

Digital Platforms & Digital Trade Restrictions

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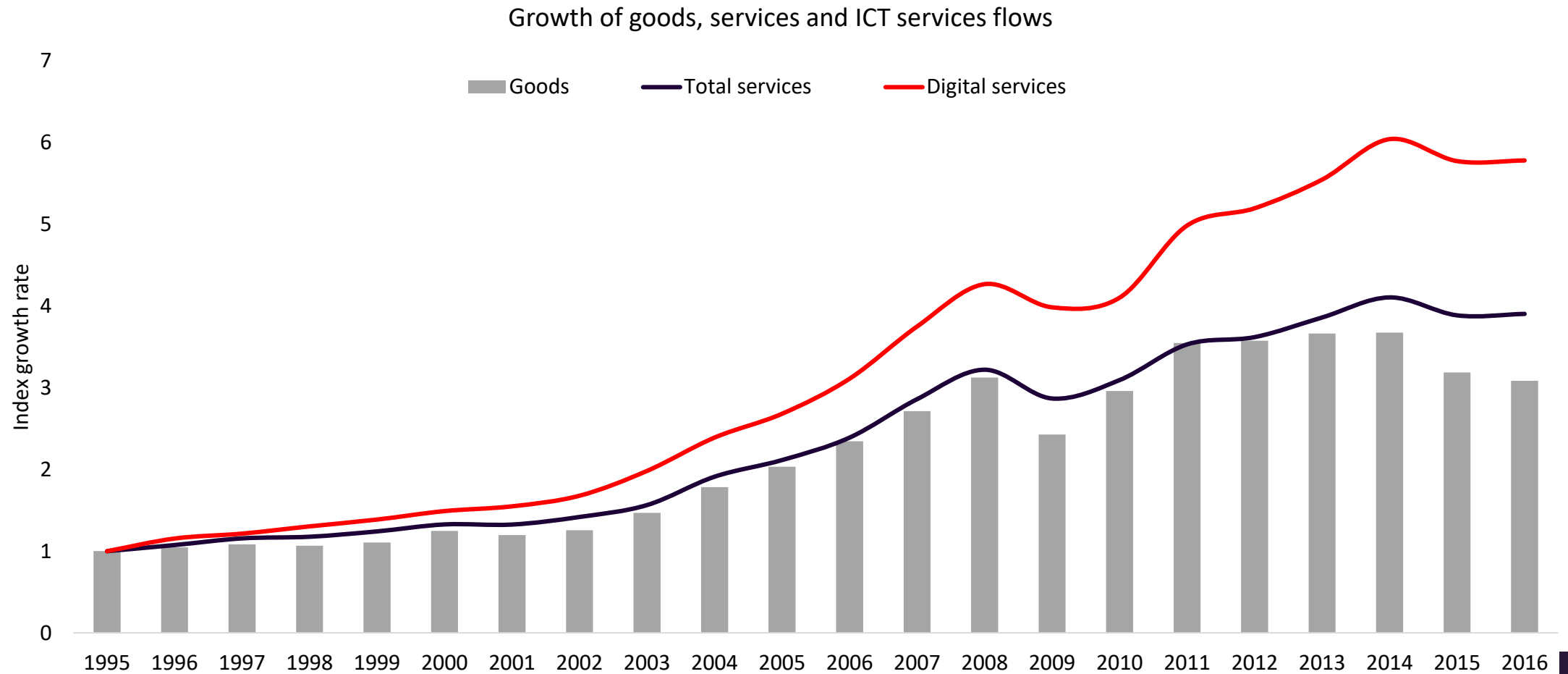


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Content

- **Restrictions** data, technologies & digital trade
 - Including digital platforms
- **Economic impacts** of these digital restrictions
 - Partner in crime: Martina Ferracane

