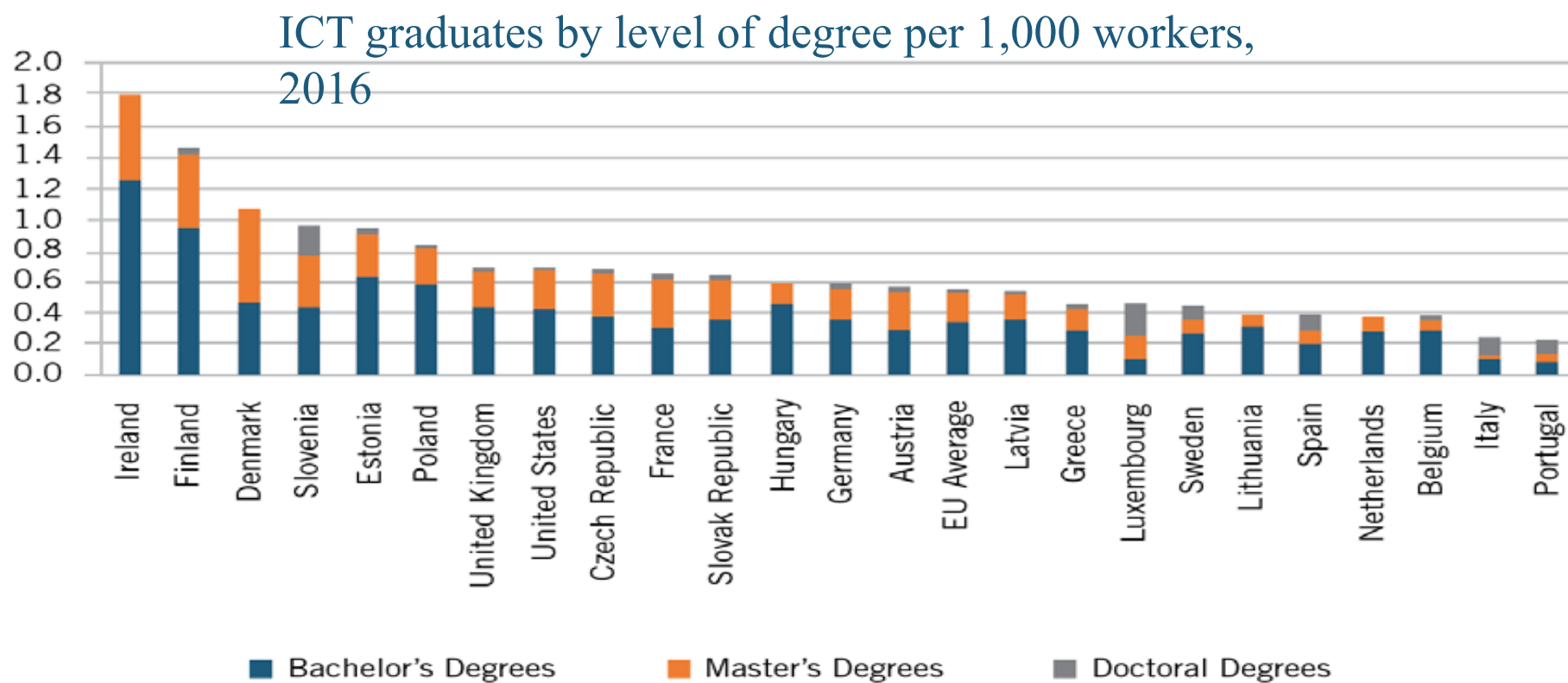
## Other Lags:

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- 46% of hyper-scale data centers are in U.S.; 19% in EU. U.S. cloud adoption projected to be 3.2 times greater as a share of GDP by 2021.
- 86% higher rate of “big data initiatives” in the U.S.
- IP traffic: 42K PB per month in U.S.; 25K PB in EU.
- Of top 25 firms applying for EU patents in “industry 4.0” technologies, 17% were EU; (compared to 46% for all areas).
- U.S. broadband speeds 20% faster in the U.S. than in EU 15.



