The Base Trends of the Economy: Globalization, Technological Change, and Competition

Stephen Ezell
VP Global Innovation Policy, ITIF

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About ITIF

- The world’s leading science and technology policy think tank.
- Supports policies driving global, innovation-based economic growth.
- Focuses on a host of issues at the intersection of technology innovation and public policy across several sectors:
  - Innovation and competitiveness
  - IT and data
  - Telecommunications
  - Trade and globalization
  - Life sciences, agricultural biotech, and energy
ITIF Publication Highlights
Today’s Presentation

1. The Digital Economy and Coming CAS Wave
2. Europe’s Digital Sectors Have Lagged
3. Key Strategic Considerations for the EU
4. Policy Recommendations
Increasingly Digitalized Global Economy

- Digital economy accounts for 25% of global GDP.

- 50% of all value created in the global economy will be created digitally over the next decade.

- Increased cross-border data flows have contributed 10% to global GDP growth over the past decade.

Increased Cross-Border Data Flows Driving Global GDP Growth

- The value of international data flows surpassed the value of international merchandise trade for the first time in 2015.

Tech Innovation Progresses Along S-Curves

Steel-Tech System
- Takeoff: 1890-1905
- Adoption: 1906-1928
- Slowdown: 1929-1944

Electro-Mechanical Tech System
- Takeoff: 1945-1958
- Adoption: 1959-1974
- Slowdown: 1974-1993

Digital Electronic Tech System
- Adoption: 2001-2010
- Slowdown: 2011-2027
Tech Innovation Progresses Along S-Curves

Steel-Tech System
Electro-Mechanical Tech System
Digital Electronic Tech System
Connected, Autonomous, & Smart Tech System - CAS -

<table>
<thead>
<tr>
<th>Time Periods</th>
<th>Steel-Tech System</th>
<th>Electro-Mechanical Tech System</th>
<th>Digital Electronic Tech System</th>
<th>Connected, Autonomous, &amp; Smart Tech System - CAS -</th>
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<tbody>
<tr>
<td>1890-1905</td>
<td>06-1928</td>
<td>1929-44</td>
<td>1945-58</td>
<td>2027-38</td>
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<td>06-1928</td>
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<td>2011-26</td>
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<td>1929-44</td>
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<td>1945-58</td>
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<td>59-74</td>
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<td>2038-??</td>
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ITIF INFORMATION TECHNOLOGY & INNOVATION FOUNDATION
The Next “CAS” Wave
CAS Implications

1. More industries will become “innovation-based industries,” including agriculture, manufacturing, education, retail, financial services, transportation, and health care.

2. Revived productivity growth/new opportunities for leadership.

3. Key task for governments is to facilitate the “installation” of CAS in most industries.

4. This includes clearing the way for innovative disruptors of existing industries.
Today’s Presentation

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2. Europe’s Digital Sectors Have Lagged

3. Key Strategic Considerations for the EU

4. Policy Recommendations
Europe’s Digital Tech Sectors Have Lagged

Number of Tech Unicorns and Exits/GDP ($ Millions)

Source, ITIF, “Promoting European Growth, Productivity, and Competitiveness By Taking Advantage of the Next Digital Technology Wave”
Europe’s Digital Tech Sectors Have Lagged

Digital Platform Companies by Region, 2015

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of Platforms</th>
<th>Company Market Cap</th>
<th>Employees, FY</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. America</td>
<td>64</td>
<td>$3,123B</td>
<td>820M</td>
</tr>
<tr>
<td>Asia</td>
<td>82</td>
<td>$930B</td>
<td>352M</td>
</tr>
<tr>
<td>Europe</td>
<td>27</td>
<td>$181B</td>
<td>109M</td>
</tr>
<tr>
<td>Africa &amp; L. America</td>
<td>3</td>
<td>$69B</td>
<td>27M</td>
</tr>
<tr>
<td>Grand Total</td>
<td>176</td>
<td>$4,303B</td>
<td>1.3M</td>
</tr>
</tbody>
</table>

Source, ITIF, “Promoting European Growth, Productivity, and Competitiveness By Taking Advantage of the Next Digital Technology Wave”
Europe’s ICT Sectors Contribute Less to Economic Output

Value Added in the ICT Sector as a % Total Value Added, 2015

Source, ITIF, “Promoting European Growth, Productivity, and Competitiveness By Taking Advantage of the Next Digital Technology Wave”
Creation and Use of ICTs Contributes Less to GDP Growth

ICT Contribution to Average Annual Growth Rate, 1985-2016

Source, ITIF, “Promoting European Growth, Productivity, and Competitiveness By Taking Advantage of the Next Digital Technology Wave”
Lagging ICT Adoption Key Contributor to Productivity Gap


Source, ITIF, “Promoting European Growth, Productivity, and Competitiveness By Taking Advantage of the Next Digital Technology Wave”
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4. Policy Recommendations
1) Focus on the Future, Not the Past

- Europe lagged in past ICT waves, including in PCs, smartphones, cloud computing, Internet search, and social media.
- The emergence of new technology eras has led to different firms and regions gaining competitive advantage.
- CAS winners are not predetermined.
2) Focus on Areas of Competitive Advantage

- Past digital technology waves were about “bits.” CAS will be about “bits and atoms.” This plays to the EU’s strengths in engineering, provided it improves software capabilities.