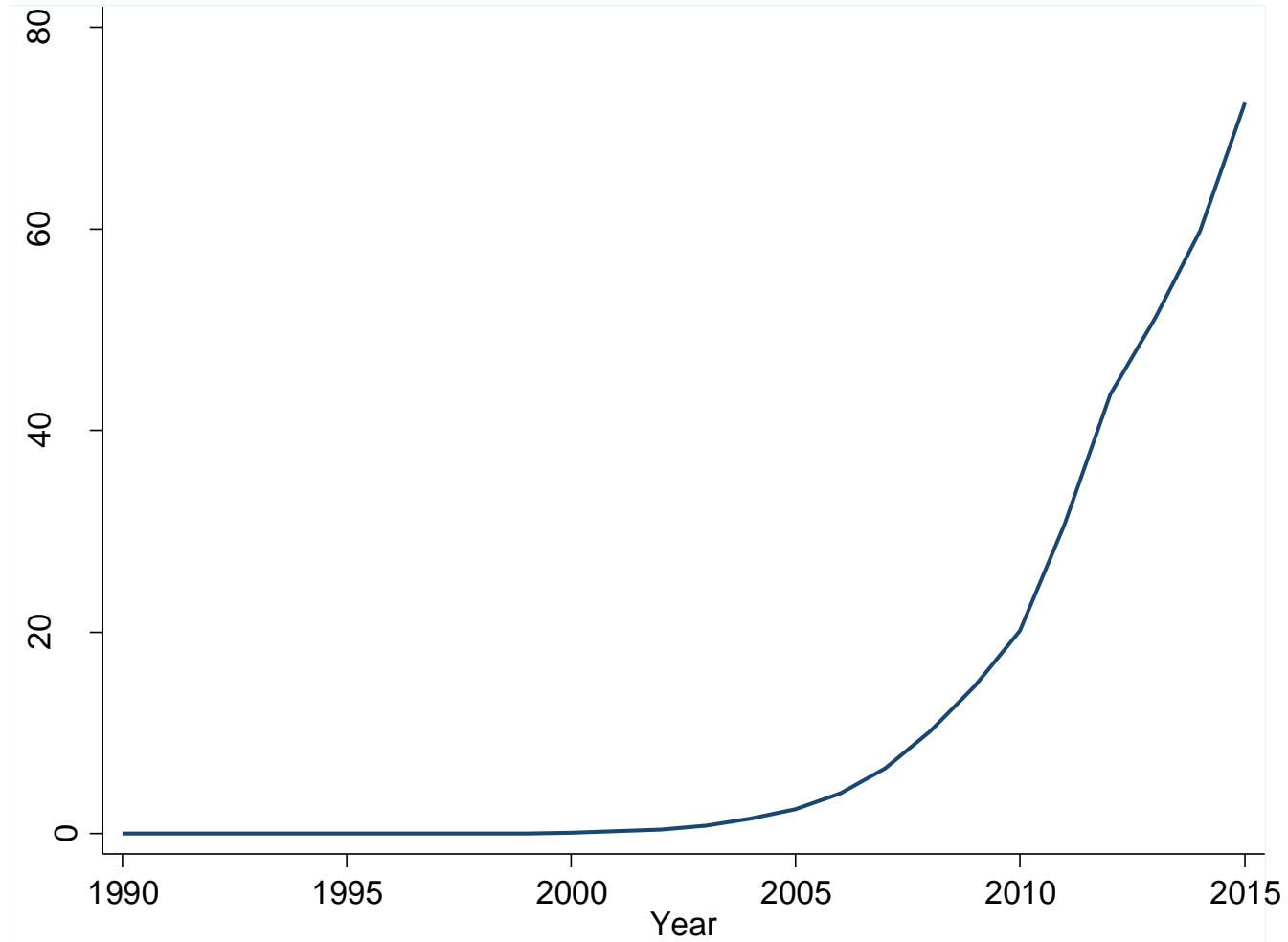
Services over the internet



Technology ideas as a flow



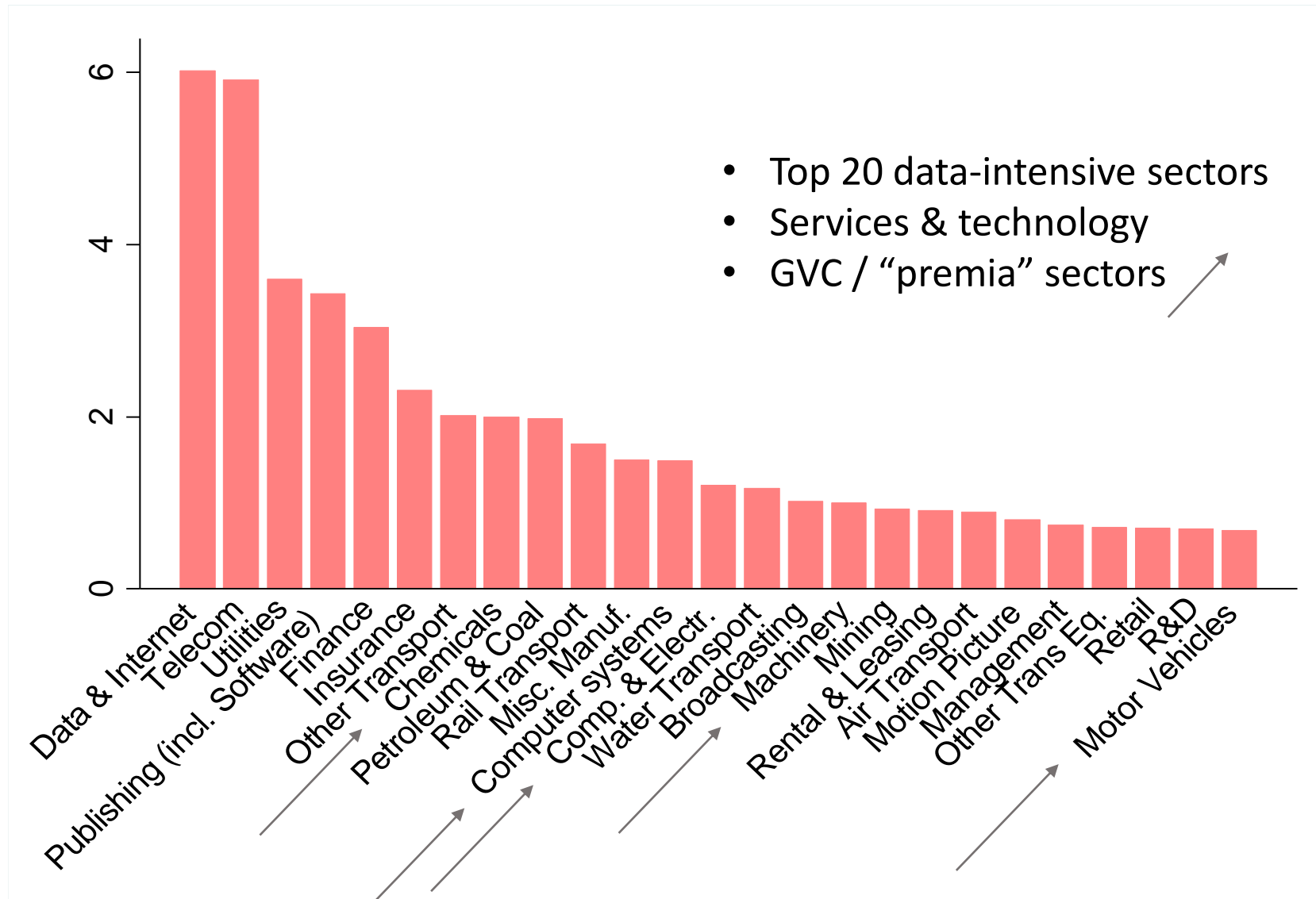
Global data traffic grows



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?



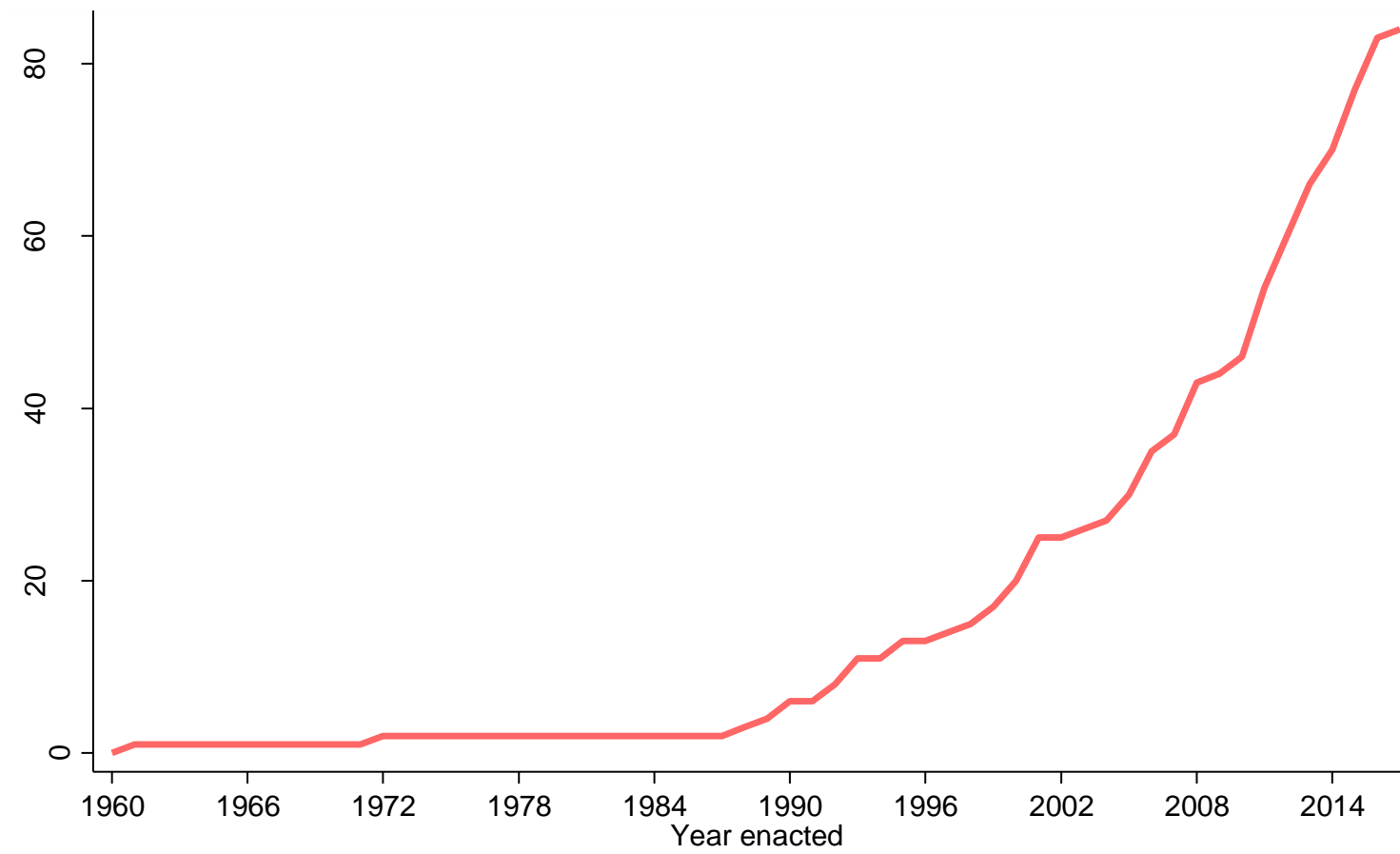
What policies are problematic?

	Internet com services	Cloud-based data processing	Digital content	E-commerce	IoT
Data measures					
Data protection and privacy	X	X	X	X	X
Data localization	X	X		X	X
Cybersecurity measures					
Disclosing source codes		X	X	X	X
Restrictions on cryptography	X	X	X	X	X
Censorship			X		
IPR measures					
Intermediate liability	X		X	X	
Anciliary copyrights	X		X	X	

USITC (2017)



Number of data-related restrictions



Digital Trade Restrictiveness Index

The screenshot displays the ECiPE website's 'DTE Report' page. The browser's address bar shows the URL <https://ecipe.org/dte-report/>. The website header includes the ECiPE logo, navigation menus for 'ABOUT US', 'PROGRAMS', 'RESEARCH', 'EVENTS', 'MEDIA', and 'BLOG', and a search bar labeled 'Custom Search'. Below the header, the 'DTE' section is highlighted, with sub-links for 'DATABASE', 'DTE REPORT', and 'PUBLICATIONS'. A dropdown menu is open, showing the text: 'compare with each other. The index is based on the Digital Trade Estimates (DTE), a database that ECiPE has developed and that is freely available for anyone to use.' To the right, there are sorting options ('Recent', 'Title') and a 'BROWSE' button. A preview of the report cover is shown, featuring the title 'Digital Trade Restrictiveness Index' and authors: Martina Francesca Ferracane, Hosuk Lee-Makiyama, and Erik van der Marel. The report cover also includes the ECiPE logo and the text 'DTE | DIGITAL TRADE ESTIMATES'. At the bottom of the page, there is a 'SHARE THIS PAGE' section with social media icons and a 'NEWSLETTER SIGNUP' button. The Windows taskbar at the bottom shows various open applications and the system clock indicating 18:06 on 18/10/2019.



Digital Trade Restrictiveness Index

- Wider DTE Project
 - Database
 - Digital Trade Restrictiveness Index (DTRI)
 - DTRI report

