



DIGITAL TRANSFORMATION AND BUSINESS DYNAMICS

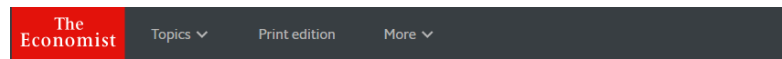
Flavio Calvino and Chiara Criscuolo

*OECD Directorate for Science Technology and Innovation
Productivity and Business Dynamics Division*

with the contribution of the whole DynEmp team

INNOVA Measure Workshop – Brussels, 28th November 2017

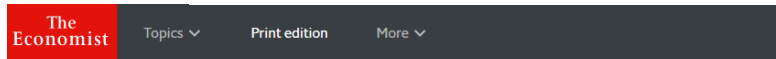
- ❑ Digital technologies impact on cost of firm entry and potential/need for post-entry firm employment growth



Tech startups

A Cambrian moment

Cheap and ubiquitous building blocks for digital products and services have caused an explosion in startups. Ludwig Siegele weighs its significance



Less miserable

The rise of “deep-tech” is boosting Paris’s startup scene

The capital now leads Europe for the number of venture-capital funding rounds



CADE METZ BUSINESS 09.15.15 07:00 AM

WHY WHATSAPP ONLY NEEDS 50 ENGINEERS FOR ITS 900M USERS

EARLIER THIS MONTH, in a post to his Facebook page, WhatsApp CEO Jan Koum announced that his company’s instant messaging service is now used by more than 900 million people. And then

Harvard
Business
Review

GROWTH STRATEGY

Why Digital Companies Grow Without Adding Headcount

by Tom Perrault

FEBRUARY 11, 2016

said
y
e
post
of you

- ❑ Little cross-country evidence examining the effects of digitalisation on business dynamism

- ❑ What is the impact of digitalisation on business dynamics?
- ❑ Is there more entry and exit or more churning in industries that are most digital intensive?

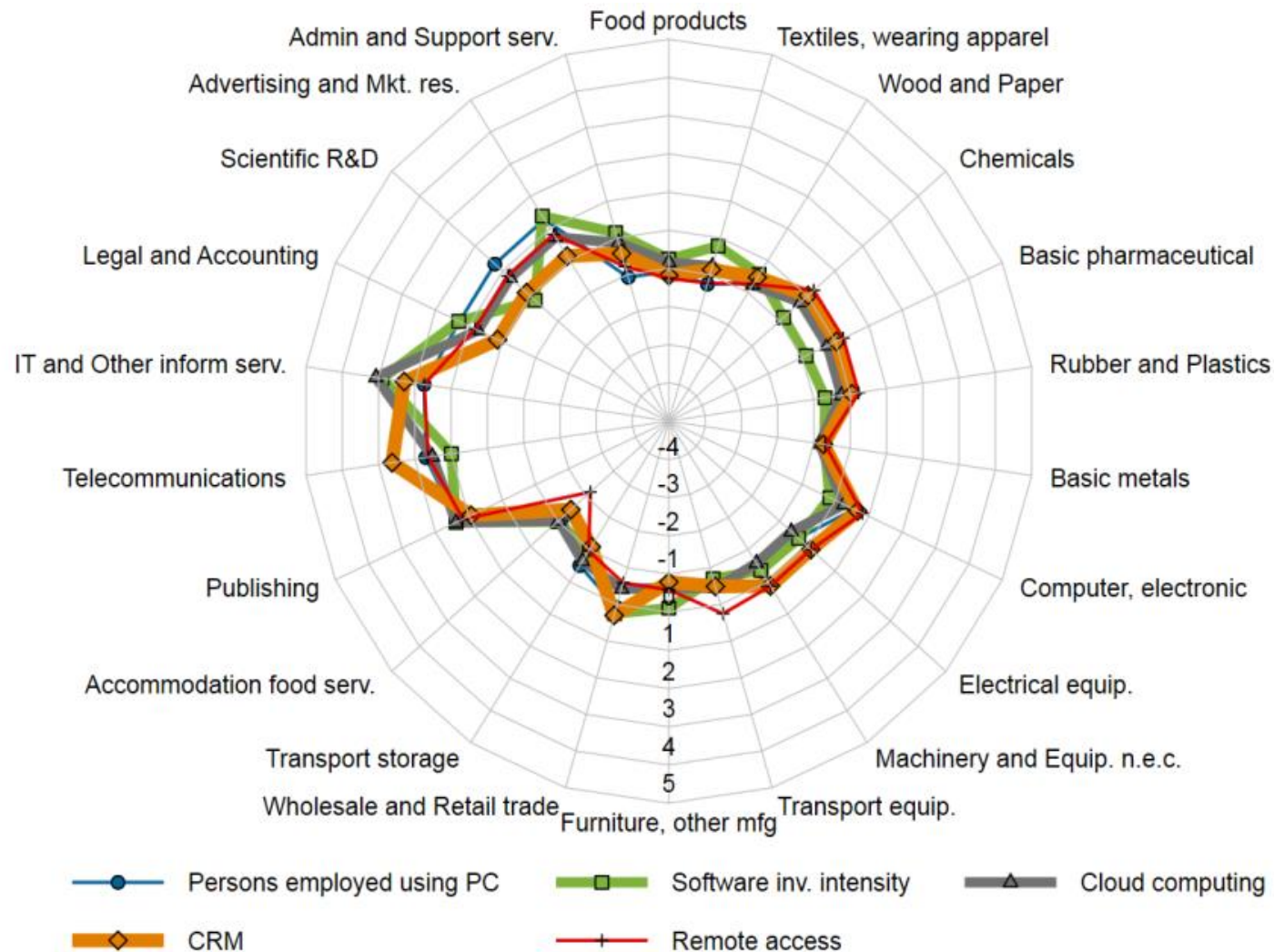
- ❑ **Two key challenges**
 - ✓ Measuring **digitalisation** in sectors
 - ✓ Comprehensively tracking **business dynamics**

