What is the Key to Global Competitiveness in the Emerging Internet Economy?

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ITIF: Who We Are

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

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

Today's Presentation

1 **What is the Emerging Internet Economy?**

2 What is Competitiveness?

3 Policy Tradeoffs Between Competitiveness and Productivity

What is the *Emerging* Internet Economy?

- Machine learning-AI
- IOT
- Robotics
- 3D printing
- Autonomous vehicles
- Etc.

Prognosticators Say These Will Transform Everything

A few recent books:

- *The Singularity*
- *The Second Machine Age*
- *The Third Wave*
- *The Fourth Industrial Revolution*
- *The Fifth Technology Revolution*
- *The Sixth Wave*
- *Infinite Progress*

But It's Not a Revolution, It's Evolution

Claim: Moore's Law is Speeding Up

- "We are entering the second half of the "exponential chess board."

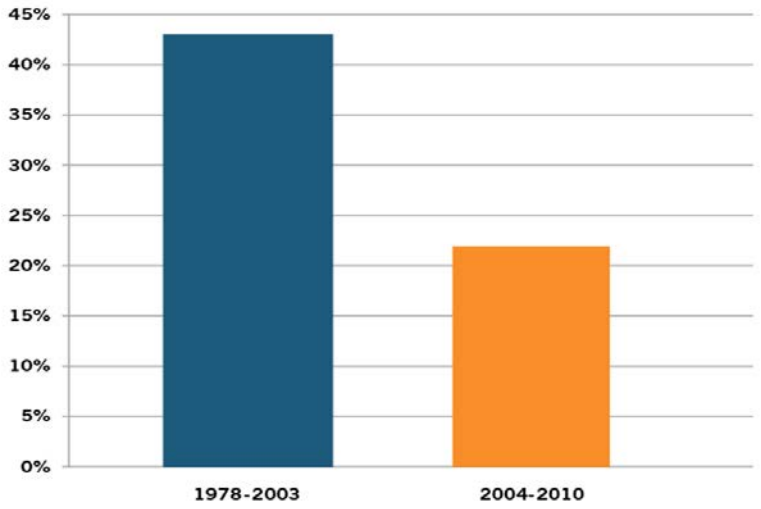
  – Erik Brynjolfsson

- "Information technology … progresses exponentially."

  – Ray Kurzweil

Reality: Moore's Law is Slowing Down

- Speed increases are slowing, while transistors per dollar are decreasing
- Even Gordon Moore's says his law "can't continue forever. The nature of exponentials is that you push them out and eventually disaster happens."



Annual % change in processer speed

Claim: Change is Faster Than Ever

- "We are entering into an era in which the pace of innovation is growing exponentially."

  – Peter Diamandis and Steve Kotler

- "We're in a world of exponential transformational change."

  – Daniel Burrus

- "Explosive and exponential advances."

  – Joseph Jaffe

Reality: Technology Is Diversifying, Not Accelerating

	Years Before Used in 50% of U.S. Homes
• *Electricity*	*28*
• *Telephones*	26
• *Radios*	8
• *Televisions*	9
•	
• *Personal Computers*	17
• *Public Internet*	9
• *Mobile Phones*	15
• *eBooks/Tablets*	9
• *Home Robots (Roomba)*	
• *FitBits and similar*	
• *Electric Cars (Tesla)*	
• *Consumer 3D Printers*	
• *Smart Watches (Bluetooth)*	
• *iHealth (Blood pressure DIY)*	
• *Nest (Thermostats)*	

None of these innovations will reach the 50% threshold in less than a decade

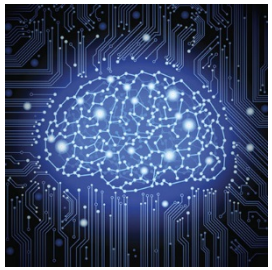
Source: David Moschella, Leading Edge Forum, CSC, 2015

Major GPTs Progress Along S-Curves

Electro-Mechanical Tech System

Digital Electronic Tech System

AI-Robotics Tech System



Takeoff	Installation	Slowdown	Takeoff	Installation	Slowdown	Takeoff	Installation
1945-58	59-74	74-93	94-2000	2001-2010	2011-27	2028-39	2039-??

Today's Presentation

1 What is the Emerging Internet Economy?

2 **What is Competitiveness?**

3 Policy Tradeoffs Between Competitiveness and Productivity

What is Competitiveness?

- Everything to all people?
- It is *not* productivity or innovation
- It is the ability of a nation to export more in value added terms than it imports after accounting for "terms of trade" ("discounts" on exports and "charges" on imports)

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3 **Policy Tradeoffs Between Competitiveness and Productivity**

ICT Competitiveness vs. Productivity Policy Matrix

	Supports ICT Industry Competitiveness	Hurts Competitiveness
Supports ICT-Enabled Productivity	▪ Tax incentives for ICT adoption ▪ ICT skills development ▪ Open data policies ▪ Tax incentives for ICT adoption ▪ Broadband deployment support ▪ More spectrum ▪ Digital literacy policies ▪ E-government, including e-procurment ▪ Digital transformation strategies (transport, health care, etc.) ▪ Support platforms (mobile payments, digital signatures, etc.) ▪ More integrated digital single markets	
Hurts ICT-Enabled Productivity	▪ ICT Tariffs ▪ Data center localization requirements ▪ Local content requirements ▪ Procurement preferences for domestic companies ▪ Discrimination against foreign tech companies	▪ ICT Taxes ▪ Cross border data flow Limits ▪ Labor market regulations ▪ Product market regulations (e.g., ban on Uber) ▪ Strict privacy regulations ▪ Limits on FDI ▪ Small business preferences

