



**Asia-Pacific  
Economic Cooperation**

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## **Approach to Measuring the Digital Economy - Global Affairs Canada**

Submitted by: Canada



**Workshop on the Digital Economy:  
Measurement, Regulation and Inclusion  
Santiago, Chile  
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# Approach to Measuring the Digital Economy - Global Affairs Canada

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# DEFINING AND SCOPING THE DIGITAL ECONOMY

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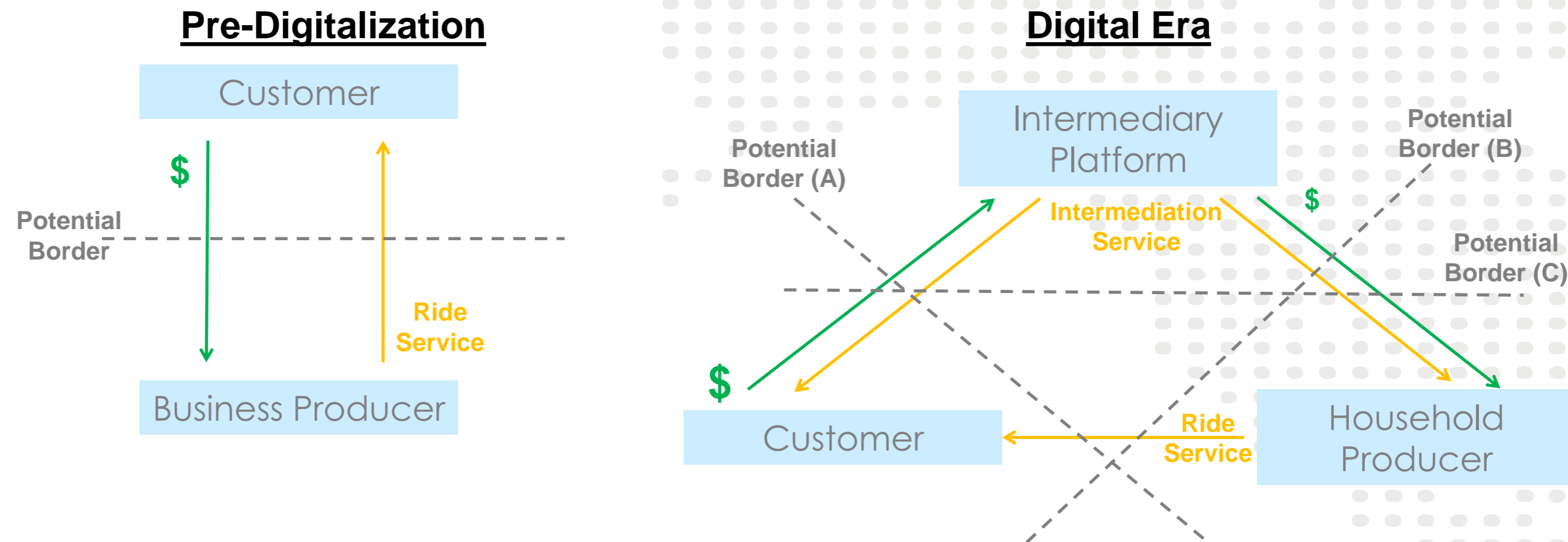
There is no clear and complete definition of the “digital economy.”

- 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.”



