Approach to Measuring the Digital Economy - Global Affairs Canada

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DEFINING AND SCOPING THE DIGITAL ECONOMY

There is no clear and complete definition of the “digital economy.”

• Some growing consensus on digitalization:
  • More than just a sub-sector of the economy,
  • An increasingly ubiquitous process – permeating all sectors of the economy.
  • The economy has gone through process of technological transformation in the past, ex: “Electricity.”
Example: Purchasing a ride service

**Pre-Digitalization**
- Customer
- Business Producer

**Digital Era**
- Intermediary Platform
- Customer
- Household Producer

- Households producers are enabled by an intermediary platform.
- The potential borders add an extra layer of complexity, we want to measure based on service flow (net flow) not monetary flow (gross flow).
WHAT IS “NEW” IN THE DIGITAL ECONOMY?

- *Household producers*, enabled digitally by *intermediary* platforms/marketplaces.
- *Global consumers*, enabled by direct interactions with *foreign businesses*.
- *Data* (especially data from “free” services) as capital and input.
- *Intangible* goods and investment.
- *Digital delivery* of goods and services, and
- An increasingly *blurred line* between goods and services

While many “new” items are not completely new; the *scale*, and *magnitude* have increased in the digital era.
“The rise of digital technologies promises to further transform international trade” (WTO 2018), with key implications for trade flow and trade cost.

WTO’s Framework for Measuring Digital Trade

Nature (‘How’)  
Digitally-Enabled: 1) Direct 2) Intermediary  
Digitally Delivered

Product (‘What’)  
Goods  
Services  
Goods and Services Bundle

Actors (‘Who’)  
Business  
Consumer  
Government  
Non-Resident

Source: WTO Secretariat, adapted from OECD (2017)
GLOBAL AFFAIRS CANADA’S RESEARCH ON “DIGITAL TRADE”

Key themes include:

**Digitally-Enabled Trade**
- International trade enhanced by digital technologies and electronic means.
- Implications on international trade flow, performance and cost.

**Digitally-Delivered Trade**
- Goods and services transported over a digital network.
- Implications on trade costs, payments, and the concept of borders.

**Data and Information Flow**
- The increasing importance of international data and information flow.
- Implications on trade efficiency, privacy, and security.

**Changing Comparative Advantage**
- Altering the importance of old sources and creating new sources.
- Implications on trade flow, and the Global Value Chain.
WHAT WE KNOW ON DIGITAL ENABLED TRADE


• Lendle et al. (2016), and Kim et al. (2017) found that distance plays a smaller negative role in trade conducted online.

• The impact of digitalization on trade varies by sector (González and Ferencz 2018) and product type (Blum and Goldfarb 2006, Head and Mayer 2014).

• Digitally advanced firms (Business Development Bank of Canada 2018) and technology-enabled small businesses (Institute for Research on Public Policy 2016) are more likely to export.
WHAT WE KNOW ON DIGITAL ENABLED TRADE

- Digital technologies enable consumers to become *global consumers*.

![Bar chart showing the share of online shoppers who make international purchases](chart)

### Share of online shoppers who make international purchases

<table>
<thead>
<tr>
<th>Country</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>61</td>
</tr>
<tr>
<td>Canada</td>
<td>63</td>
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<tr>
<td>Chile</td>
<td>67</td>
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<tr>
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<tr>
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<tr>
<td>Japan</td>
<td>6</td>
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<tr>
<td>Mexico</td>
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<td>Philippines</td>
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</tr>
<tr>
<td>Singapore</td>
<td>73</td>
</tr>
<tr>
<td>United States</td>
<td>34</td>
</tr>
</tbody>
</table>

Source: PayPal, Ipsos, August 2018
CHALLENGES TO MEASURING DIGITAL ENABLED TRADE

• *Unclear definition* of digitalization leading to the use of *proxies* to measure digitalization.
  • Take up in digital tools, internet penetration, ICT skills and infrastructures, and etc…

• While official trade data include some transactions enabled by digital technologies, it does not identify all the transactions that are digitally enabled.
  • NAICS 45411 or NACE 47.91 provides some details.

• Private company data can provide some insights, but is *non-comprehensive* and can be biased.

• *Global consumers* are difficult to survey. *Intermediary platforms* (the enablers) might be based in another economy.
WHAT WE KNOW ON DIGITAL DELIVERED TRADE

• ICT-Enabled Services* exports have been growing.

• Service trade using Supply Mode 1* (cross-border supply) can be a proxy for ICT-Enabled services.

• Growing international revenue from streaming services (ex: Netflix).

• Online labour market enabled by digital platforms matches labour supply (household producers) with international demand (Online Labour Index).

*See UNCTAD: International Trade in ICT Services and ICT-Enabled Services (2015) for more details

Growth in Canadian Exports 2006 - 2016

Data: Statistics Canada Table 12-110-0001-01 & Statistics Canada: Canada’s international trade in ICT and ICT-enabled services
Source: Office of the Chief Economist, Global Affairs Canada
CHALLENGES TO MEASURING DIGITAL DELIVERED TRADE

- Service trade data is more difficult to measure than merchandise, and attempts to measure service trade by mode have been exploratory.
  - Trade in some ‘digitized’ services are available (e.g. software, computer services)
  - UNCTAD categorized “ICT-Enabled Services” based on Central Product Classification (CPC) 2.1, Canada measures service trade using Extended Balance of Payments Services Classification (EBOPS).

- Household producers are difficult to survey, intermediary platforms (the enabler) might be based in another economy.

- There is an increasingly blurred line between goods and services. Example: smart products & accompanying services, streaming services giving access to digital goods.
WHAT WE KNOW AND CHALLENGES REGARDING TRADE AND DATA

- Data is an important input for the modern economy but there is often a trade-off between privacy, security and effective data usage.
- Casalini and González (2019) found a growing number of data regulations.
- Ferracane and van der Marel (2018) suggests that data flow restrictions lead to less service trade over the internet.
- Challenges come from the fact that there is uncertain on the role of data (capital vs input).
- Measuring the value of data is another challenge, along with intra-firm flow of knowledge and data.
WHAT WE KNOW AND CHALLENGES ABOUT DIGITAL COMPARATIVE ADVANTAGE

What we know:

• A rise in intangible capital.
• Economies of scale and scope from platforms and intermediaries:
  • Data.
  • Technical expertise.

Challenges:

• Difficult to measure intangibles such as knowledge capital and economic competencies. Baldwin et al. (2009, 2012) developed a measurement method.
• The value and role of data.


Note: GDP adjusted to include intangibles
Early Stage Work on Digital Trade at Global Affairs Canada

- Digital technology usage and digital sales by exporters.
- Survey of Digital Technology and Internet Use 2019 will provide further details on digital sales and usage.

- Exploratory work to include measures of digitization into the gravity model.
- Collaborated with Statistics Canada on various survey, such as the Canadian Internet Use survey.
LOOKING FORWARD…

• What does current data tell us as policy makers?
  • The amount of data is growing, but we need more data.
• What can APEC do?
  • International data/expertise exchange:
    • Intermediaries/Platforms,
    • Direct interaction between foreign businesses and domestic customers,
    • The use of alternative data sources (web-scrape data, administrative data, censor data, etc…),
    • Measuring the value of data.
Thank You

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