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Supports ICT-Enabled Productivity	▪ Tax incentives for ICT adoption ▪ ICT skills development ▪ Digital transformation strategies (transportation, health care, agriculture, etc.) ▪ Support ICT platforms (mobile payments, digital signatures, etc.) ▪ E-government, including e-procurement ▪ Open data policies ▪ Digital literacy policies ▪ More spectrum and more efficient spectrum use ▪ Broadband deployment support ▪ More integrated "digital single markets"

ICT Development vs. Deployment Policy Matrix

	Supports ICT Industry Competitiveness
Hurts ICT-Enabled Productivity	▪ ICT Tariffs ▪ Data center localization requirements ▪ Local content requirements ▪ Procurement preferences for domestic companies

ICT Competitiveness vs. Productivity Policy Matrix

	Hurts ICT Industry Competitiveness
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Keeping IT Prices Low is Key to Growth

- IT tariffs and discriminatory taxes sectors mean consumers/firms have to pay more while often receiving inferior products/services
- This makes downstream IT-using firms/sectors less competitive
- Diminishes productivity of financial, transportation, etc. sectors
- For every $1 of tariffs India applied to imported computers, the country lost $1.30 due to lost spillover effects

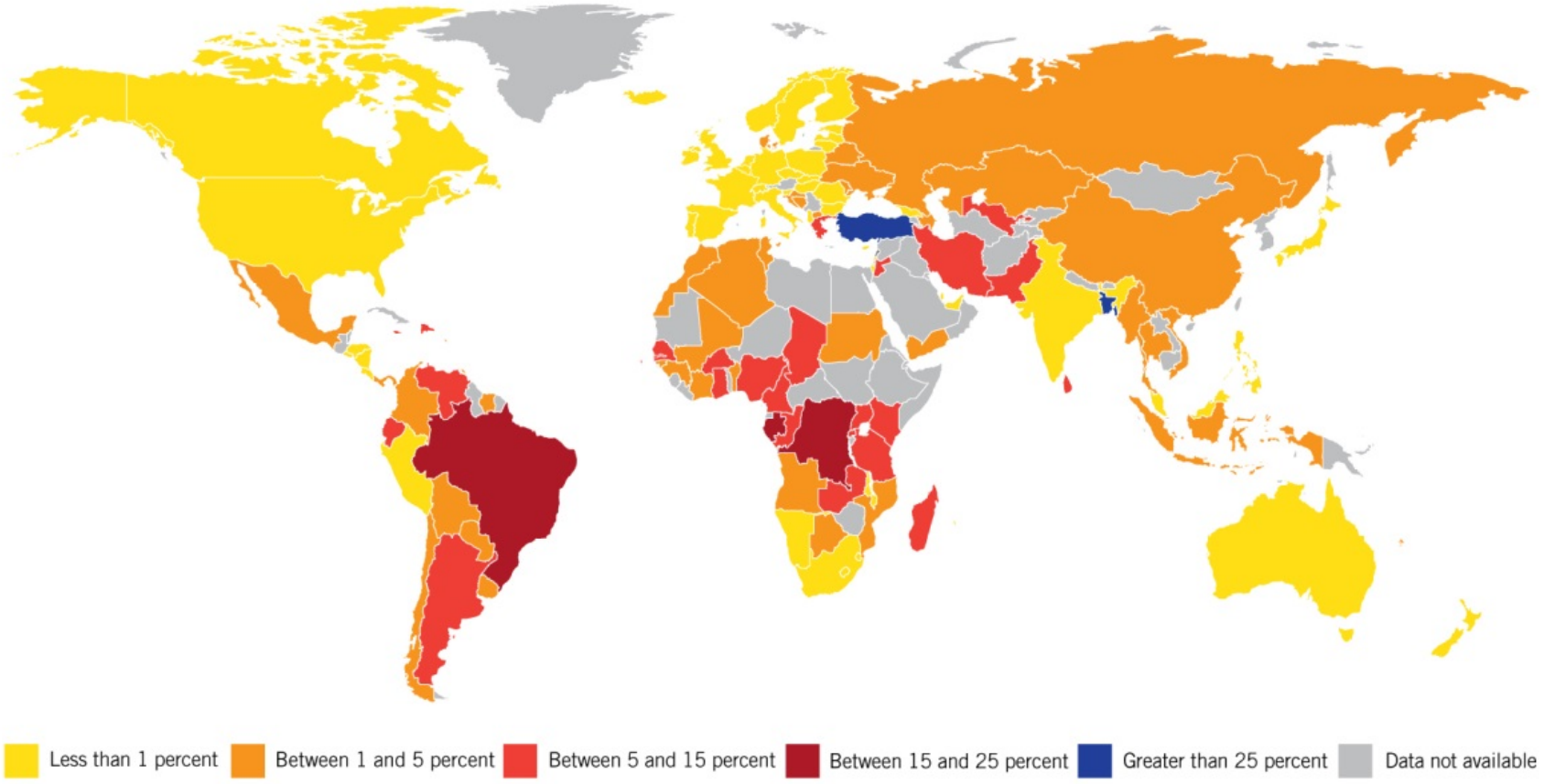
– (Kaushik and Singh, 2004)

- For every 1 percent drop in price in ICT products, there is a 1.5 percent increase in demand

– (Gurbaxani, 2003)

- Tariffs on IT products do not create a competitive domestic hardware industry, but they do limit adoption of ICT by keeping prices high

Taxes and Tariffs for Consumer ICT Products and Services



Ben Miller and Robert D. Atkinson, "Digital Drag: Ranking 125 Nations on Taxes and Tariffs on ICT Goods and Services," (Information Technology and Innovation Foundation, October 2014)

Thank You!

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