DTRI

Cluster A

Fiscal restrictions and
Market access

Chapters

1	2	3
Tariffs & trade defence	Taxation & Subsidies	Public Procurement

Cluster B

Establishment
restrictions

Chapters

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

Cluster C

Restrictions on data

Chapters

8	9	10
Restrictive data policies	Intermediate liability	Content access

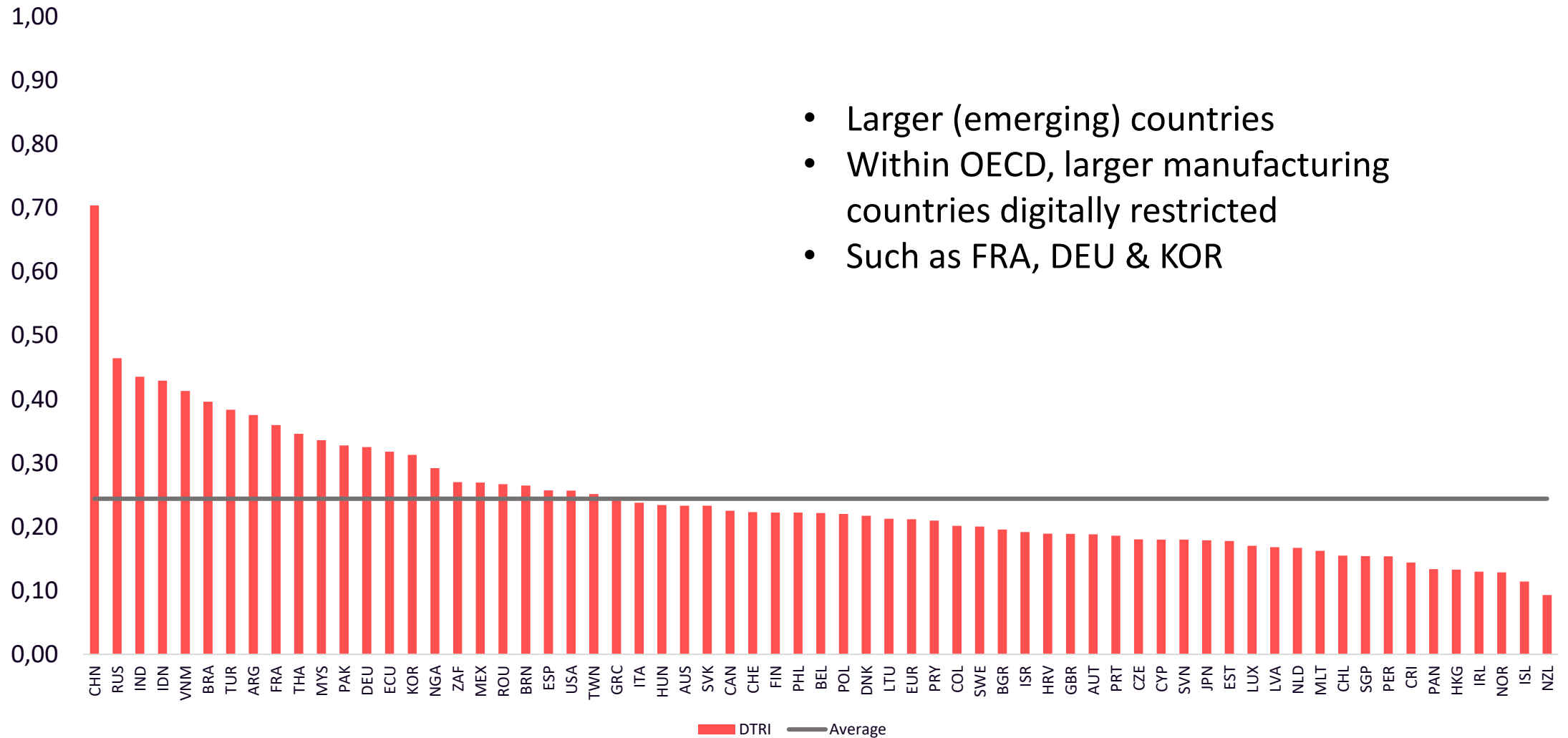
Cluster D

Trading restrictions

Chapters

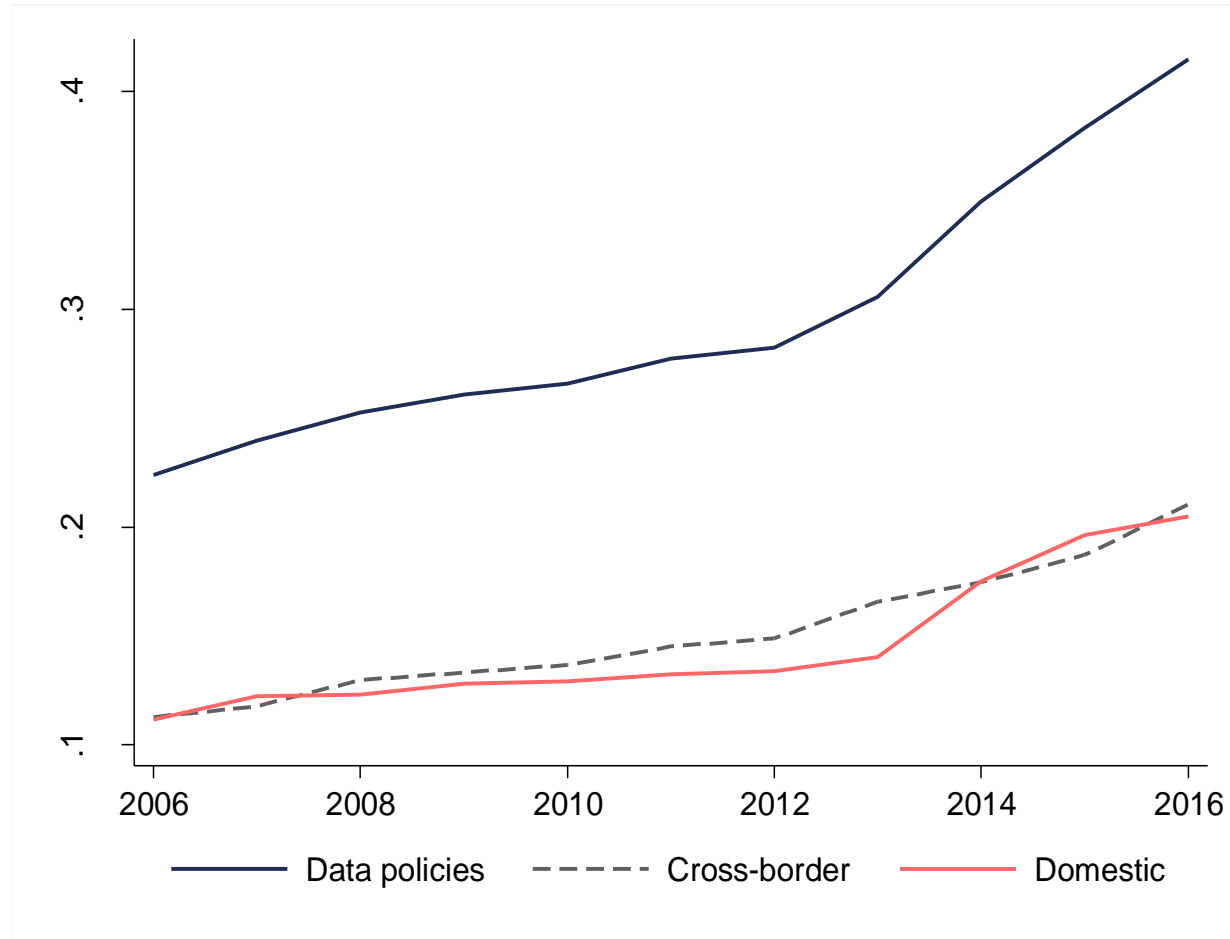
11	12	13
Quantitative trade restrict.	Restrictive standards	Online sales & transactions

Digital Trade Restrictiveness Index







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

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

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Research papers

— 8

- Ferracane, M.F. and E. van der Marel (2018) “**Do Data Flows Restrictions Inhibit Trade in Services?**”, ECIPE DTE Working Paper Series No. 2, Brussels: ECIPE. *(R&R RWE)*
- Ferracane, M.F., J. Kren and E. van der Marel (2018) “**Do Data Policy Restrictions Impact the Productivity Performance of Firms and Industries?**”, ECIPE DTE Working Paper Series No. 1, Brussels: ECIPE. *(R&R RIE)*

Research papers



- E. van der Marel and B. Shepherd (2020) “**Trade Facilitation in Services: Concepts and Empirical Importance**”, paper for the World Bank’s project on Trade Facilitation in Services. (*forthcoming*)

Research papers



- Ferracane, M.F. and E. van der Marel (2019) “**Patterns of Trade Restrictiveness in Online Platforms: A First Look**”, ECIPE DTE Working Paper Series No. 3, Brussels: ECIPE. *(under review WE special issue)*

Research papers



- Ferracane, M.F. and E. van der Marel (2019) “**Digital Innovation in East-Asia: Do Restrictive Data Policies Matter?**”, Policy Research Paper for the World Bank. (*forthcoming*)

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:

$$\text{Data Linkage (DL)}_{cjt} = \ln \frac{\sum_d \zeta_{jd}}{\text{LAB}_j} * \text{DTRI}_{ct}$$

Empirical strategy

- Regressing log of **services imports** on **data-linkage variable**

$$\ln(\text{SM})_{cjt} = \Phi + \theta \text{DL}_{cjt-1} + \delta_{ct} + \gamma_{jt} + \varepsilon_{cjt}$$