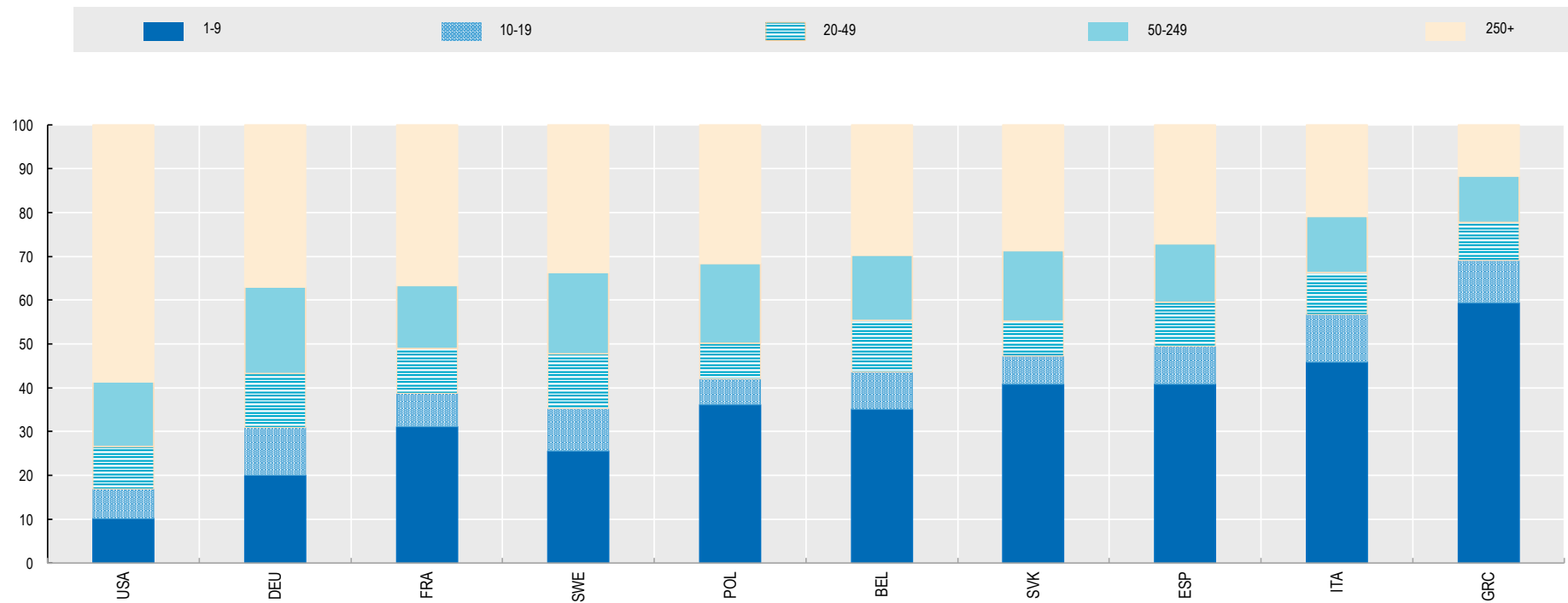
## Other Factors: Lower ICT Skills



Source: OECD. Stat, Graduates by Field, <https://stats.oecd.org>.