# TRANSACTIONS CAN BE MORE COMPLEX

Example: Purchasing a ride service



- 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

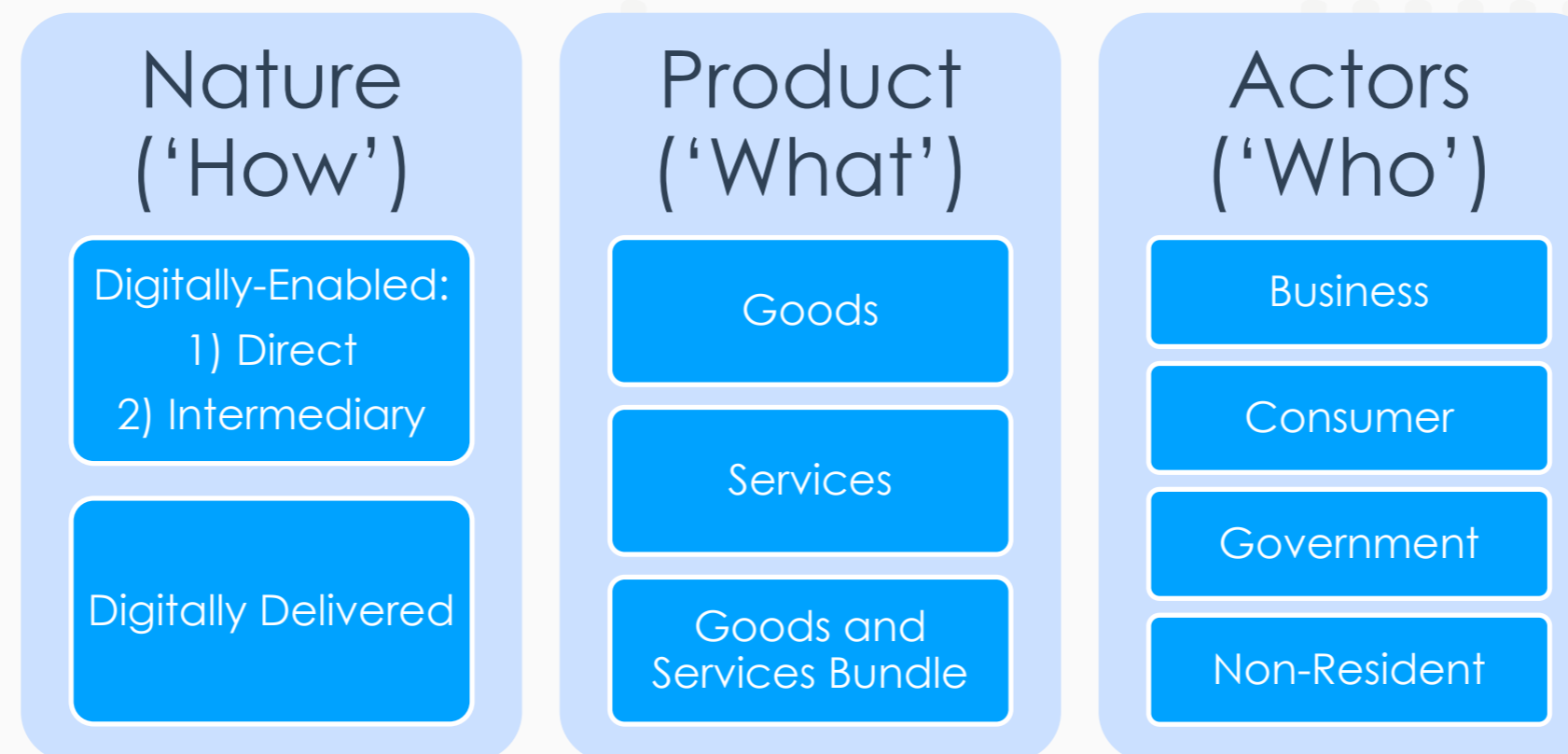
While many “new” items are not completely new; the scale, and magnitude have increased in the digital era.



# DIGITALIZATION AND INTERNATIONAL TRADE

- “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



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

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- Freund and Weinhold (2002, 2004), Clarke and Wallsten (2006), Vemuri and Siddiqui (2009), Choi (2010), Riker (2014), Benz et al. (2017), González and Ferencz (2018) found a positive correlation between trade and digitalization.
- 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*.



