



REGULATORY AND COMPETITION FRAMEWORKS FOR PRODUCTIVE INVESTMENT

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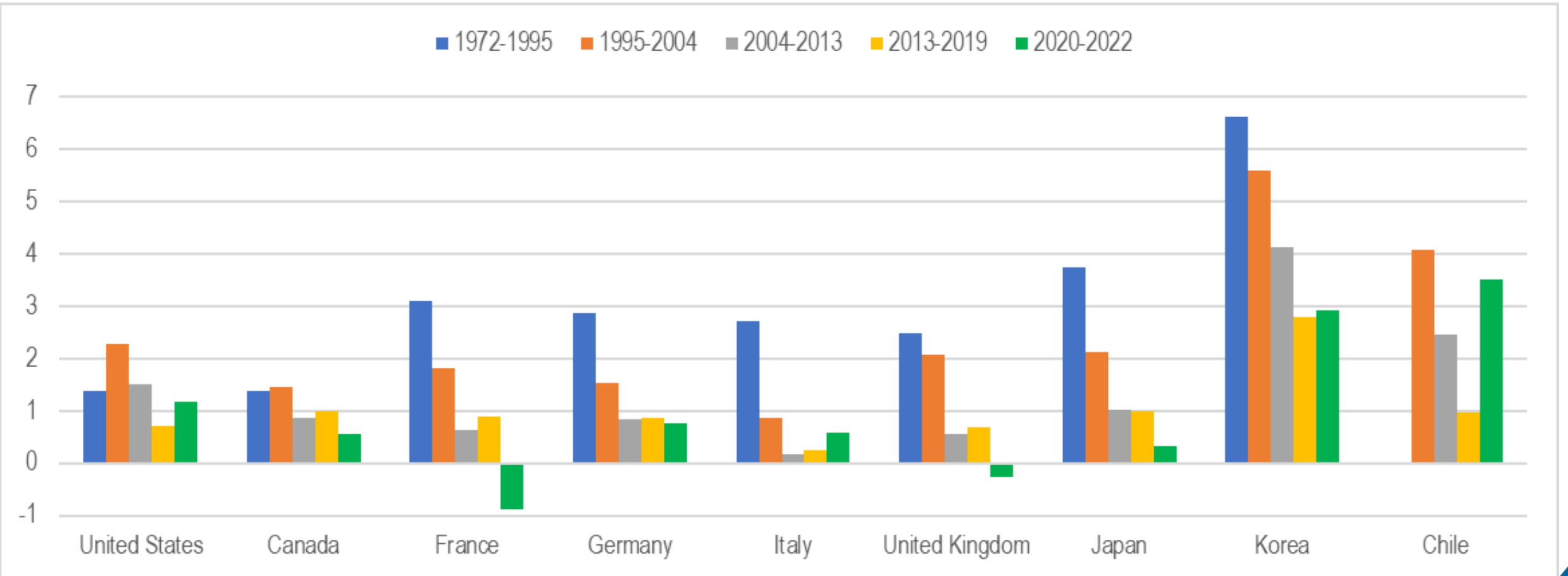
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Slowdown in aggregate productivity across countries