- ❑ **Building upon wider STI effort** (See Calvino, Criscuolo, Marcolin and Squicciarini, 2017)

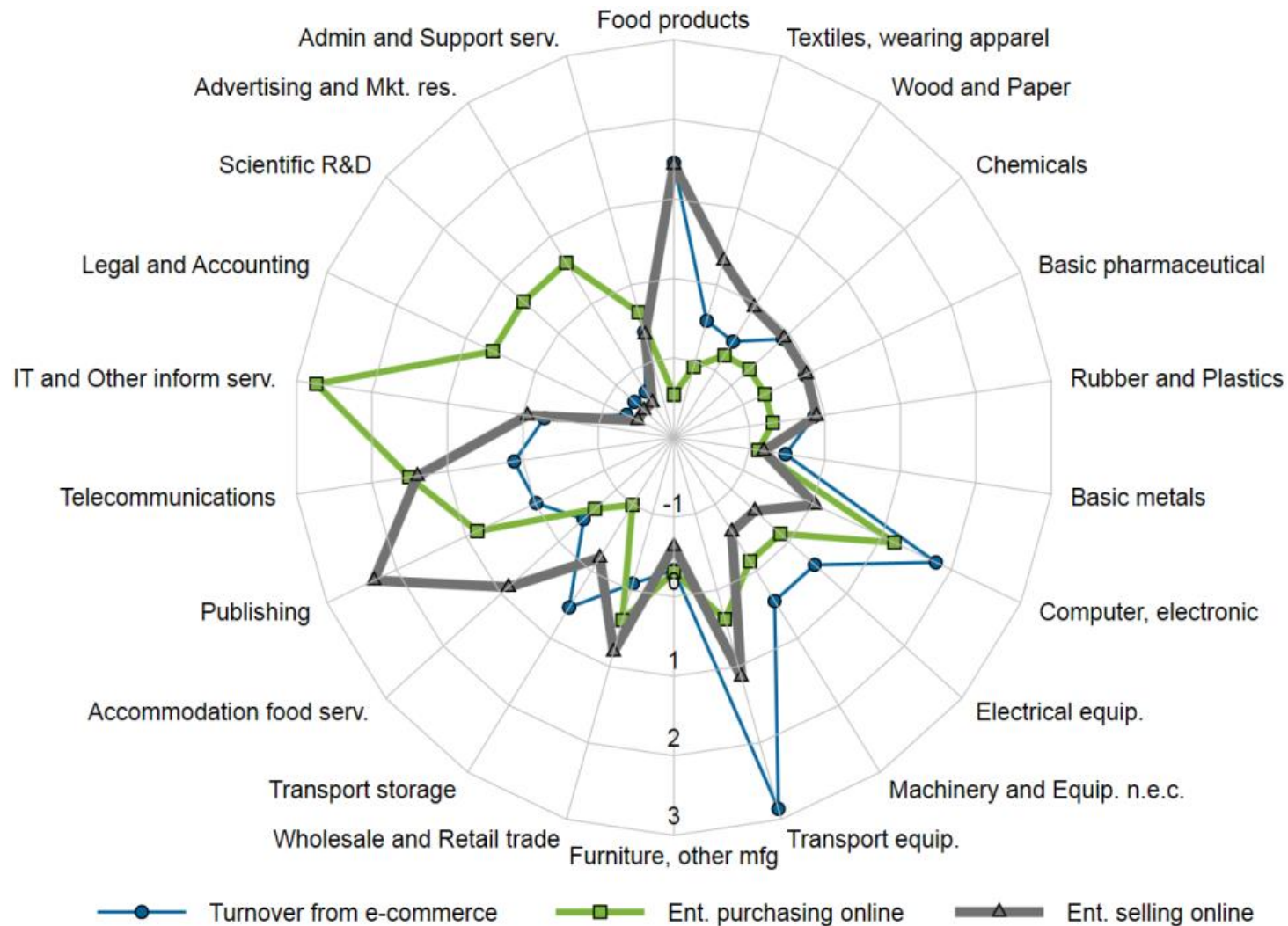


- ❑ Sectoral cross-country averages, excluding non-OECD countries, in a specific time span (e.g., 2013-15)
- ❑ Caveats (sources of variation, within sector heterogeneity, ...)