- 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

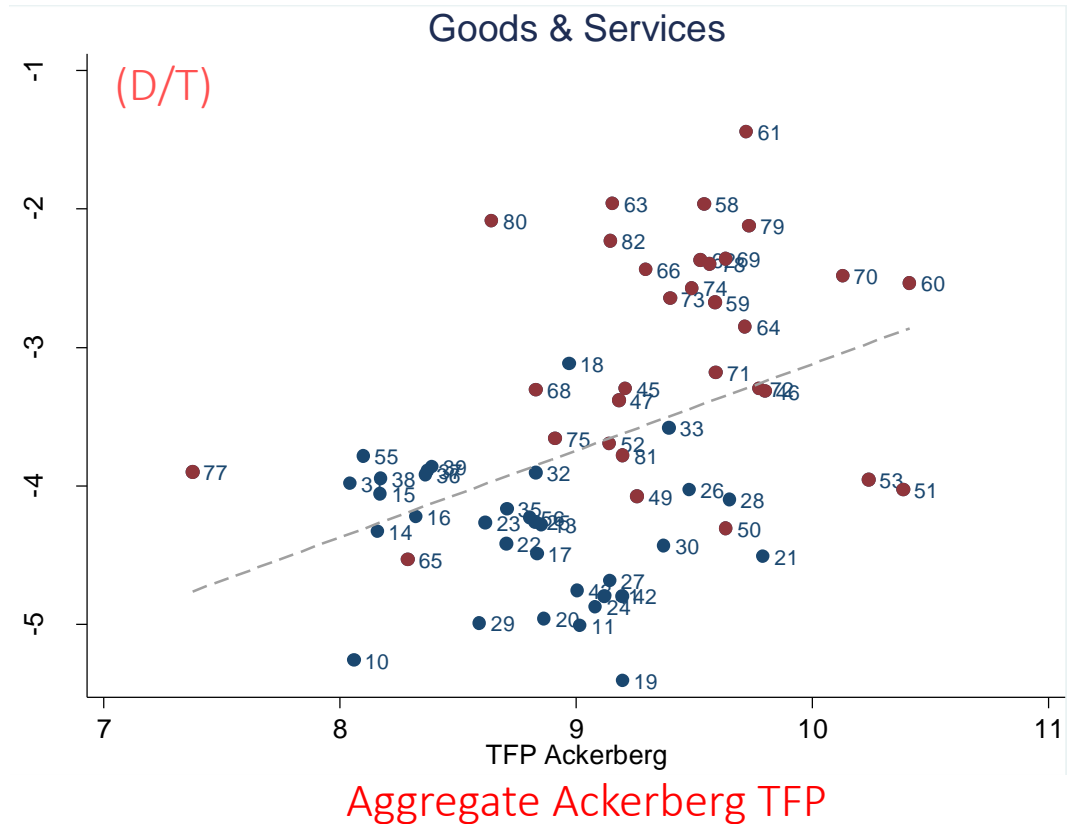
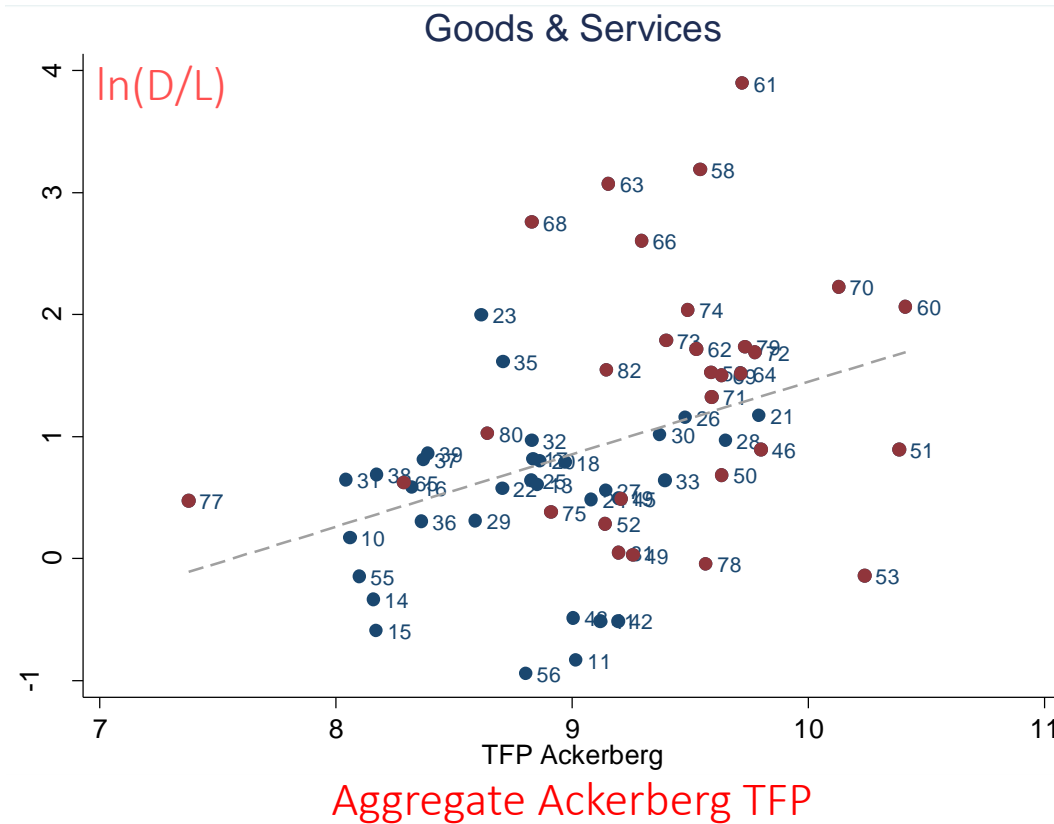
- Ratio over US BLS labour data, expressed as $\ln(D/L) \neq DL$

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



On productivity (firm-level)

	(1)	(2)	(3)	(4)	(5)	(6)
	ACF	L&P	O&P	TFPR	TFPQ	LabPr
ln(D/L) * Data policy CB	-0.305*** (0.000)	-0.311*** (0.000)	0.139 (0.270)	0.047 (0.115)	-0.240*** (0.000)	-0.039 (0.262)
ln(D/L) * Data policy DOM	-0.340*** (0.000)	-0.506*** (0.000)	-0.385*** (0.000)	-0.015 (0.158)	-0.100*** (0.000)	-0.149*** (0.000)
FE Country-Year	Yes	Yes	Yes	Yes	Yes	Yes
FE Sector-Year	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3516012	3521289	3521289	3521289	3521289	3521724
R2A	0.866	0.702	0.615	0.131	0.322	0.569
R2W	0.023	0.191	0.008	0.010	0.242	0.022
RMSE	0.444	0.702	1.017	0.776	1.014	0.670

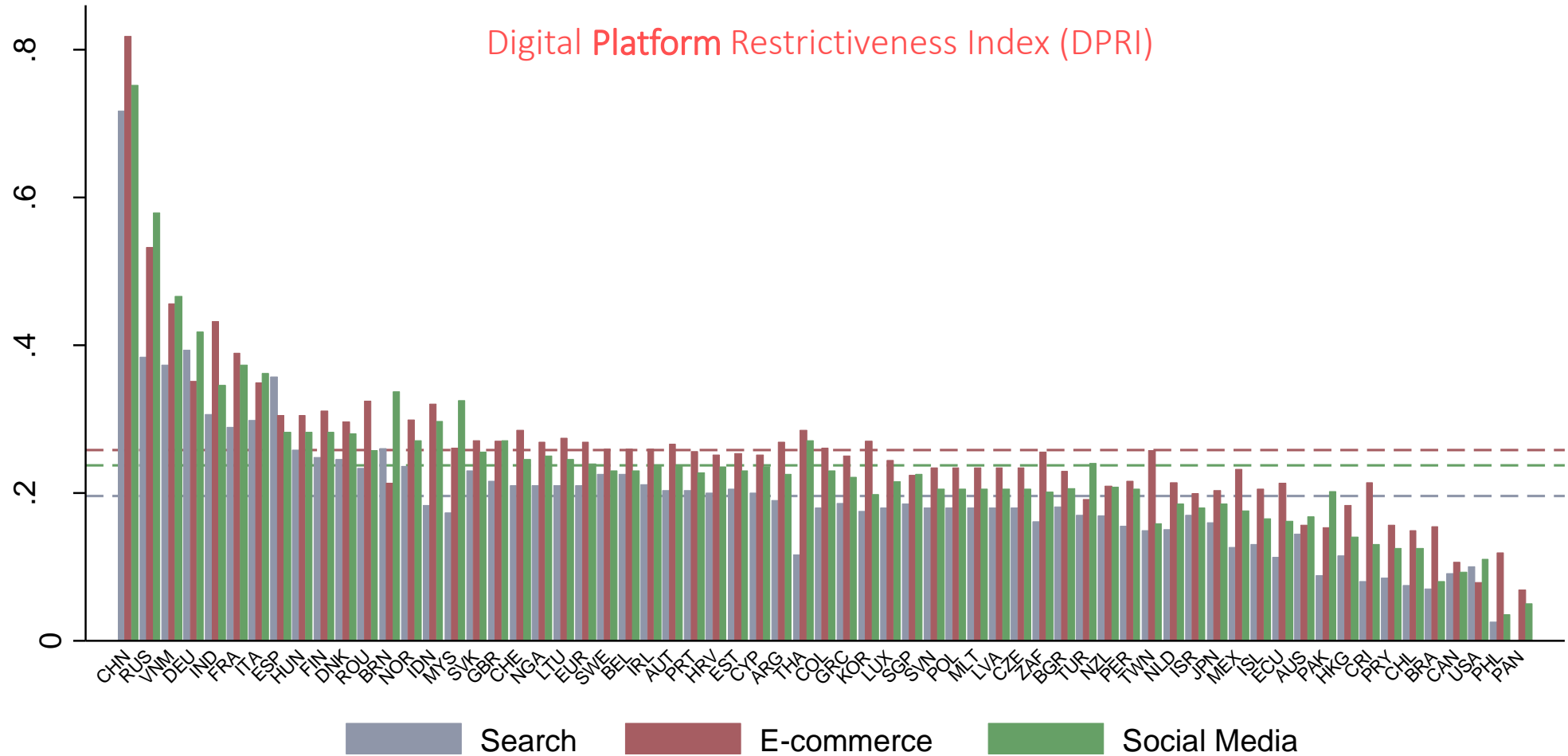
Economic impacts

- On productivity (through platforms) —

On productivity (industry-level)