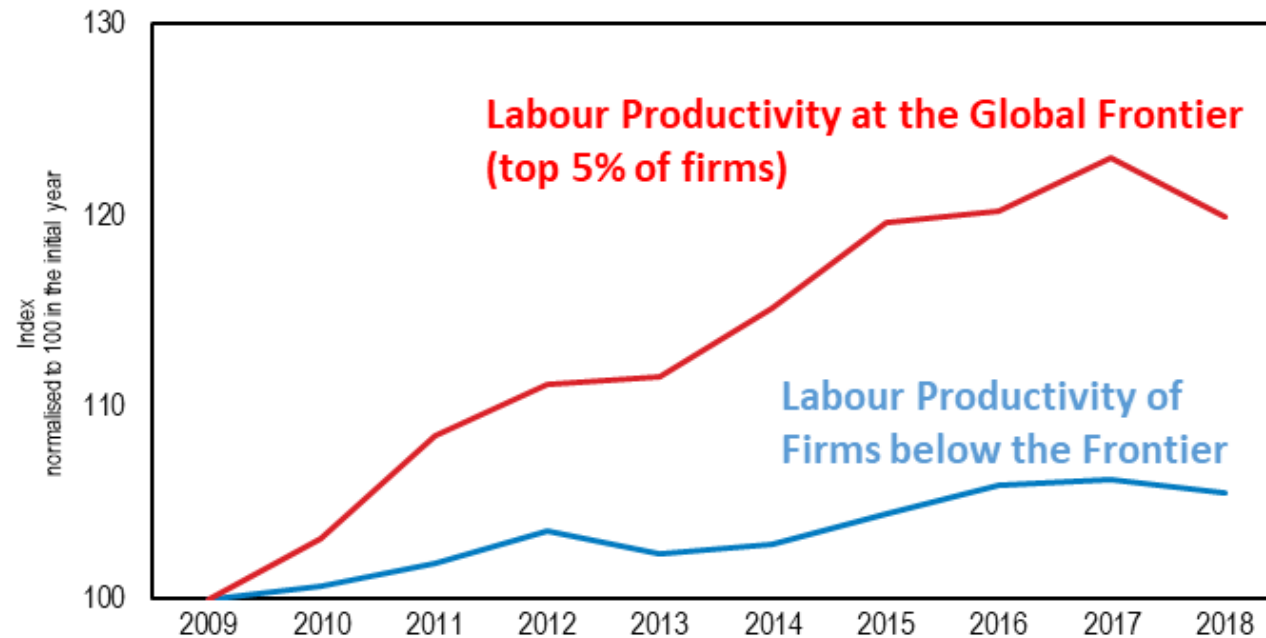


Source: Calculations based on OECD Stat



Increased productivity gaps across firms

- GFP work identified an **increasing productivity gap** between firms at the frontier and other firms (Andrews, Criscuolo, Gal, 2015 and 2016; Berlingieri et al., 2020, Criscuolo et al., 2022)





Outlook not “rosy” ...innovation is needed

- Additional headwinds (energy prices; inflation; GVC disruption; inequality; skills shortages...)
- Objective of net zero emissions by 2050
- Need for “productive investment”; in **innovation**

This presentation will focus:

- Role of competition and regulatory framework
- Industrial and other policies?



COMPETITION



Does Competition matter for Investment in Innovation?

- Innovation, in its rate and direction, both determines and is affected by competition
- The Relationship is theoretically complex and challenging to measure
- Fundamental trade-off
 - **market dynamism and creative destruction:** entry of innovative firms, threat of entry to incumbents, and exit of inefficient firms (*ex-ante*)
 - **Market power:** recovering the fixed costs of innovation requires either sufficient scale or profitability per unit (*ex-post*)



A weakening competitive environment?

The academic literature and several OECD analyses document a number of trends suggesting changes in the overall competition environment:

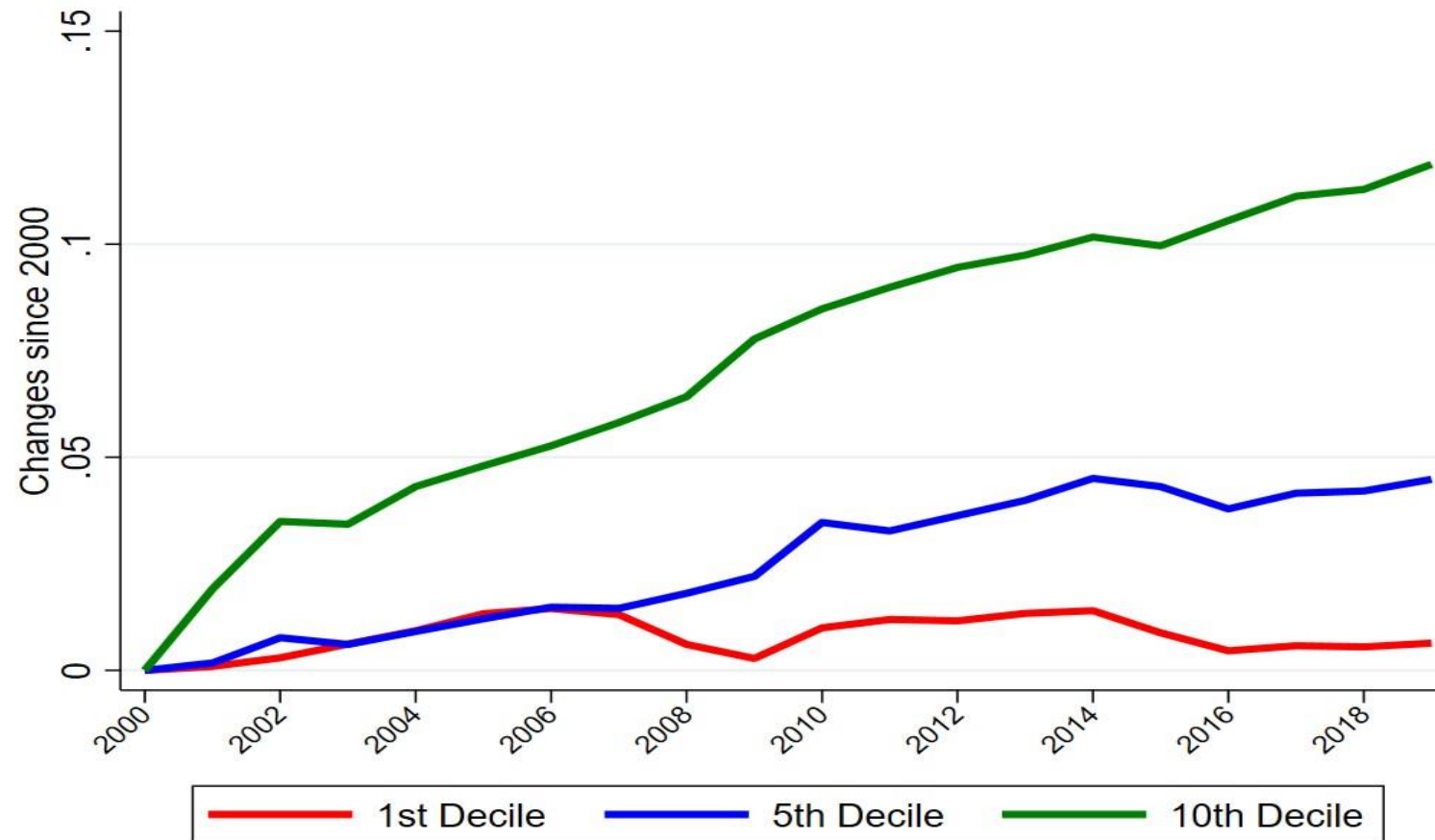
- ↑ **Concentration** (Autor et al., 2020; Bajgar et al., 2019; Bessen, 2017; De Loecker et al., 2022).
- ↑ **Mark-ups and mark-ups dispersion** (Calligaris et al., 2018, De Loecker et al. 2022, De Ridder et al. 2022)
- ↓ **Entry rates** (Akcigit and Ates, 2021; Calvino et al., 2020; Decker et al., 2017)
- ↓ **Productivity growth and greater divergence** (Andrews et al., 2016; Berlingieri et al., 2020, Criscuolo et al., 2022; De Loecker et al., 2022)