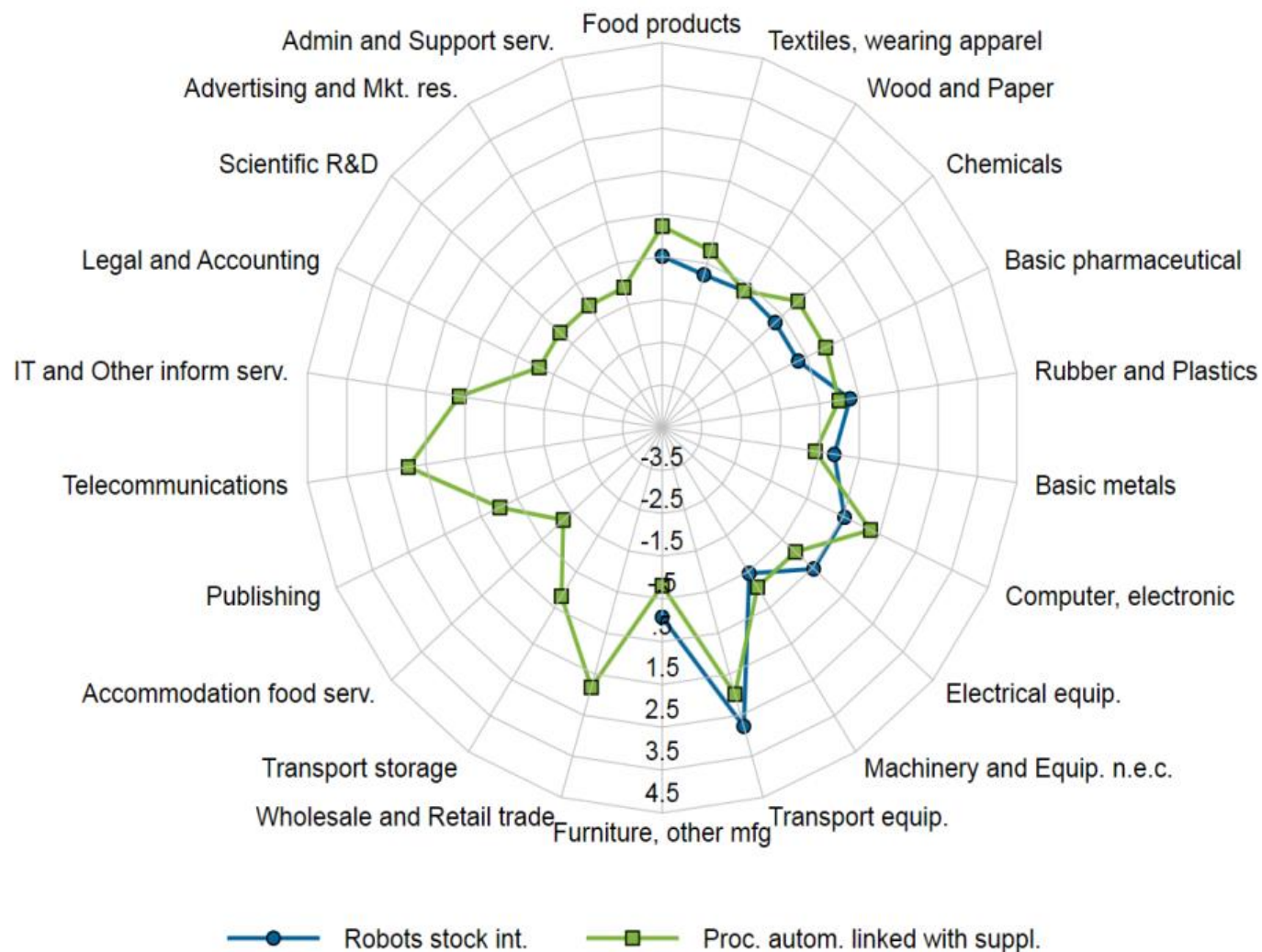
Organisational indicators



Market-related indicators



Automation indicators



□ *DynEmp3*

- ✓ Newly collected OECD database based on micro-aggregated population of firms

□ 16 countries (12 used here)