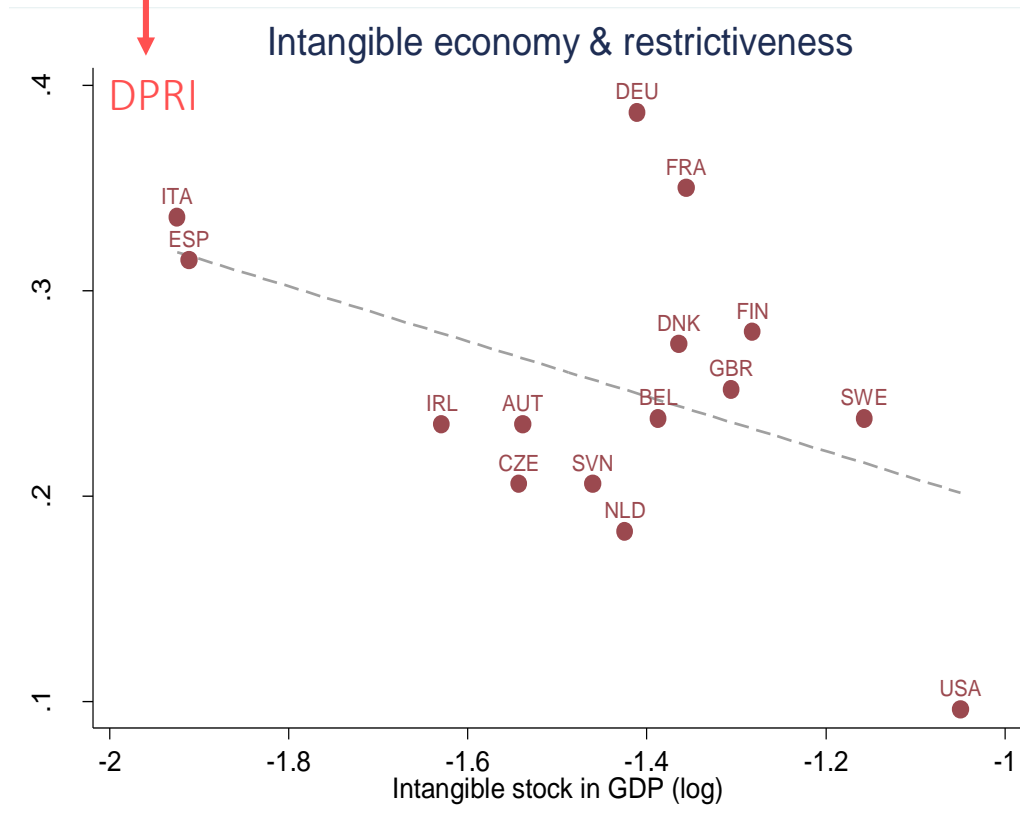
Search, e-commerce & social media

Digital Platform Restrictiveness Index (DPRI)

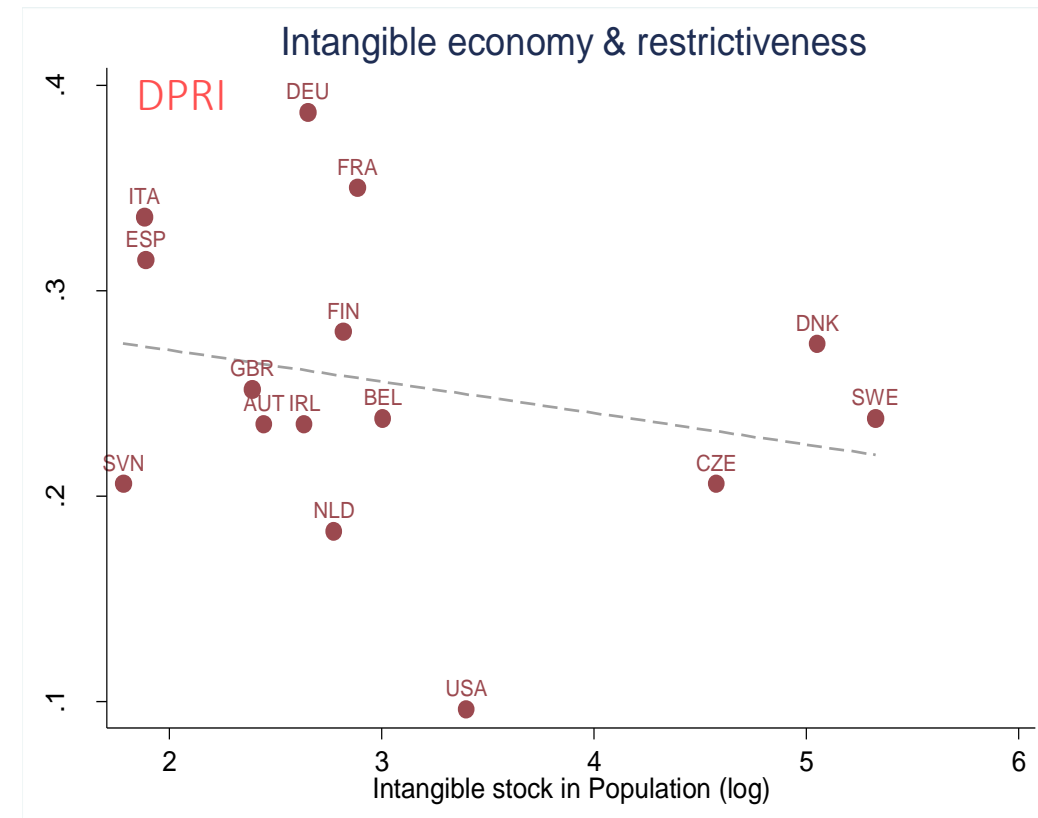


On productivity (industry-level)

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

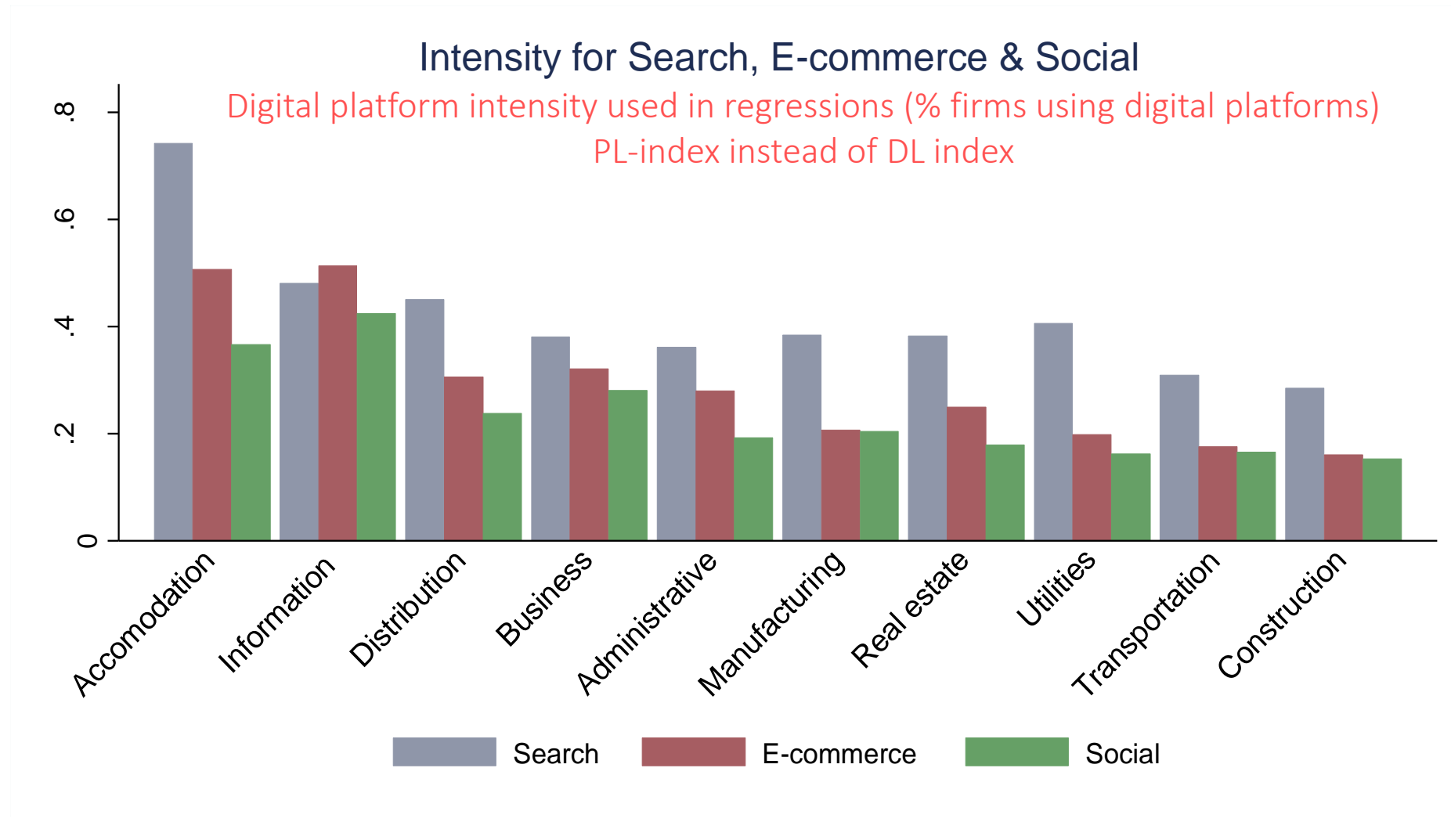


Intangible stock in GDP (log)



Per Capita Intangible stock (log)

On productivity (industry-level)