Each of them has limitations in capturing the degree of competition. However, most of them seem to point in the same direction, i.e., suggest a reduction in competition.



Markups are rising, driven by the highest markup firms

Markups growth over time (2000-2019) in different parts of the distribution

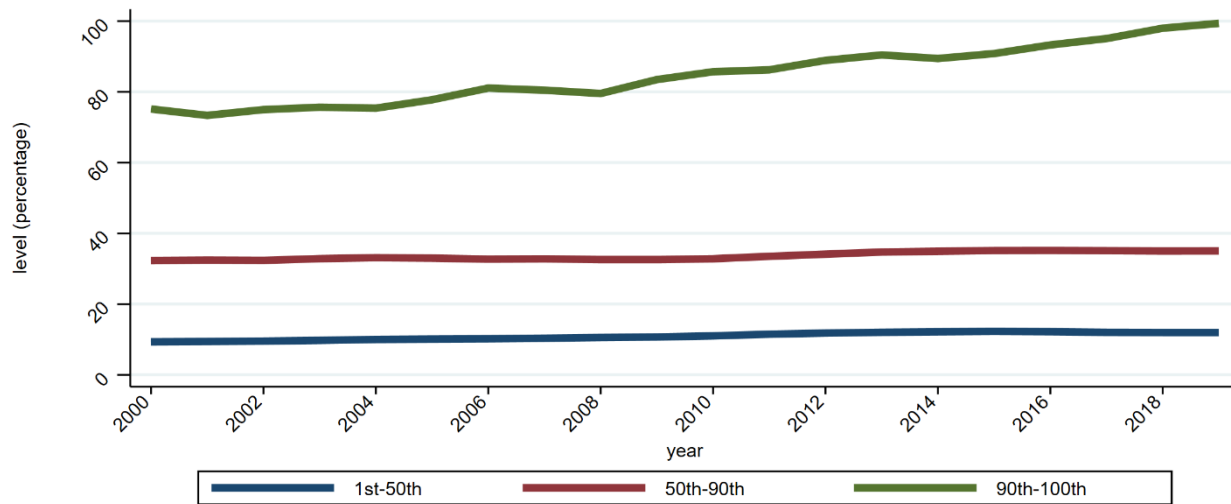


Source: OECD/PIE ongoing work, “Measuring and analysing the evolution of competition in the EU during the last 20 years”. Figure based on Calligaris et al., (2018, 2022) [“Mark-ups in the digital era”, STI WP.](#)