## Other Factors: Too Many Small Firms

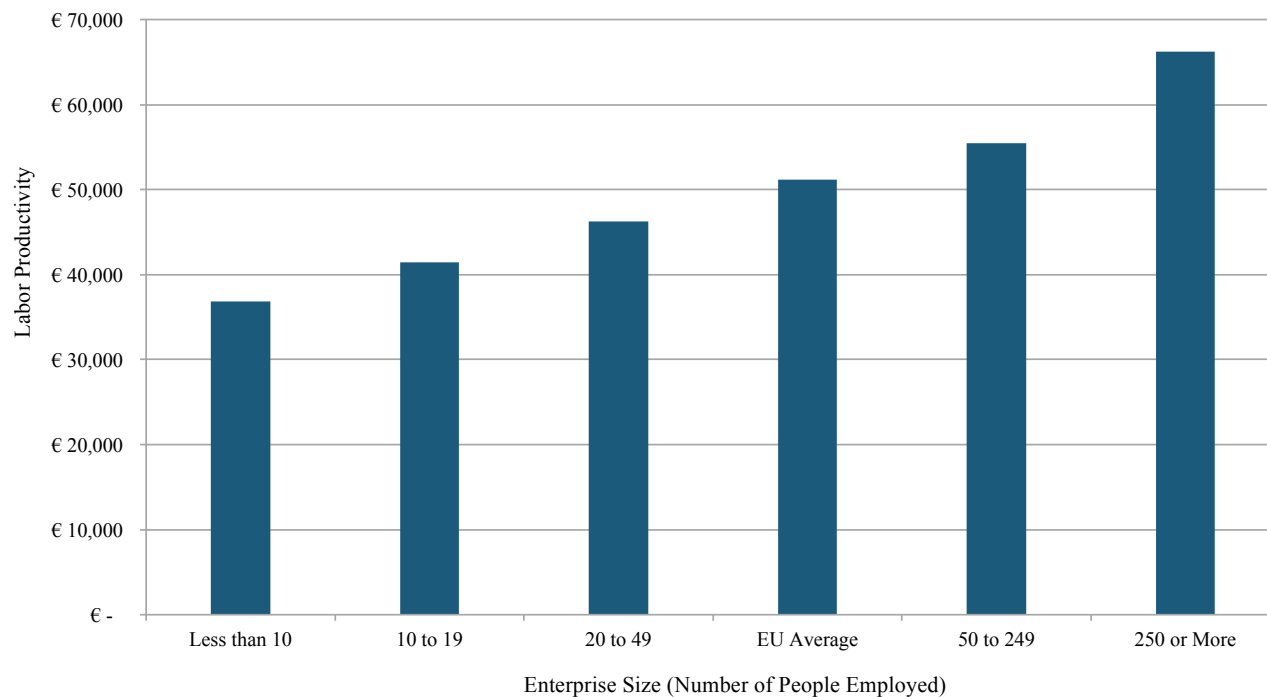
Percent of Workers by Enterprise Size, 2014



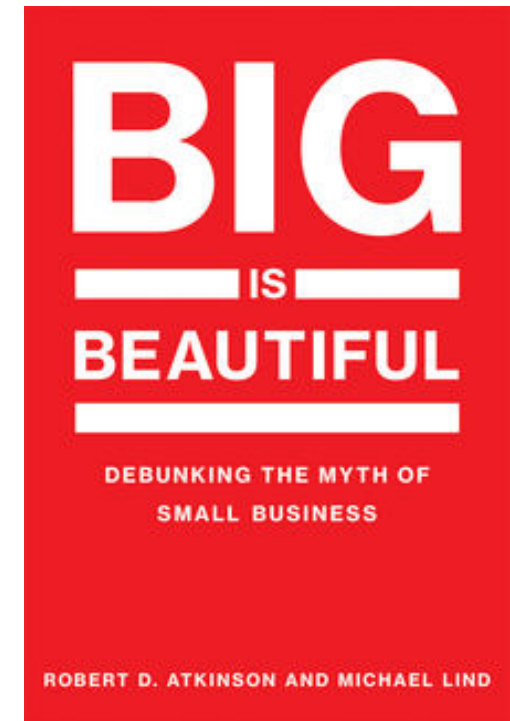
Source: "Entrepreneurship at a Glance 2017", OECD

# Small Firms Are Less Productive

Percent of Workers by Enterprise Size, 2014



Source: Eurostat, Structural Business Statistics.