Source: PayPal, Ipsos, August 2018



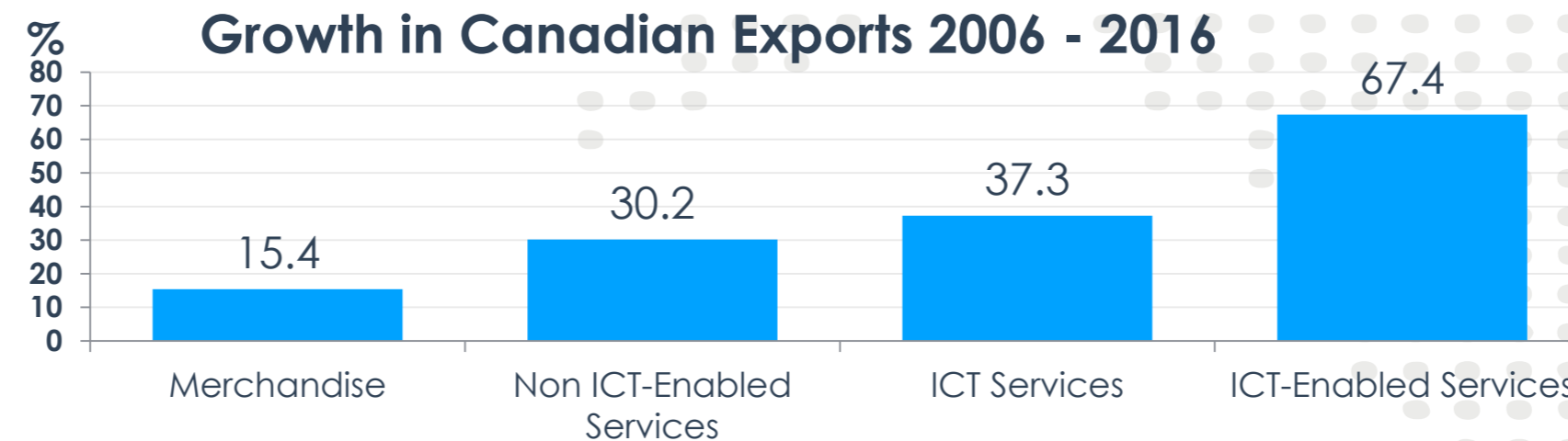
## CHALLENGES TO MEASURING DIGITAL ENABLED TRADE

- *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.



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

- 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



# CHALLENGES TO MEASURING DIGITAL DELIVERED TRADE

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- 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

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- Growth in cross-border bandwidth (McKinsey Global Institute 2016).
- 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*.