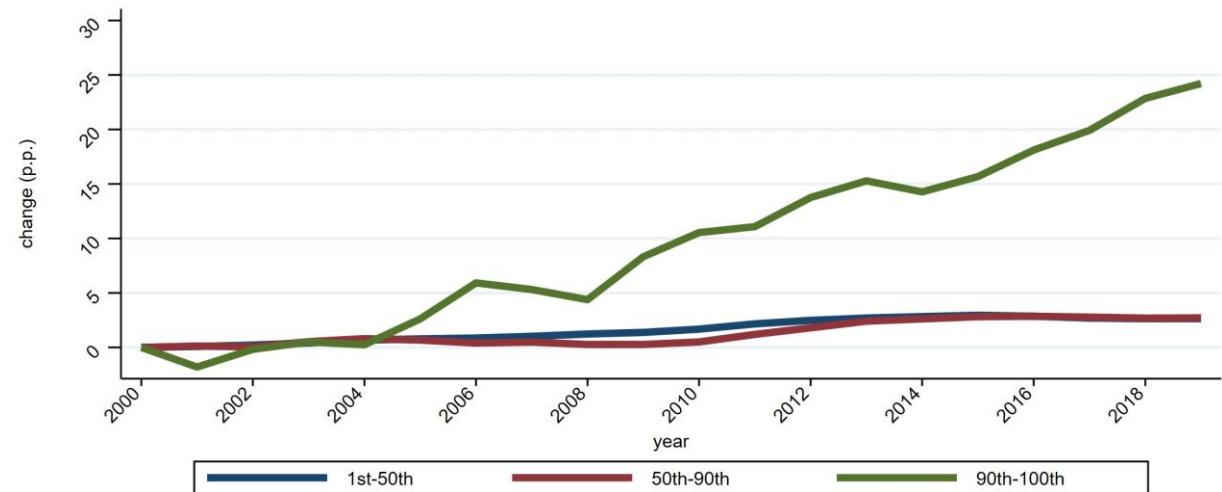


Industry concentration has risen

CR4 levels over time (2000-2019) in different parts of the distribution



CR4 growth over time (2000-2019) in different parts of the distribution

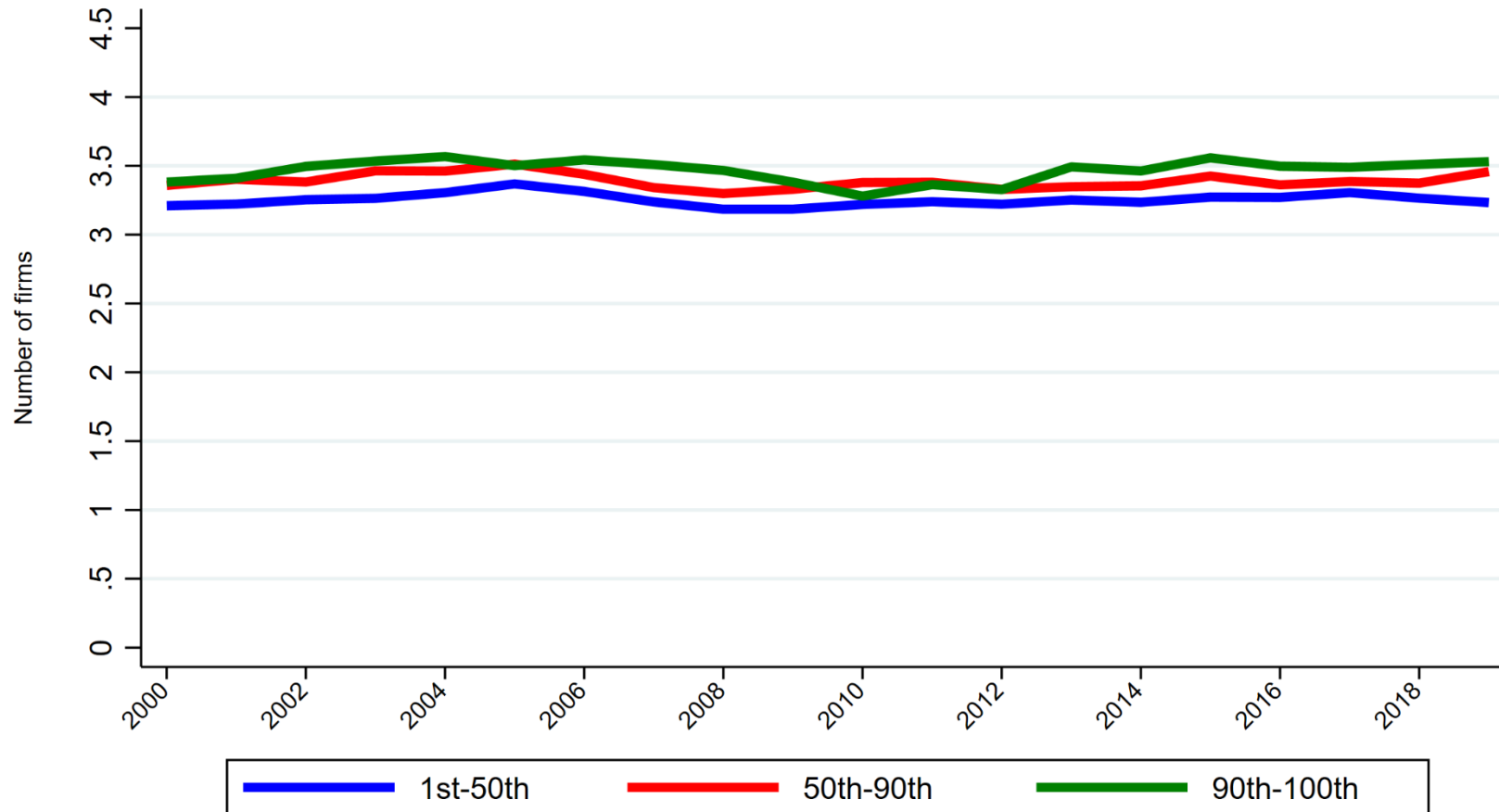


Source: OECD/PIE ongoing work, “Measuring and analysing the evolution of competition in the EU during the last 20 years”. Figure based on the methodology developed in Calligaris et al., (2019) [“Industry Concentration in Europe and North America”, STI WP.](#)