- ✓ Coverage: late 1990s to 2015

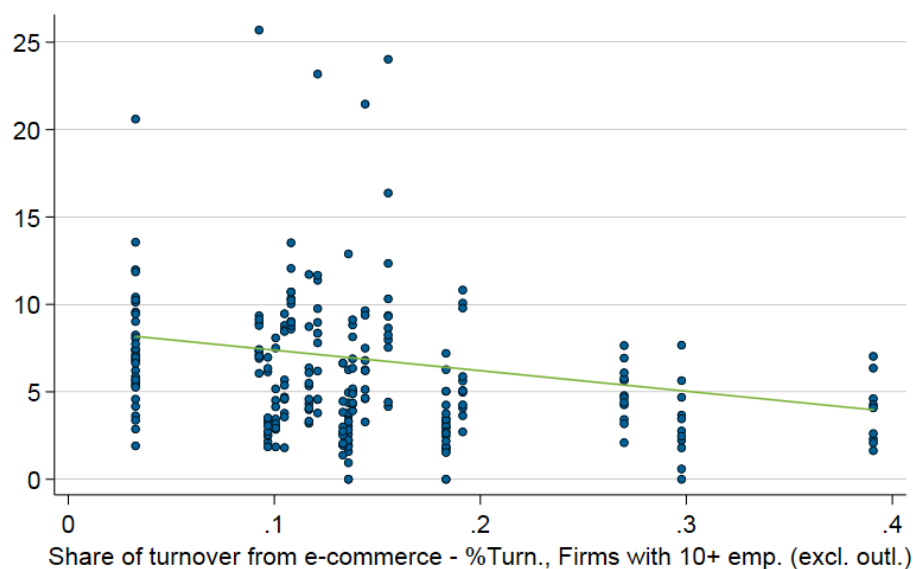
□ Rich set of Business Dynamics measures

- ✓ **Entry rate**; exit rate; average size of entrants; **contribution of entrants to NJCR**, churning rate, NJCR of incumbents

