Digital Platforms & Digital Trade Restrictions

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Univesité Libre de Bruxelles (ULB) - Solvay Brussels School
Content

• Restrictions data, technologies & digital trade
  • Including digital platforms

• Economic impacts of these digital restrictions
  • Partner in crime: Martina Ferracane
Services over the internet

Growth of goods, services and ICT services flows

- Goods
- Total services
- Digital services

Index growth rate
Technology ideas as a flow

Exports 2009 = 1

Goods Services ICT-services Ideas
Global data traffic grows
The role of data in globalization

• Contribution of data to GDP > goods (McKinsey)
• Particularly great role in Artificial Intelligence (Goldfarb and Trefler, 2018)
Where are data in the economy?

- Top 20 data-intensive sectors
- Services & technology
- GVC / “premia” sectors
What policies are problematic?

<table>
<thead>
<tr>
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<th>Internet com services</th>
<th>Cloud-based data processing</th>
<th>Digital content</th>
<th>E-commerce</th>
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USITC (2017)
Number of data-related restrictions
Digital Trade Restrictiveness Index
Digital Trade Restrictiveness Index

• Wider DTE Project
  • Database
  • Digital Trade Restrictiveness Index (DTRI)
  • DTRI report
<table>
<thead>
<tr>
<th>Cluster A</th>
<th>Cluster B</th>
<th>Cluster C</th>
<th>Cluster D</th>
</tr>
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<tbody>
<tr>
<td>Fiscal restrictions and Market access</td>
<td>Establishment restrictions</td>
<td>Restrictions on data</td>
<td>Trading restrictions</td>
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</table>

### Chapters

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<td>Tariffs &amp; trade defence</td>
<td>Taxation &amp; Subsidies</td>
<td>Public Procurement</td>
<td>FDI restrict.</td>
<td>IPR restrict.</td>
<td>Competition</td>
<td>Mobility (M4)</td>
<td>Restrictive data policies</td>
<td>Intermediate liability</td>
<td>Content access</td>
<td>Quantitative trade restrict.</td>
<td>Restrictive standards</td>
<td>Online sales &amp; transactions</td>
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</tbody>
</table>
Digital Trade Restrictiveness Index

- Larger (emerging) countries
- Within OECD, larger manufacturing countries digitally restricted
- Such as FRA, DEU & KOR
Restrictions in data

• Larger (emerging) countries
• But overall a fairly mixed bag
Global trend in data policies
Economic impacts

• On productivity (of local firms)
  • On productivity (through platforms)*
• On trade in services (over the internet)
• On digital innovation (in East Asia)*
## DTRI

### Cluster A
- Fiscal restrictions and Market access

#### Chapters
1. Tariffs & trade defence
2. Taxation & Subsidies
3. Public Procurement

### Cluster B
- Establishment restrictions

#### Chapters
4. FDI restrict.
5. IPR restrict.
6. Competition
7. Mobility (M4)

### Cluster C
- Restrictions on data

#### Chapters
8. Restrictive data policies
9. Intermediate liability
10. Content access

### Cluster D
- Trading restrictions

#### Chapters
11. Quantitative trade restrict.
12. Restrictive standards
13. Online sales & transactions
Research papers


Research papers

Research papers

Research papers

Empirical strategy

• All works use similar identification strategy
• Use of sectoral data-intensities (follows Arnold et al., 2015; 2011)
• Interacted with DTRI: data-linkage (DL) variable:

\[
\text{Data Linkage (DL)}_{cjt} = \ln \frac{\sum d_{ij}}{\text{LAB}_j} \times \text{DTRI}_{ct}
\]
Empirical strategy

• Regressing log of services imports on data-linkage variable

\[ \ln(SM)_{ct} = \Phi + \theta DL_{ct-1} + \delta_{ct} + \gamma_{jt} + \epsilon_{ct} \]

• 2006-16/18, US intensities as data-intensities (exogenous)
• Strict clustering, robustness checks, lagged structure (endogeneity)
Data-intensities

(1) **US Census 2010** software expenditures *
(2) **US BEA IO** Use Table for 2007
   - Ratio over US BLS labour data, expressed as $\ln(D/L) \neq DL$
Economic impacts

• On productivity (of local firms)
On productivity (firm-level)

In all papers, ln(D/L) is preferred and used as part of the identification strategy.