Entrenchment rather high along the whole concentration distribution

Entrenchment levels (2000-2019) in different parts of the CR4 distribution

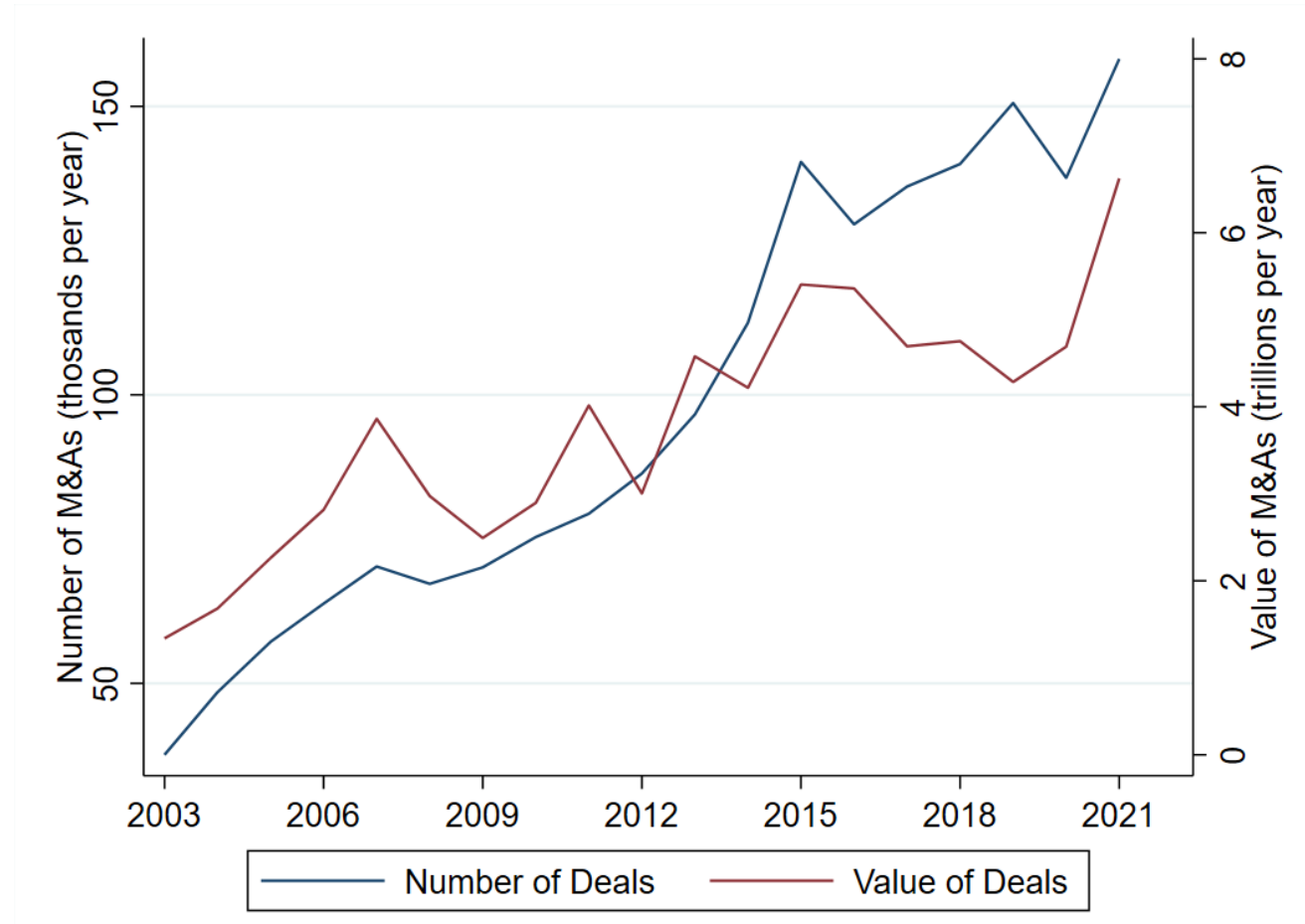


Source: OECD/PIE ongoing work, “Measuring and analysing the evolution of competition in the EU during the last 20 years”.