□ Entry rates

✓ Turnover from e-commerce vs. ICT investments

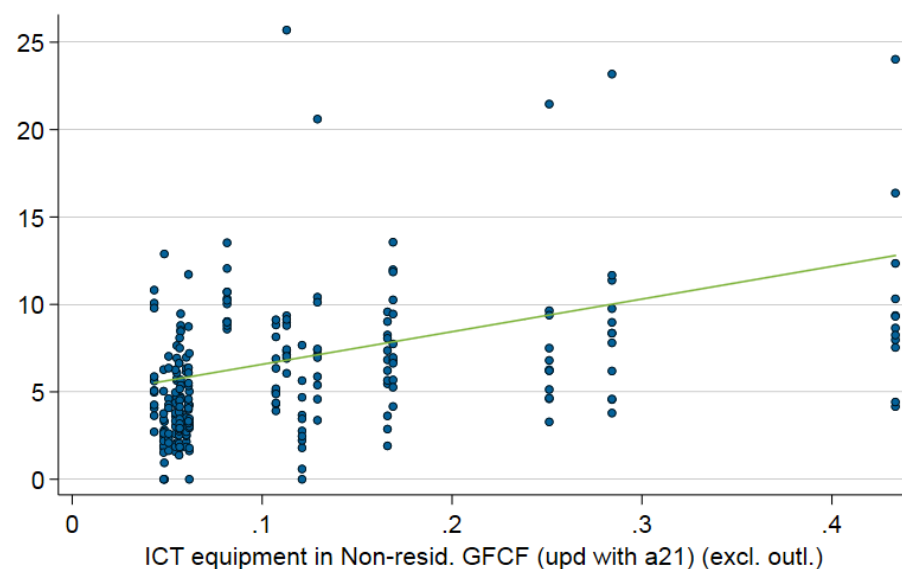
Share of turnover from e-commerce



• Entry rate (n. posemp, %) — Fitted values

Notes: digitalisation: 2013-15. BD: 2013 for all country apart from NOR (2014).

ICT investments



• Entry rate (n. posemp, %) — Fitted values

Notes: digitalisation: 2013-15. BD: 2013 for all country apart from NOR (2014).

- ❑ How does business dynamics differ for most digital intensive industries?
- ❑ Focus on 2013-15 (for now)
- ❑ Relate

Y=Different **business dynamics** dimensions

on

X=Different facets of **digitalisation**

Visual summary of results



Digital transformation		Role for Business Dynamics		
Proxy	Facet	Entry rate	Contr. ent. NJCR	Overall summary
Software investments	Organisation			
Remote access				
Pers. using PC				
Cloud computing				
CRM				
Sh. turnover from e-commerce	Market			
Enter. Selling online				
Enter. Purchasing online				
ICT specialists	Labour			
ICT skills				
ICT investments	Capital and Intermediates			
ICT intermed. services				
ICT intermed. goods				
Robots stock int.	Automation			
Processes autom. linked				

Note: Overall summary based on the average of significant standardised coefficients from separate regressions

- ❑ Focus on 2003-05 vs. 2013-15 growth
 - ✓ (Y=growth in business dynamics, X=growth in digitalisation)
- ❑ Growth in digitalisation of capital ↓ av. size of incumbents
- ❑ Growth in digitalisation of labour ↑ entry rates and ↑ churning
- ❑ Growth in digitalisation of market (int.) ↓ growth dispersion and ↓ entry rates

- ❑ Digitalisation is a **complex phenomenon**, important to consider different dimensions
- ❑ Results appear to indicate **two sides**, depending on indicators considered
 - ✓ Organisational, investments, part of labour and market: ↑ business dynamism
 - ✓ Automation, e-commerce turnover: ↓ business dynamism
 - ✓ Number of firms selling online: ↑ entry rates; = contr. entrants to NJCR

☐ **Dynamic analysis (changes on changes)**

- ✓ Analysis of declining business dynamism focusing on high-tech

☐ **Country-specific** dynamics and the role of national policies and framework conditions

☐ Refinement/extension of current indicators

☐ Including additional countries

☐ **Complementary analysis**

- ✓ M&As and the digital transformation
- ✓ Evolution of mark-ups and the digital transformation

The DynEmp Network

(countries included in this progress report)



Country	Contributors	Institutions
BEL	Michel Dumont, Chantal Kegels	BFP – Federal Planning Bureau
BRA	Carlos Henrique Leite Corseuil	IPEA – Instituto de Pesquisa Econômica Aplicada
CRI	Alfonso Alfaro Ureña, Juan Diego Chavarría, Arlina Gómez, Tayutic Mena, Francisco Monge	BCCR – Banco Central de Costa Rica and COMEX – Ministry of Foreign Trade
ESP	Valentín Llorente García, Alicia Fernández Sanz	INE – Spanish Statistical Office
FIN	Mika Maliranta	ETLA – The Research Institute of the Finnish Economy
HUN	Mihály Szoboszlai	MNB – Central Bank of Hungary
ITA	Stefano Costa	ISTAT – National Institute for Statistics
NLD	Michael Polder	Statistics Netherlands (Centraal Bureau voor de Statistiek)
NOR	Arvid Raknerud, Diana-Cristina Iancu	Statistics Norway
PRT	Paulo Jorge Martins Dias, Teresa Feliciano	GEP – Gabinete de Estratégia e Planeamento
SWE	Fredrik W. Andersson	Statistics Sweden
TUR	Faik Yücel Günaydın	Ministry of Science, Industry and Technology

- ❑ **Calvino F. and C. Criscuolo (2017). “Business dynamics and Digitalisation: a progress report”, *DSTI/CIIE(2017)17***
- ❑ **Calvino F., C. Criscuolo, L. Marcolin and M. Squicciarini (2017). “A taxonomy of digital intensive sectors”, *DSTI/CIIE/WPIA(2017)2***



THANK YOU!