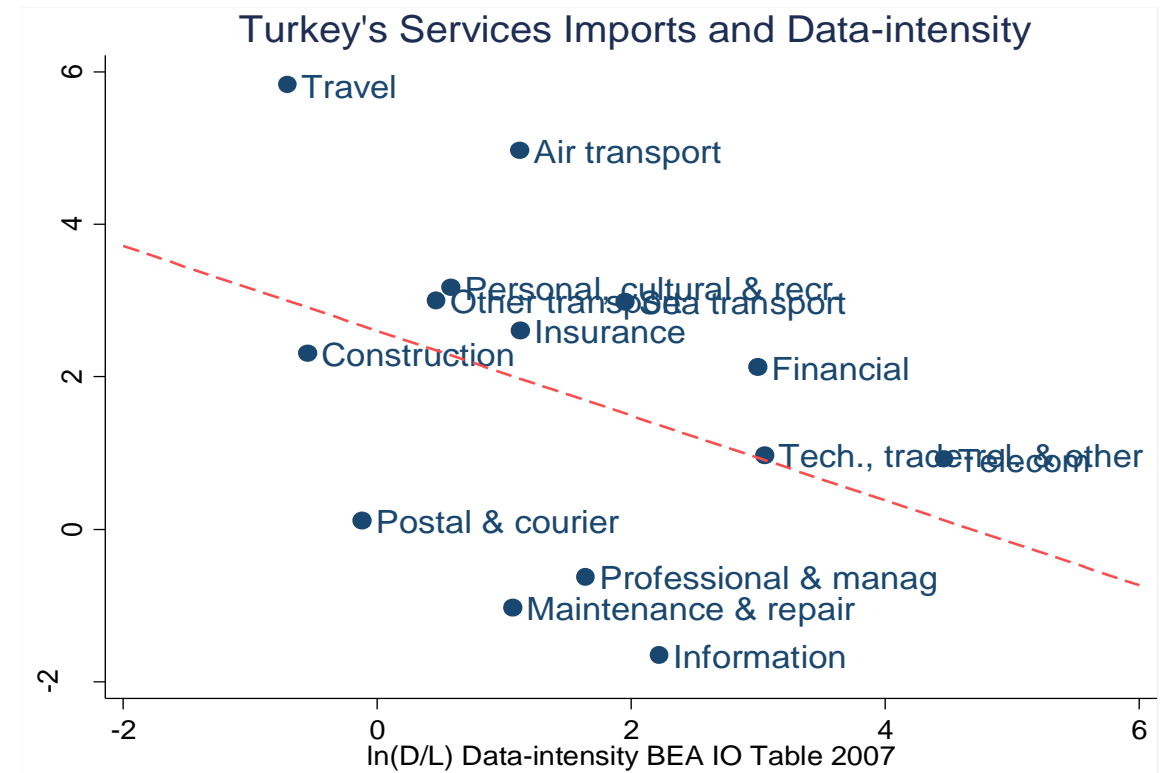
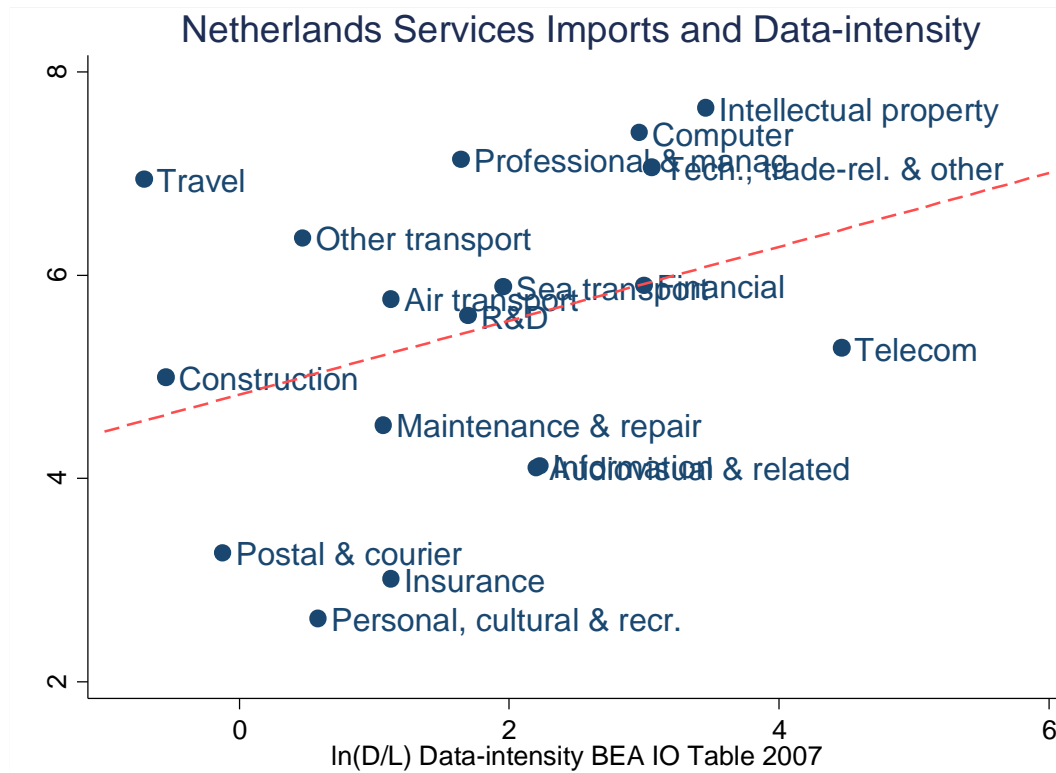
On productivity (industry-level)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		ln(VAConKIT)				ln(LPConKIT)		
PL index – Total	-1.860*				-0.370			
	(0.050)				(0.801)			
PL index – Search		-1.471*				-0.617		
		(0.060)				(0.674)		
PL index – E-commerce			-1.943**				-0.193	
			(0.049)				(0.890)	
PL index – Social				-1.719**				-0.168
				(0.049)				(0.893)
FE country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	116	116	116	116	98	98	98	98
R2A	0.495	0.491	0.494	0.496	0.407	0.409	0.407	0.407
R2W	0.039	0.031	0.037	0.041	0.001	0.003	0.000	0.000
RMSE	0.971	0.975	0.972	0.970	1.128	1.127	1.129	1.129

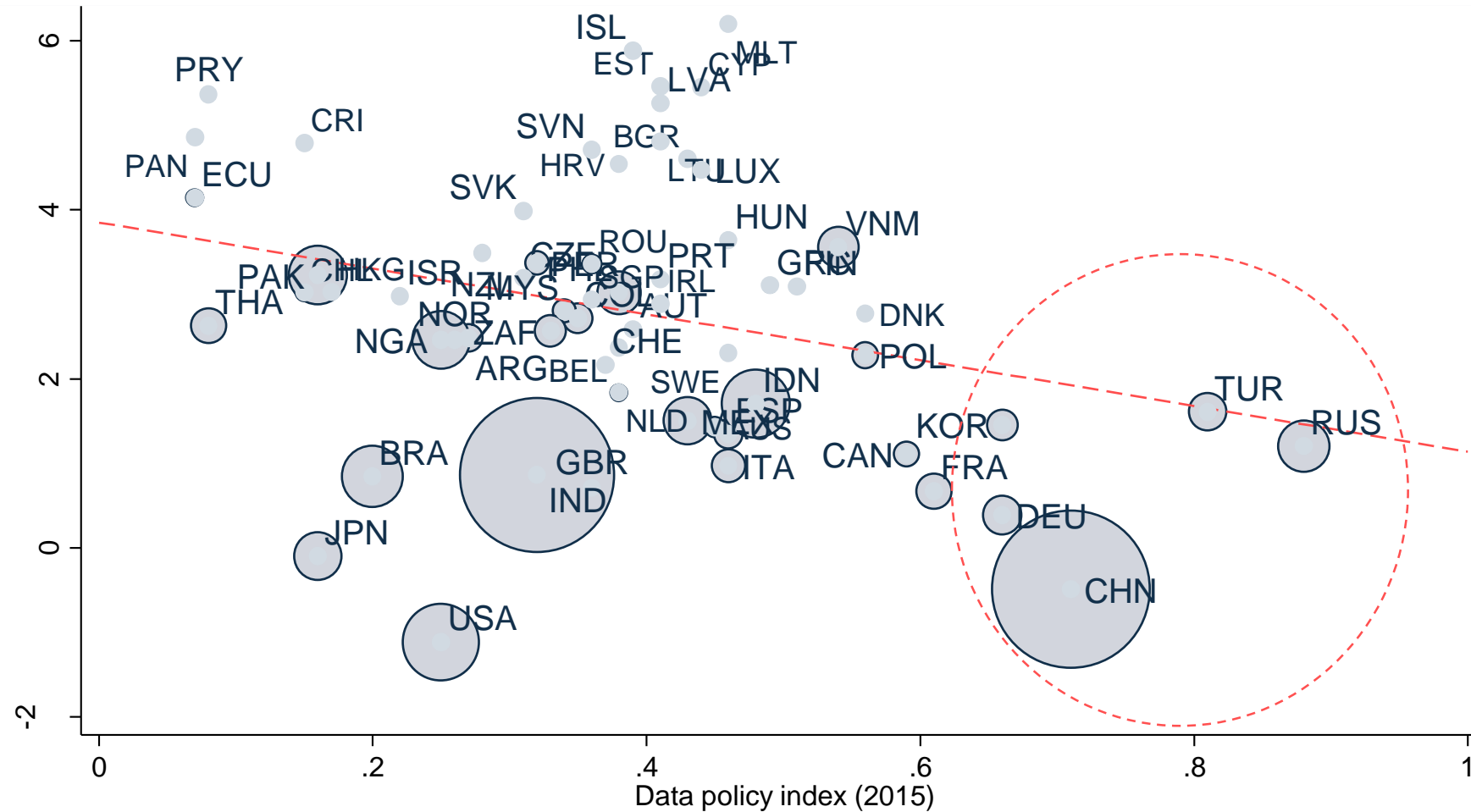
On productivity (summary)