M&As activity increased over time

The number and value of M&As has been increasing

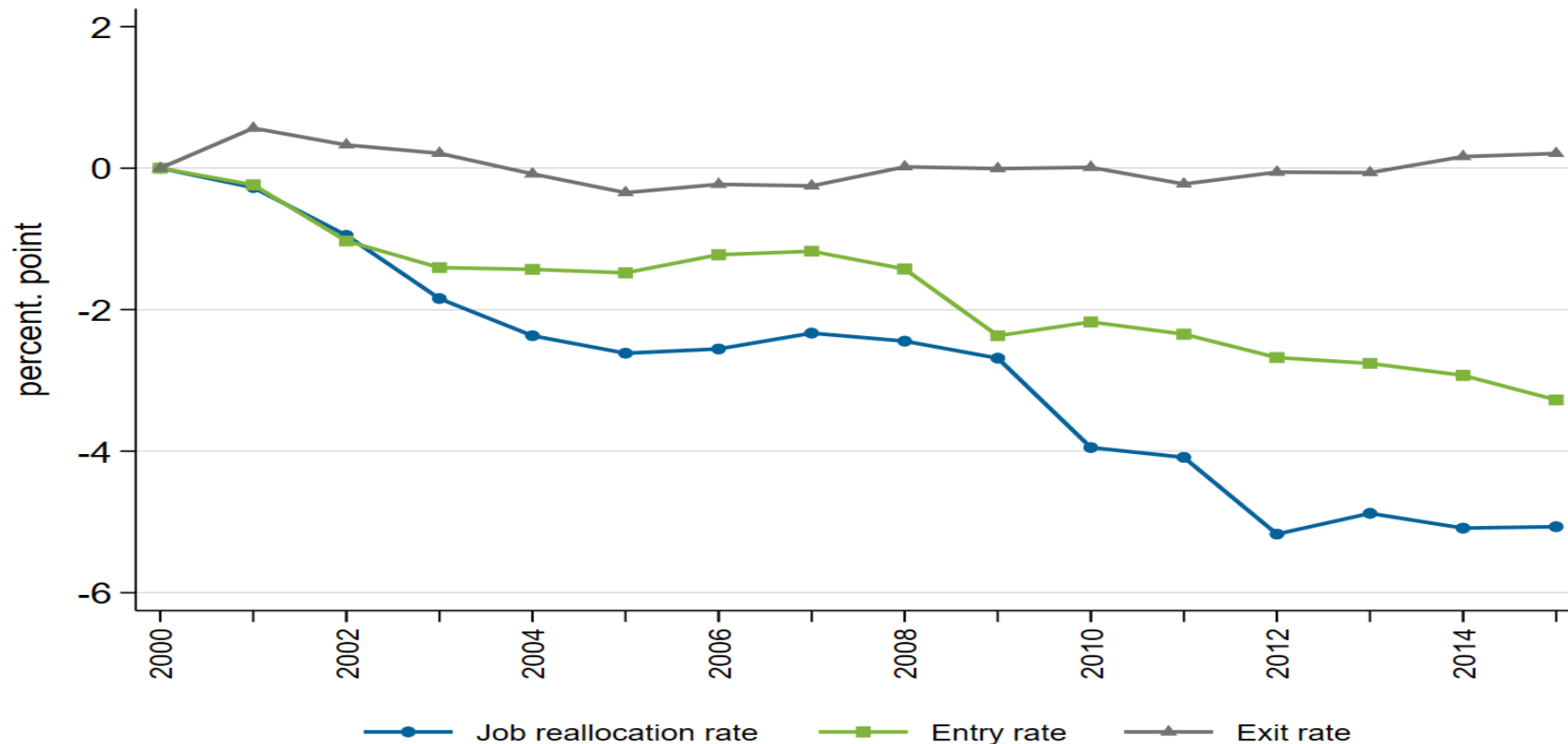


Source: Figure based on the methodology developed in Bajgar et al., (2021) [“Intangibles and Industry concentration: Supersize me”, STI WP.](#)



Dynamism is steadily declining

On average, JR and ER have declined by 5 pp and 3 pp respectively, over 15 years
(i.e. around 0.35 pp and 0.2 pp each year)



Source: Calvino et al. (2020) "Declining business dynamism: structural and policy determinants", STI Policy Paper.



THE ROLE OF PRODUCT MARKET REGULATION



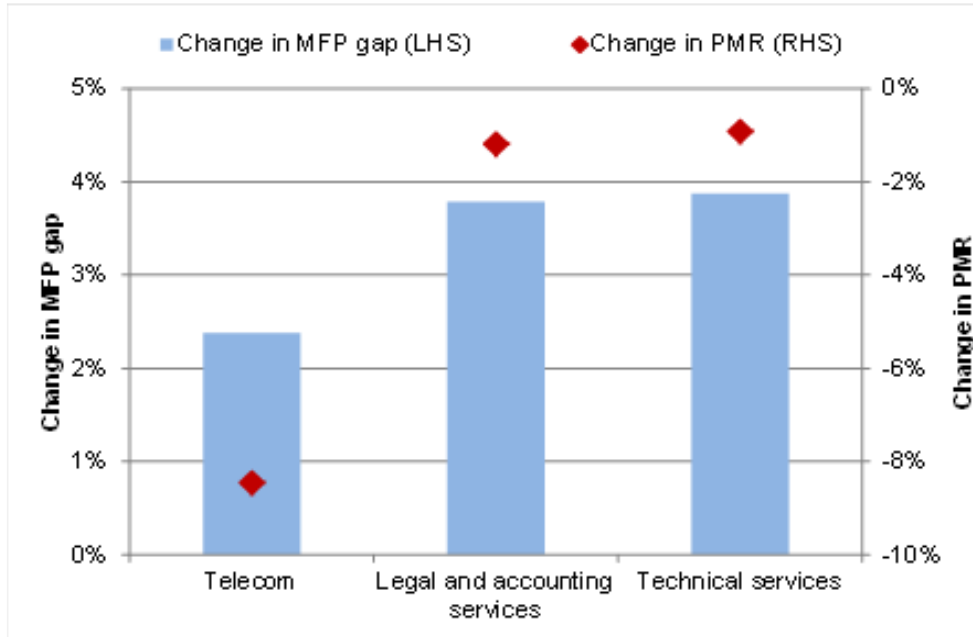
Pro-competitive PMR as an incentive for lagging firms to boost their productivity – a few key channels