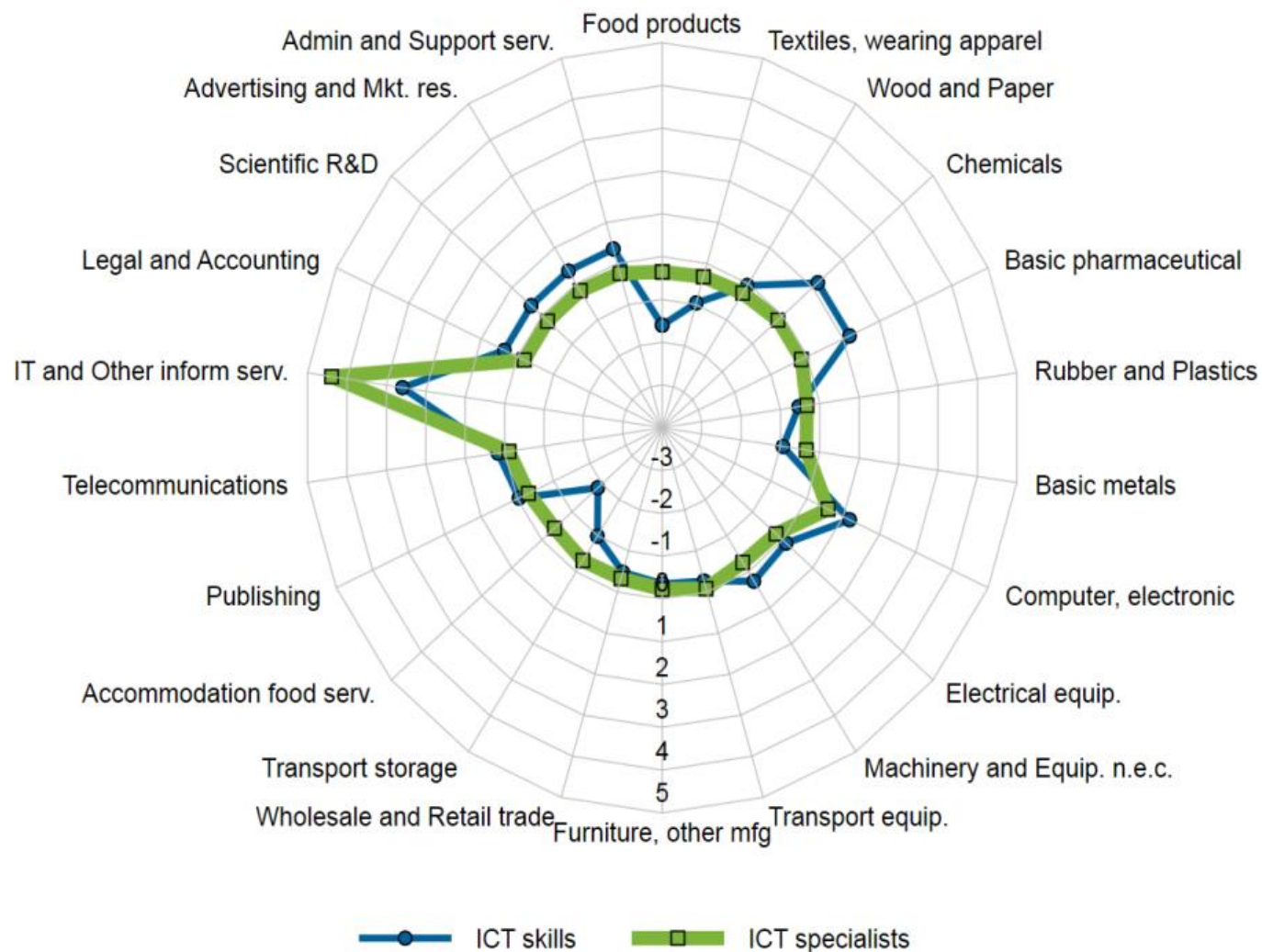
Flavio.CALVINO@OECD.ORG

Chiara.CRISCUOLO@OECD.ORG

DynEmp@OECD.ORG

[illegible]

Labour-input indicators



Capital- and intermediate-inputs indicators

