Measuring Digital Economy: Perspective from Chinese Taipei

Submitted by: Chinese Taipei
Measuring Digital Economy:
Perspective from Chinese Taipei

Connie Chang
National Development Council
Chinese Taipei
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Digital economy is the main driving force of economic growth and transformation

• Internet Economy: Internet infrastructure, ICT industry
• Digital Economy: Digital platforms, Digital transactions

Its measurement has become a topic of much discussion

• OECD (2017) proposed a framework for a satellite account for measuring digital economy
• The United State Bureau of Economic Analysis (BEA) (2018) produced the first exploratory estimates on the digital economy that are created within the OECD framework
“evaluation of current and future state of digital economy is needed to guide policy-making”

Chinese Taipei: not only taking notes but also taking actions

Currently, we have ...

① **GDP by ICT industry**
   - from 1981 to 2017
   - macroeconomic accounts (according to 2008SNA)

② **Sales by E-Commerce**
   - from 2015 to 2017
   - Industry and Service Census (conducted every 5 years) and Special Project Surveys

③ **Digital Economy**
   - from 2008 to 2015
   - estimated by production approach
Scope of Digital Economy

Digital Economy

Broad Definition from International Organizations

Digital Sector

Digital Manufacturing
- Electronic Parts and Components Manufacturing
- Information and Communication Products Manufacturing

Digital Services
- Information and Communication Products Retails and Equipment Maintenance
- Broadcasting
- Telecommunications
- IT-related Services ...

E-Commerce
- Internet B2C Retail Trade
- Agriculture E-commerce
- E-finance
- Online Travelling-related Services
- E-learning Services ...

Chinese Taipei (Policy-making agent definition)

Source: Board of Science and Technology, the Cabinet, Chinese Taipei
Methodology of Chinese Taipei

Digital Economy

- **Digital Manufacturing**
  - Manufacture of Electronic Parts and Components
  - Manufacture of Information and Communication Products

- **Digital Services**
  - Information and Communication Products Retail and Equipment Maintenance
  - Broadcasting
  - Telecommunications
  - IT-related Services

- **E-Commerce**
  - Internet B2C Retail Trade
  - Agriculture E-commerce
  - E-finance
  - Online Travelling-related Services
  - E-learning Services

ICT Industry

- **ICT Manufacturing**
  - Manufacture of Electronic Parts and Components
  - Manufacture of Computers, Electronic and Optical Products

- **ICT Services**
  - Telecommunications
  - IT and Other

- **E-Commerce**
  - B2B
  - B2C
  - Note: Lack of Data on P2P

Source: Board of Science and Technology, the Cabinet, Chinese Taipei

Source: Directorate-General of Budget, Accounting and Statistics, the Cabinet, Chinese Taipei
Chinese Taipei’s annual compound growth rate of nominal digital economy is **6.4%** between 2008-2015

**Scale of Chinese Taipei’s digital economy**

- 2008: 72.3 Billion (USD)
- 2009: 78.8 Billion (USD)
- 2010: 90.8 Billion (USD)
- 2011: 106.2 Billion (USD)

**Share of digital economy in total GDP of Chinese Taipei**

- 2008: 17.3%
- 2009: 17.7%
- 2010: 18.3%
- 2011: 20.3%

Source: Board of Science and Technology, the Cabinet, Chinese Taipei
Comparison

Chinese Taipei’s share of digital economy in total GDP is higher than that of the US, Malaysia or Thailand ...

<table>
<thead>
<tr>
<th>Country</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Taipei</td>
<td>20.0%</td>
<td>20.3%</td>
<td>20.0%</td>
<td></td>
</tr>
<tr>
<td>the US</td>
<td>6.1%</td>
<td>6.3%</td>
<td>6.1%</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>17.8%</td>
<td>18.2%</td>
<td>17.8%</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>14.4%</td>
<td>16.6%</td>
<td>14.4%</td>
<td></td>
</tr>
</tbody>
</table>

Source: 1. Board of Science and Technology, Executive Yuan, Chinese Taipei
2. Bureau of Economic Analysis, Department of Commerce, the US
3. Malaysia Digital Economy Corporation, Malaysia
4. The Centre for Economic and Business Forecasting, University of the Thai Chamber of Commerce, Thailand
Does the difference of the share of digital economy in total GDP truly reflect the performance of digital economy in each economy?

different definition?

incomplete value assessment?
### Definition Gap

<table>
<thead>
<tr>
<th>Chinese Taipei</th>
<th>The US</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Digital Economy</strong></td>
<td><strong>Digital Economy</strong></td>
</tr>
<tr>
<td>• Digital Manufacturing</td>
<td>• Hardware</td>
</tr>
<tr>
<td>– Manufacture of Electronic Parts and Components</td>
<td>• Software</td>
</tr>
<tr>
<td>– Manufacture of Information and Communication Products</td>
<td>• Support Services</td>
</tr>
<tr>
<td>• Digital Services</td>
<td>• Telecommunications</td>
</tr>
<tr>
<td>– Information and Communication Products</td>
<td><strong>E-Commerce &amp; Digital Media</strong></td>
</tr>
<tr>
<td>Retails and Equipment Maintenance</td>
<td>• E-Commerce</td>
</tr>
<tr>
<td>Broadcasting</td>
<td>– B2B</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>– B2C</td>
</tr>
<tr>
<td>IT-related Services</td>
<td>• Digital Media</td>
</tr>
<tr>
<td>• E-Commerce</td>
<td>– Data Streaming</td>
</tr>
<tr>
<td>– Internet B2C Retail Trade</td>
<td>– Online Publishing</td>
</tr>
<tr>
<td>– Agriculture E-commerce</td>
<td>– Broadcasting</td>
</tr>
<tr>
<td>– E-finance</td>
<td><strong>Source:</strong> Bureau of Economic Analysis, Department of Commerce, the US</td>
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<td>– Online Travelling-related Services</td>
<td><strong>Source:</strong> Board of Science and Technology, the Cabinet, Chinese Taipei</td>
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<td>– E-learning Services</td>
<td><strong>Source:</strong> Bureau of Economic Analysis, Department of Commerce, the US</td>
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</tbody>
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There is a growing debate on the range of options for rethinking economic value in the 4th industrial revolution:

- Identify & account for a range of new intangible assets.
- Adapt or complement GDP to account for digitally-derived value.
- Adapt measures of consumer welfare, well-being & societal value.
- Focus new metrics on distribution & disaggregated data.
- Rethink the fundamental definition of value.

The need to measure economic welfare in the digital age is clear. The question then becomes, what to measure, and how:

- **GDP-Plus** by David Lipton (2018) captures the positive welfare effects from the digital economy.
- **GDP-B (GDP-Benefit)** by Erik Brynjolfsson et al. (2018) provides an approximate adjustment to traditional GDP growth for new and free goods.
Hurdles to measuring and comparing the digital economy

• the absence of a generally agreed definition of the digital economy
• the absence of industry and product classification for digital platforms and associated services

It is challenging but necessary for policy-making purpose to ...

• include free digital services in the definition of GDP
• develop new indicators for welfare created by free digital products
Recommendation

• APEC: guidelines and recommendations are to be developed on measuring digital transactions and digital economy

• Each APEC member economy: classification systems be updated for digital activities and products to support measurement improvements
  – Provide domestic statistical offices with sufficient resources to measure digital activities and products and to develop indicators of welfare effects of digitalization
  – Expand the use of new data sources linked to digitalization, such as “Big Data” and promote data sharing through public-private partnership