1. Sharpening the **incentives** for incumbent firms to adopt better technologies (Bloom, Draca and Van Reenen., 2015; Perla, Tonetti and Waugh, 2015; Steinwender, 2015; Baily, 1993; Baily et al., 2005)
2. Raising **managerial quality**, which is complementary to adoption (Bloom and Van Reenen, 2010; Bloom et al 2012)
3. Reducing **entry barriers**: young firms possess a comparative advantage in commercialising leading technologies (Henderson, 1993; Baumol, 2002)
4. Raising returns to technology upgrade in downstream manufacturing sectors via **input-output linkages** (Bourlès, Cetto, Lopez, Mairesse and Nicoletti, 2013)

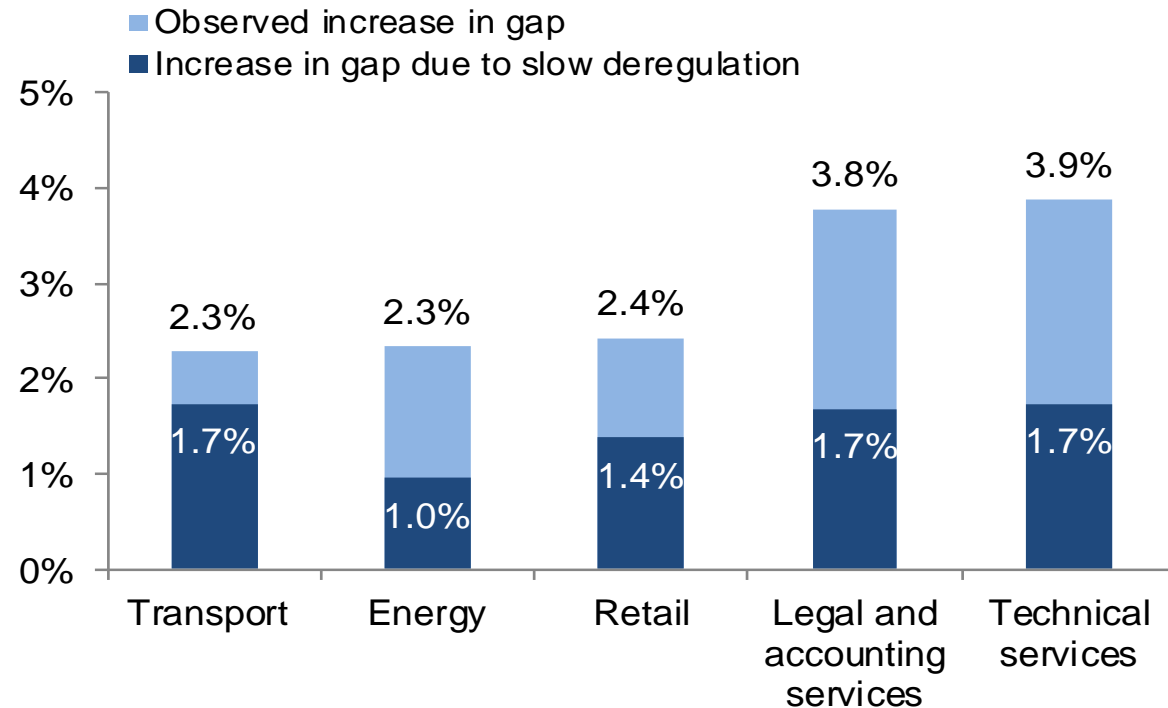


Slower reform goes hand in hand with a larger increase in the productivity gap

Selected industries; annual average change over time and across countries



Estimated contribution to the annual change in the MFP gap of the slower pace of reform *relative to the fastest reforming industry (telecoms)*



Source: Andrews, Criscuolo and Gal (2016)