In all papers, ln(D/L) is preferred and used as part of the identification strategy.
On productivity (firm-level)

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<td>O&amp;P</td>
<td>TFPR</td>
<td>TFPQ</td>
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<td>In(D/L) * Data policy CB</td>
<td>-0.305***</td>
<td>-0.311***</td>
<td>0.139</td>
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<td></td>
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<td>(0.115)</td>
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Economic impacts

• On productivity (through platforms)
On productivity (industry-level)

Search, e-commerce & social media

Digital Platform Restrictiveness Index (DPRI)
On productivity (industry-level)

Digital platforms and data play an important role in the intangible economy; Corrado et al. (2016)
On productivity (industry-level)

Intensity for Search, E-commerce & Social

Digital platform intensity used in regressions (% firms using digital platforms)

PL-index instead of DL index

- Accommodation
- Information
- Distribution
- Business
- Administrative
- Manufacturing
- Real estate
- Utilities
- Transportation
- Construction

Digital platform intensity used in regressions (% firms using digital platforms)

Search, E-commerce, Social

PL-index instead of DL index
On productivity (industry-level)

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<td>1.128</td>
<td>1.127</td>
<td>1.129</td>
<td>1.129</td>
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</table>
On productivity (summary)

• Especially w.r.t. policies for domestic use of data
• Especially on local small and medium sized firms (SMEs)
• Looking at platforms: ICT-related value-added contribution to LP
Descriptive

Netherlands Services Imports and Data-intensity

Turkey's Services Imports and Data-intensity
On trade in services (internet)
## On trade in services (internet)

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<td>(\ln(SM))</td>
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<tr>
<td>(\ln(D/L) \times \text{Data policy CB})</td>
<td>-2.078***</td>
<td>-1.803**</td>
<td>-1.082***</td>
<td>-1.058***</td>
<td>-1.067***</td>
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<td></td>
<td>0.007</td>
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<td>-1.614**</td>
<td>-1.066</td>
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<td>Yes</td>
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<td>M1</td>
<td>M1</td>
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On trade in services (summary)

• Especially w.r.t. cross-border data policies
• On imports over the internet, i.e. Mode 1 GATS
• Also seems an important trade facilitation in services “enabler”
On digital innovation (in East Asia)
## On digital innovation (in East Asia)

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<tr>
<td></td>
<td>New products introduced</td>
<td>New processes introduced</td>
<td>Foreign licensing of technology</td>
<td>Spent on innovation</td>
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<td>Index * ln(D/L)</td>
<td>-0.014</td>
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<td>No. groups</td>
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<td>-4690.1</td>
<td>-5207.8</td>
<td>-4045.7</td>
<td>-3475.1</td>
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</table>
On digital innovation (summary)

• Especially w.r.t. acquiring licenses of foreign technology
  • Implies impact on “mode” of entering a market through the use of IP
  • Generally tends to affect small firms that otherwise could not enter / grow
• On local firms in East Asian countries
Conclusions

• Digital restrictions matter, especially for intangible trade
• Larger manufacturing-based (middle-income) countries ↑
• However, enabling environment matters too (example EU)
  • How to institutionalize trust and security?
Further thoughts

• Trade in technology ideas (IP: patents, copyrights, trademarks)
• Future of trade: **mix** between goods and services
• Digital platforms good example: ecosystem involves many services
Optional slide

- Optional slides
Data-intensity (BEA IO Use vs US Census)
Digital enabling environment

[Graph showing Digital Trade Restrictiveness Index (DTRI) with countries represented as circles, some labeled with countries such as AUT, BEL, BGR, CYP, CZE, DEU, DNK, ESP, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ITA, LTU, LUX, LVA, MLT, NLD, POL, PRT, ROU, SVK, SVN, SWE, and the Technological Readiness (WEF) axis marked with values 4.5, 5, 5.5, 6, and 6.5.]
Data-intense services (Mode 3 / Mode 1; gross terms)

Source: Andrenelli et al (2018); using analytical AMNE database.
GVC position and DTRI

Digital Trade Restrictiveness Index (DTRI)