- 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



On trade in services (internet)



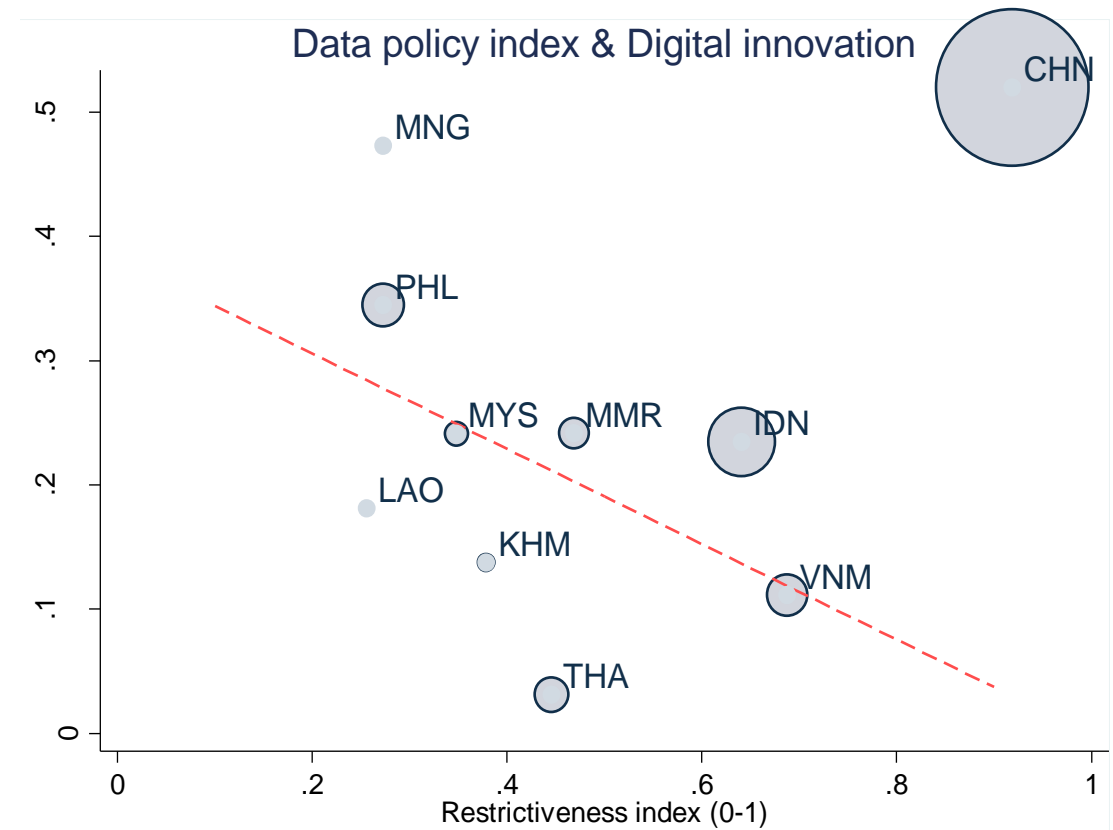
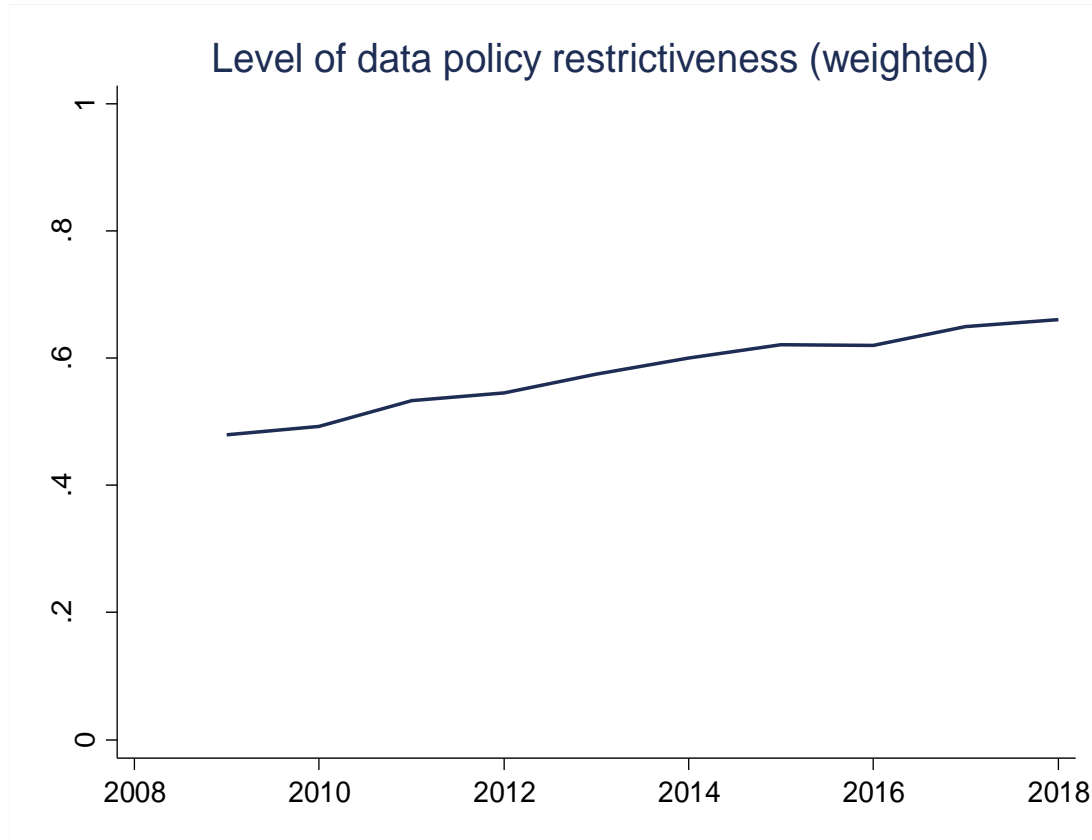
On trade in services (internet)

	(1)	(2)	(3)	(4)	(5)	(6)
	ln(SM)	ln(SM)	ln(SM)	ln(SM)	ln(SM)	ln(SM)
ln(D/L) * Data policy CB	-2.078*** (0.007)		-1.803** (0.019)	-1.082*** (0.003)	-1.058*** (0.003)	-1.067*** (0.003)
ln(D/L) * Data policy DR		-1.614** (0.028)	-1.066 (0.155)	-0.481 (0.236)	-0.546 (0.183)	-0.543 (0.185)
STRI	-2.967 (0.536)	-3.662 (0.448)	-3.097 (0.520)	-0.942** (0.020)	-1.050** (0.030)	-1.095** (0.026)
FE year-country	Yes	Yes	Yes	Yes	Yes	Yes
FE year-sector	Yes	Yes	Yes	Yes	Yes	Yes
STRI classification	M1	M1	M1	ENTIRE	MA&NT	DISCR
Observations	430	430	430	950	886	886
R2A	0.755	0.752	0.756	0.763	0.753	0.753
R2W	0.026	0.014	0.031	0.026	0.027	0.027
RMSE	0.968	0.974	0.967	0.951	0.949	0.948

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)

	(1)	(2)	(3)	(4)
	New products introduced	New processes introduced	Foreign licensing of technology	Spent on innovation
Index * ln(D/L)	-0.014	0.121	-0.336***	-0.122
	(0.887)	(0.283)	(0.001)	(0.297)
Observations	9988	8855	9276	8933
LR chi2(10)	1193.96	1072.52	215.74	947.12
No. groups	32	32	24	12
Log likelihood	-4690.1	-5207.8	-4045.7	-3475.1

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**?