- Build on EU strengths in tech-enabled business services, including accounting and finance, engineering services, supply chain and logistics, environmental compliance, consulting, graphics design, and biometrics.
3) Address Unequal Adoption of Digital Tools

- Wide gaps in adoption and effective use of digital tools between EU firms, industries, and nations.

- Lagging firms (especially SMEs), industries, and nations hold back EU digital progress and productivity.
4) Shift the Strategic Focus of the EU’s Digital Policies

- **Foundational**: Addressing potential harms from ICT, ICT companies, or individuals.

- **Field Clearing**: Reducing barriers and enabling markets.

- **Proactive**: Opening markets, enabling digital entrants and actively supporting digital transformation.
5) Build on the EU’s Unique Advantages

- EU is more open to launch supporting policies to drive digital transformation: smart grid, smart cities, health IT, E-IDs, etc.

- Take advantage of EU “laboratories of democracy,” particularly in smaller nations, to support and diffuse more bottom-up policy innovation.
6) Win Through Out-Investing the U.S.

- Only 5 nations exceed U.S. government’s investment in R&D as a share of GDP: Austria, Denmark, Finland, France, and Germany.

- The Commission should set a target to exceed the U.S. level by 20 percent by 2025. This would require additional €45 billion.
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1) Regulation

- Support national efforts to reform regulation through the “innovation principle.”

- Efforts to “level the playing field” should focus on equivalent protection, not equivalent regulation. Subjecting new digitally based business models to the same regulation as incumbents will limit innovation.

- Preempt individual member digital economy regulations.
Fintech refers to businesses that leverage the latest innovations in information technology to radically improve financial services.

In the first half of 2018, European fintechs received €23 billion of investment, double the €12 billion in U.S., and €14 billion in Asia.
The Vision

- “Open banking” where Internet-protocol-based financial transactions become dominant.
- Allow Internet protocols to do for banking what Skype did to telephone, Uber did to taxis, and WhatsApp did to messaging.
- A fundamentally more-efficient, lower-cost, more-globalized, and more-consumer friendly (e.g., mobile-first) model.
The Challenge

- Significant barriers impede fintech innovators, including:
  - Access to incumbent financial institutions.
  - Access to government regulator data.
  - "Bricks and mortar" regulations.
  - Standards and standards processes.

- Incumbent financial institutions have relatively weak incentives for innovation, explaining why most maintain multiple types of legacy and dedicated software, rather than replacing them with integrated, interoperable systems.
Regulatory Principles for FinTech

1. European regulators should embrace regulatory sandboxes for fintechs, and remove duplicative regulations inhibiting growth.

2. The EU should seek to create international harmonization for financial services laws and regulations, e.g. routing and AML.

3. The EU/member states should be early adopters of fintech services.

4. The EU/member states should increase funding for fintech R&D, and focus especially on promoting fintech cybersecurity.
2) Resources for Firms: Data, Research, Skills & Infrastructure

- Every EU member state should appoint a chief digital officer.
- Expand use of financial support instruments, such as innovation vouchers, to stimulate manufacturing digitalization.
- Expand tax credits supporting firms’ investments in new plant and capital equipment.
- Support lifelong learning and strong workforce reskilling programs (e.g., Austria, France, Sweden).
3) Culture and Institutions

- Expand support for EU universities to create entrepreneurship education programs and reform university engineering curriculum toward project-based learning and entrepreneurship.

- Establish an EU-wide productivity agency to identify specific policies to spur faster technology-based productivity and to act as a champion stronger productivity policies.

- Create an “innovation dividend” to better socialize economic gains from innovative industries/technologies.
4) Trade

- Give EU Commission authority to approve or reject acquisitions of EU firms from state-capitalist nations.
- Develop provisions to protect data flows within EU trade agreements and hold firms accountable by ensuring that data protection rules flow with the data.
- Establish a digital single market for services.
Join the Global Trade and Innovation Policy Alliance
Thank You!

Stephen J. Ezell | sezell@itif.org | @sjezell