## Other Factors: Less Even Adoption of ICT by EU Firms

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- The gap in ICT intensity between firms in any particular industry is 55% higher in the EU than in the U.S.
- So, the gap between the most productive and least productive firms in any particular industry is twice as high in Europe than in the United States.

Sources: Wen Chen, Thomas Niebel, and Marianne Saam, “Are intangibles more productive in ICT-intensive industries? Evidence from EU countries,” Telecommunications Policy 40, no. 5, (2016); Yuriy Gorodnichenko, Debora Revoltella, Jan Švejnar, Christoph T Weiss, “Resource Misallocation in European Firms: the Role of Constraints, Firm Characteristics and Managerial Decisions” (working paper, European Investment Bank, Luxembourg, 2018).

## Higher Levels of Regulation

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- Higher product market and labor regulations limit investment and limit the ability of firms to benefit from ICT investment.
  - Only the UK experienced lower negative effect on ICT investment from regulation, than the United States, with Italy the highest.
  - If EU digital ad revenue had grown at the same rate as in the United States from 2012 to 2017, an additional 11.6 billion euros would flow annually to the EU digital ecosystem.

Source: Gilbert Cette, Jimmy Lopez, Jacques Mairesse, “Upstream Product Market Regulations, ICT, R&D and Productivity,” *Income and Wealth*, February 2017, vol 63.

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2

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What Should Europe Do?

## What to do

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### 1. Focus on raising productivity in all industries through ICT.

- Establish a dedicated productivity agency.
- Make 3% productivity growth the dominant EU **innovation mission** (“easy to communicate, mobilize many actors, transformative potential for science, non-p1 and partnerships”).



## What to do

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1. Focus on raising productivity in all industries through ICT.
2. **Focus on the future: robotics, AI, blockchain, quantum, 5G, IOT, autonomous systems, etc.)**
  - Search, social networks, OSs, PCs, and smart phones are relative mature and global competition is largely settled.





## What to do

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1. Focus on raising productivity in all industries through ICT.
2. Focus on the future
3. Focus on areas of competitive advantage: bits *and* atoms and technology-enabled business services.



## How?: Shift the Tactical Focus

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**Less Defense:** Regulating platforms, GDPR, cyber security rules, regulating “gig economy”, digital taxes, roaming charges, geo-blocking, e-privacy rules, regulating video platforms, copyright reform, antitrust enforcement; etc.



## How?: Shift the Tactical Focus

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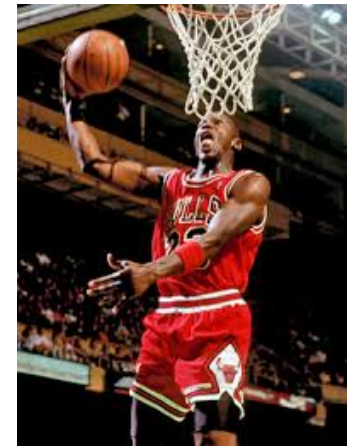
- Less Defense
- More “Field Clearing”
  - **Build on progress:** data localization ban; cross-border package delivery; modernizing the European Electronic Communications Code; single digital gateway for permits.
  - **Next steps:** EU market for services; ensure digital business models face a digital regulatory regime, harmonize spectrum; roll back preferences for small business.



## How?: Shift the Tactical Focus

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- Less Defense
- More “Field Clearing”
- More Offense
  - Support ICT R&D and digital skills;
  - PPPs in key technology areas (e.g., digital IDs, high performance computing, AI);
  - PPPs in key industry applications (e.g., health IT, smart grid, smart cities).



## A Few Other Ideas

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- **Shift ICT R&D:** let industry decide areas to get support; tell academic researchers areas it will get support in.
- **Move Horizon Europe from a retailer to a wholesaler:** fund a modest number of industry-university R&D centers.
- Each major DG should install a Chief Technology Officer.
- Fund an EU-wide Digital Manufacturing and Design Innovation Institute.

# Thank You!

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