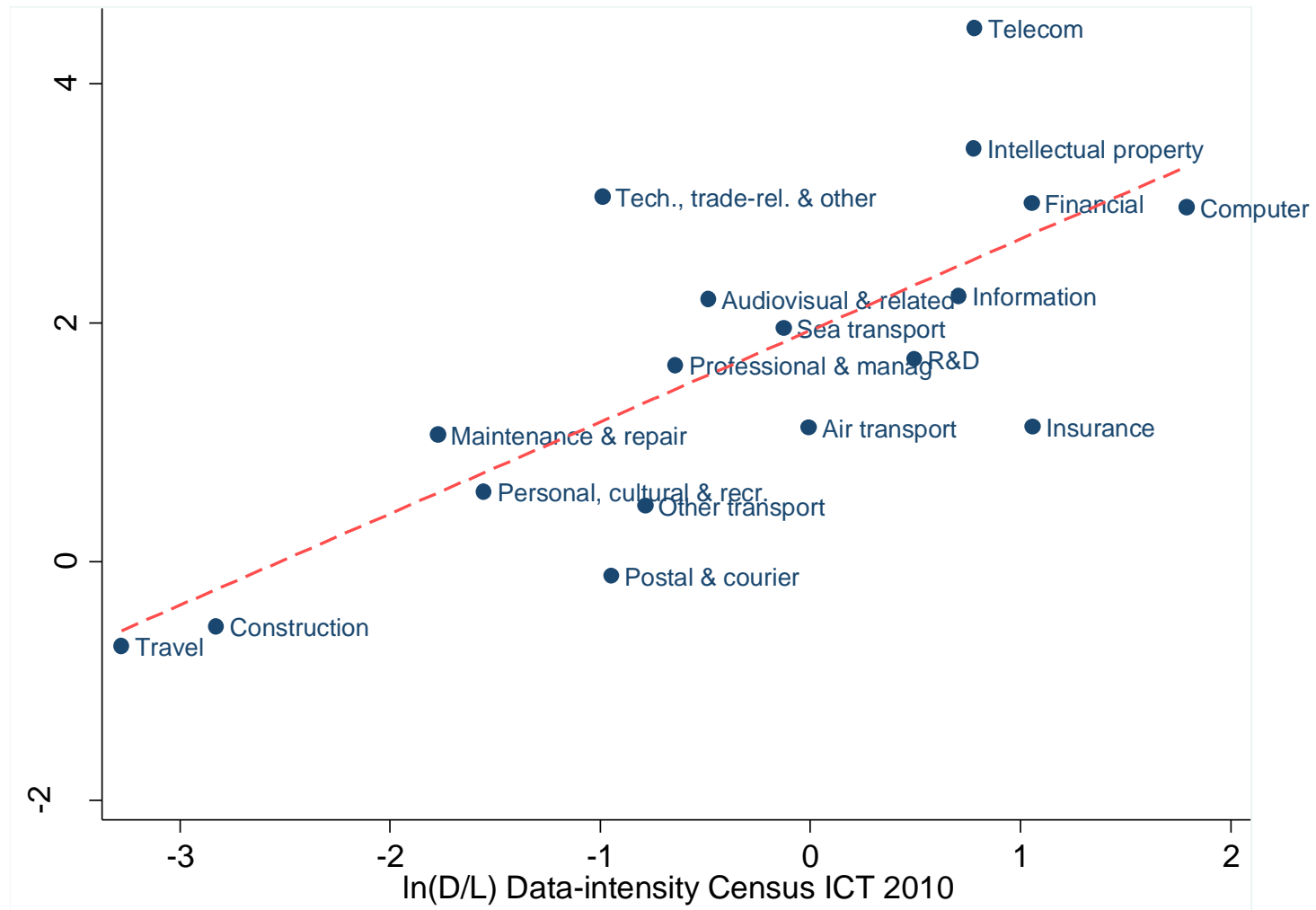
Further thoughts

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

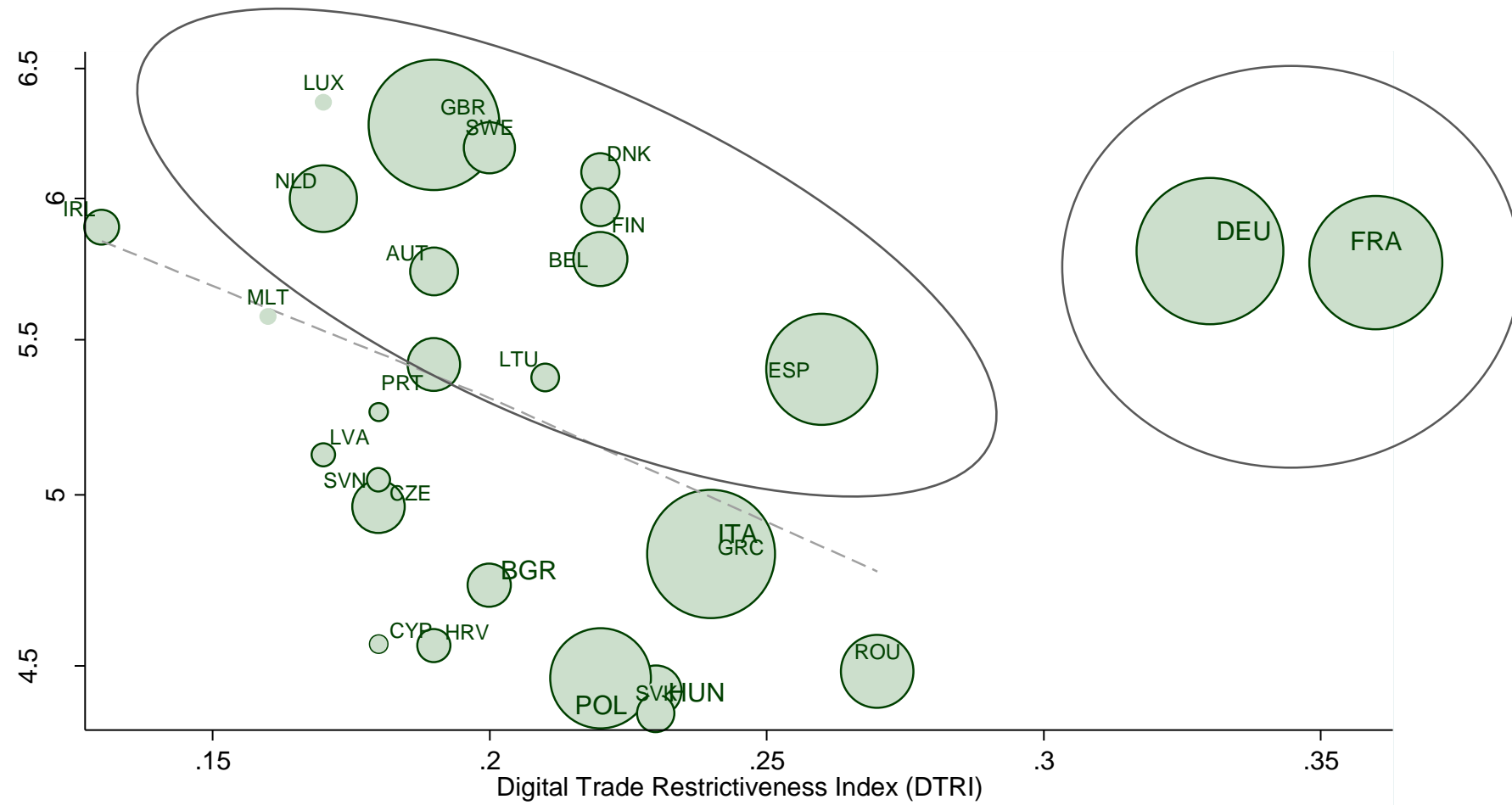
Optional slide

- Optional slides

Data-intensity (BEA IO Use vs US Census)

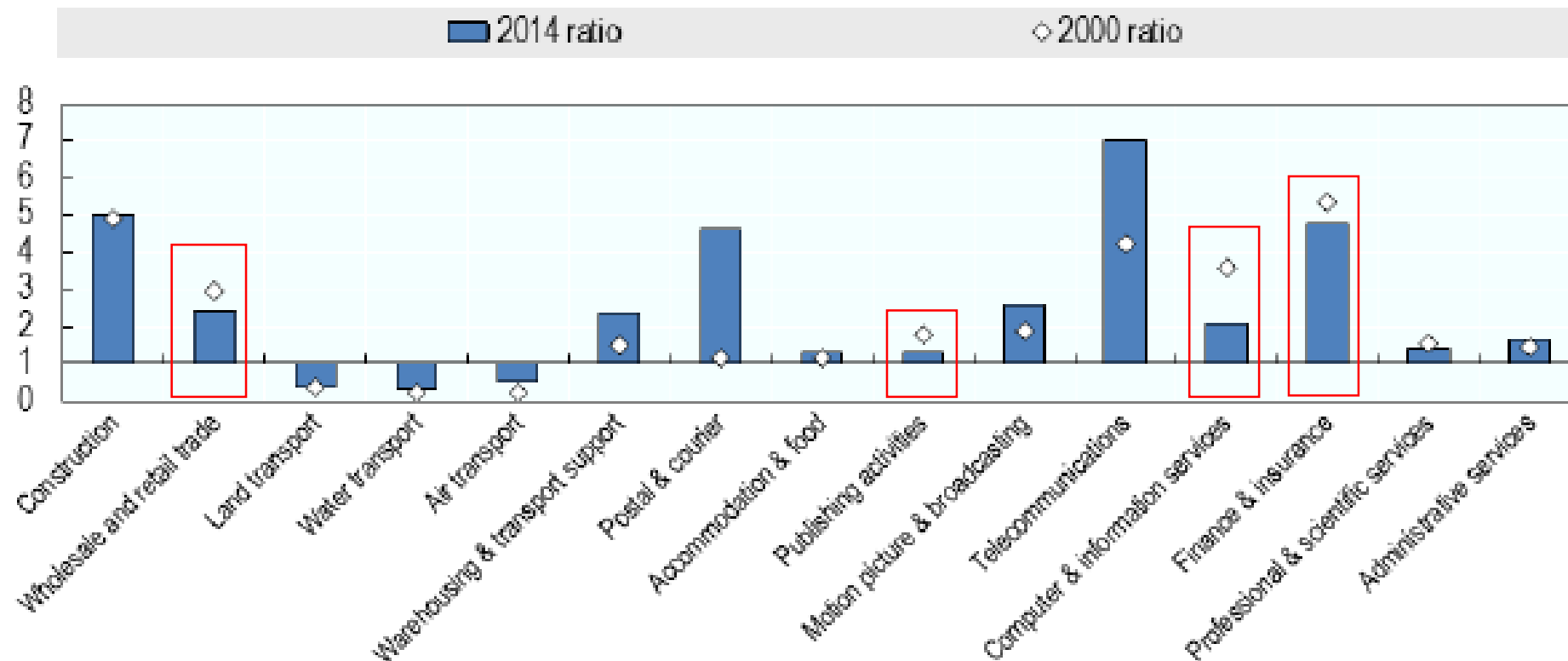


Digital enabling environment



Data-intensive services (Mode 3 / Mode 1; gross terms)

Figure 11. Ratio of mode 3 to cross-border trade in services, by industry, 2000 and 2014



Source: Andrenelli et al (2018); using analytical AMNE database.

GVC position and DTRI

