Section B: Towards a new digital era
Emergence of digital technologies

- Technological developments contributing to emergence of digital technologies:
  - Advances in computing power (Moore’s law)
  - Increases in bandwidth (Gilder’s Law)
  - Explosive growth of digital data
    - 16.1 trillion gigabytes created in 2016
    - 163 trillion gigabytes will be created in 2025
Moore’s Law

Consumer Price Index (December 1997=100)

Date


Increased bandwidth

Source: CISCO Systems and World Development Indicators.
How digital era is impacting the economy

- Growth of online markets
  - research products, compare prices, provide feedback (customer ratings)

- Customized goods and services
  - product visualization and 3D printing, use of AI to generate recommendations

- Improves firms’ ability to produce, promote, distribute and maintain their products
  - IOT in smart manufacturing
performed any shopping-related task on a mobile device | researched a product on a mobile device | made a purchase using a mobile device

Source: Ernst & Young (2015)
Personalized goods and services

Source: Deloitte (2015)
Challenges posed by digital technologies

- Privacy and security (increased public concern)
- Market concentration
  - Network effects, scale without mass (Brynjolfsson et al, 2008), high switching costs
- The many dimensions of the digital divide
  - Regulatory divide
  - Gender divide
  - Small and big firms
  - High and low-skilled workers
## Percentage of US adults confident in the ability of institutions to protect their privacy

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Not at all confident</th>
<th>Not too confident</th>
<th>Somewhat confident</th>
<th>Very confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Their mobile phone manufacturers</td>
<td>13</td>
<td>13</td>
<td>43</td>
<td>27</td>
</tr>
<tr>
<td>Their credit card companies</td>
<td>15</td>
<td>15</td>
<td>42</td>
<td>27</td>
</tr>
<tr>
<td>Their mobile phone service providers</td>
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<td>47</td>
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</tr>
<tr>
<td>Their email providers</td>
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<td>17</td>
<td>46</td>
<td>20</td>
</tr>
<tr>
<td>Companies/retailer s they do business with</td>
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<td>21</td>
<td>46</td>
<td>14</td>
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<tr>
<td>The federal government</td>
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<td>21</td>
<td>37</td>
<td>12</td>
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<tr>
<td>Social media sites they use</td>
<td>24</td>
<td>27</td>
<td>38</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: Pew Research Center.
Notes: Survey conducted 30 March – 3 May 2016.
Figure B.15: ICT by development levels

Sources: UNCTAD (2017b), based on ITU data.
Gender divide

Internet penetration rate for men
Internet penetration rate for women
Measuring digitalization of the economy

- Estimates of e-commerce transactions and trade in potentially ICT-enabled services
- Data from e-commerce platforms (Amazon, Alibaba), search engines (Alphabet/Google), mobile payment services (M-Pesa) and content streaming (Netflix, Spotify)
Digital intensity of sales

Global e-commerce

Potentially ICT-enabled services

U.S. trade in ICT and potentially ICT-enabled services 2016, billions $U.S.

- **Exports**
  - ICT services: $337.4
  - Other PICTE services: $348.8
  - Not PICTE services: $66.1

- **Imports**
  - ICT services: $202.1
  - Other PICTE services: $260.6
  - Not PICTE services: $41.9

- **Balance**
  - ICT services: $88.2
  - Other PICTE services: $135.3
  - Not PICTE services: $159.5

U.S. Bureau of Economic Analysis
Spotify

Subscribers by region

- Europe: 40%
- North America: 31%
- Latin America: 19%
- Rest of World: 9%

Alibaba revenue breakdown (per cent), 2016-17