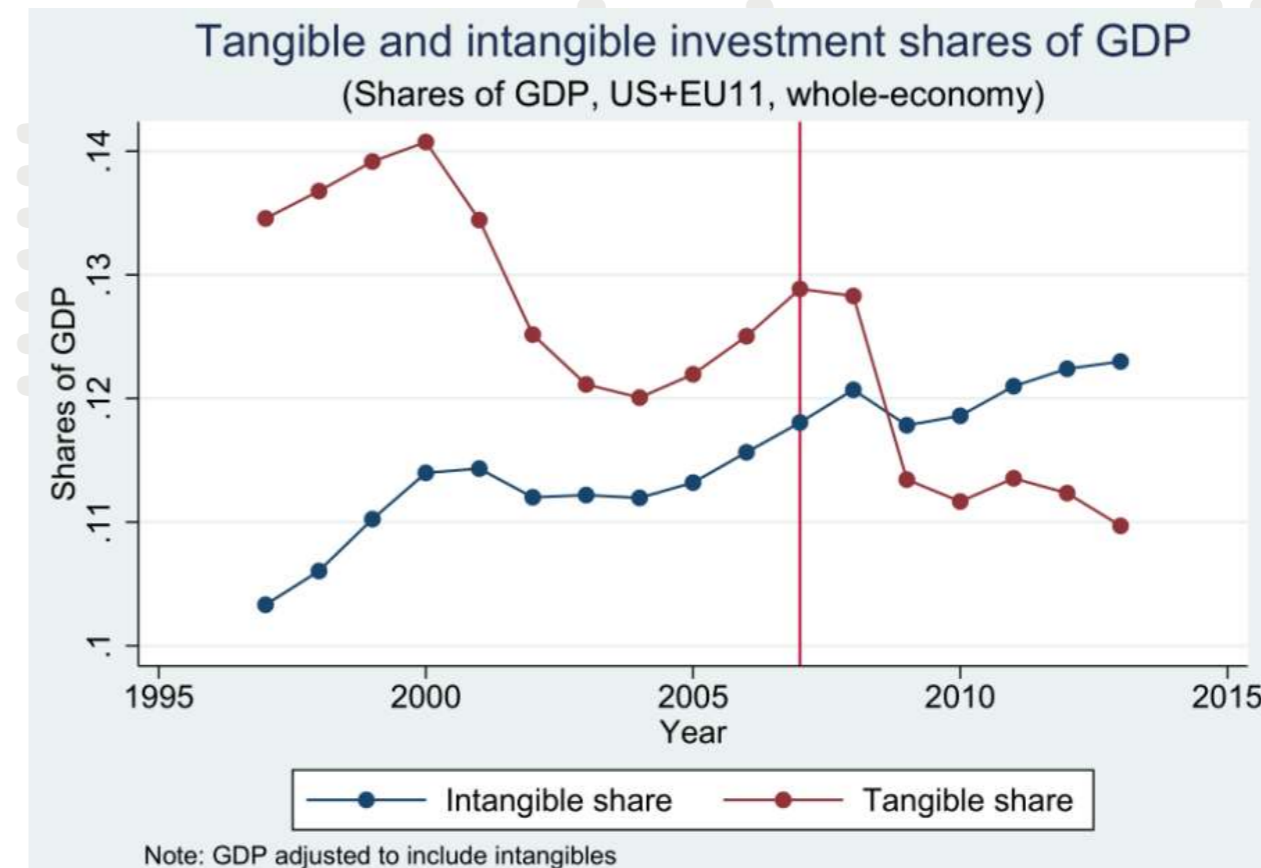
# WHAT WE KNOW AND CHALLENGES ABOUT DIGITAL COMPARATIVE ADVANTAGE

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.



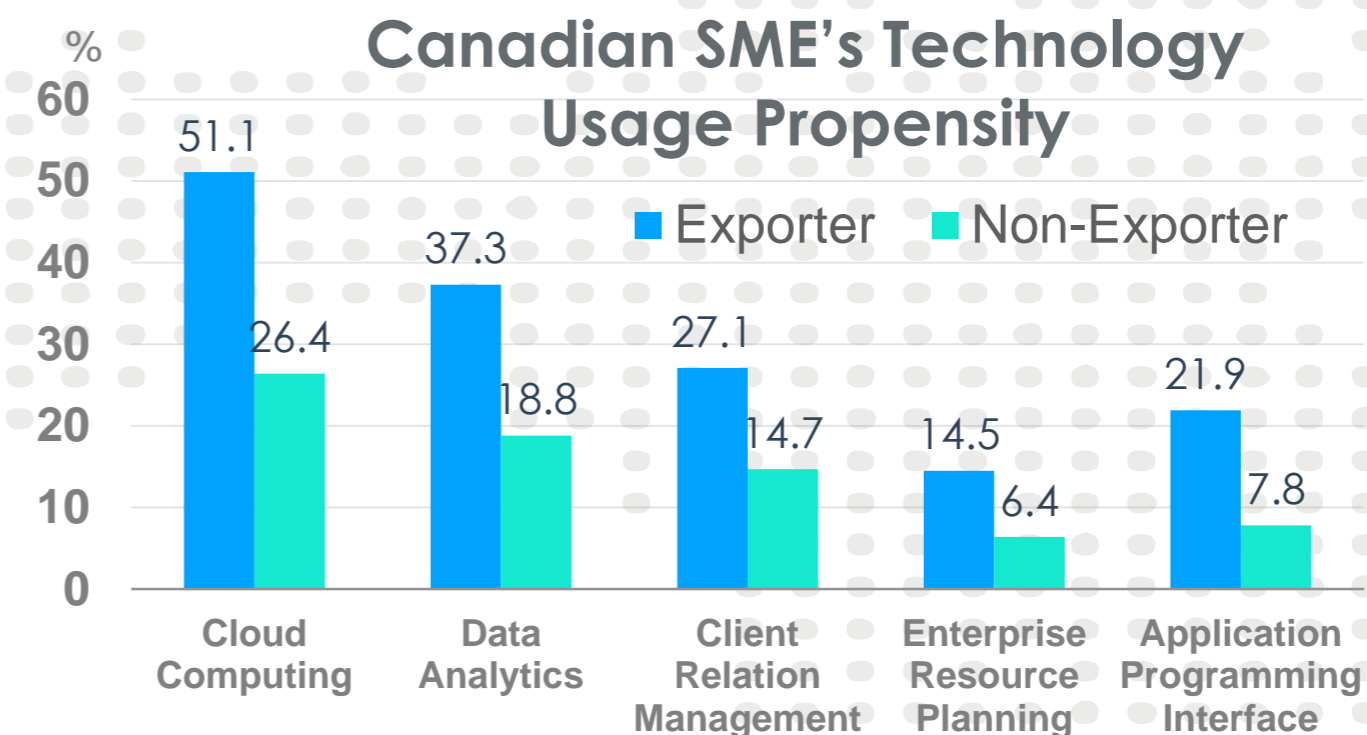
Source: Jonathan Haskel, Stian Westlake (2017) calculation using SPINTAN database, "Capitalism without Capital".





## 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.



Data: Survey on Financing and Growth of Small and Medium Enterprises

- 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...

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- 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.

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# Thank You

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