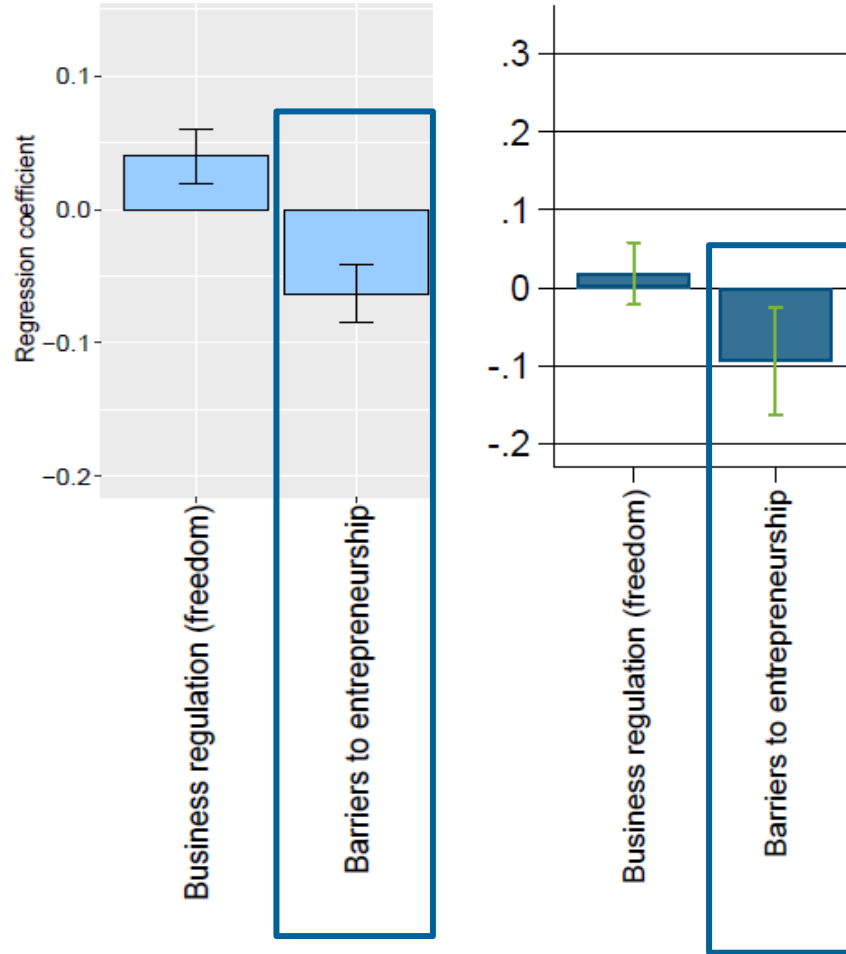
Note: The figure shows the annual change in the (log) MFPR gap between the frontier and laggard firms and the change in the (log) PMR indicator. Technical services refer to architecture and engineering.

MFP divergence was perhaps inevitable due to structural changes in the global economy...but policy could have worked harder to counter such forces



The decline in dynamism is faster when barriers to entrepreneurship are stronger

Decline in entry rates Decline in job reallocation rates



- **barriers to entrepreneurship**, from the OECD PMR database. [A high value of the index indicates stronger barriers to entrepreneurship.]
- **Main results:**
- *High regulatory barriers to entrepreneurship amplify declines in entry rates and are associated with stronger declines in job reallocation.*
 - *Reducing administrative burdens for start-ups is particularly relevant in digital intensive sectors.* (F. Calvino, and C. Criscuolo (2019), "[Business dynamics and digitalization](#)", STI Policy Papers, No. 62.)



Regulatory barriers affect firms in the same industry but also downstream

- **Importance of Input-output linkages!**
- *Q: how anti-competitive regulation in input markets affects mark-ups in their own industry but also downstream.*

In an we find that regulatory barriers upstream [in network industries - electricity, gas, telecom, post and air, rail and road transports - and in retail and professional services]:

Main results:

- *More regulated industries have on average higher mark-ups.*
- *Regulatory barriers in network industries decrease the mark-ups of firms operating in downstream industries: in industries where the output of the regulated industries is used as intermediate input the most, mark-ups are lower.*

Source: recent update of "Mark-ups in the digital era" (Calligaris, Criscuolo and Marcolin, 2018),



The ability of innovative firms to upscale depends on **regulatory burden** as well as on other framework policies

- Cumbersome PMR in business services may raise the cost of expanding the firm
- Indeed they are found to be negatively associated with **capital flows** to patenting firms and **employment growth** of patenting firms

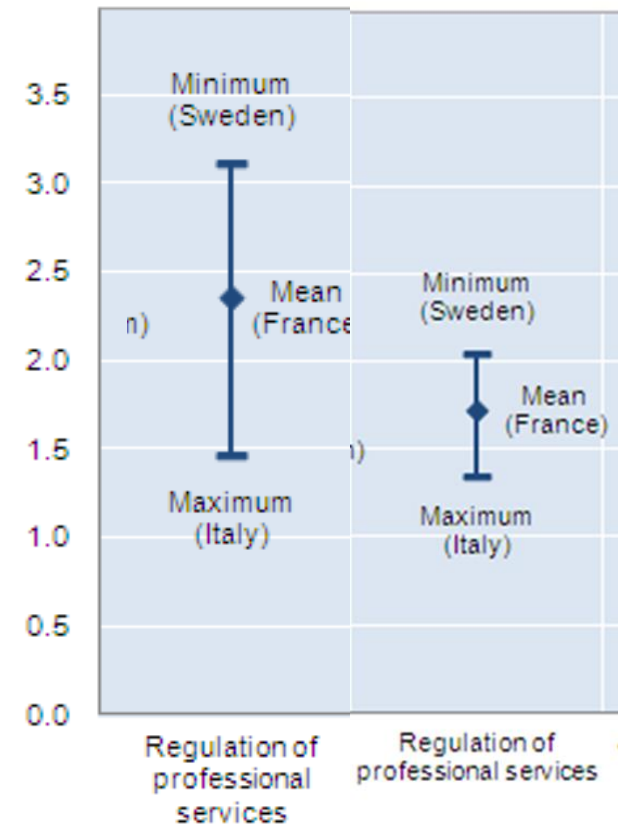
Change in firm **capital and employment** associated with a 10% change in the patent stock

Selected OECD countries; 2002-2010

Firm Capital

Firm Employment

%

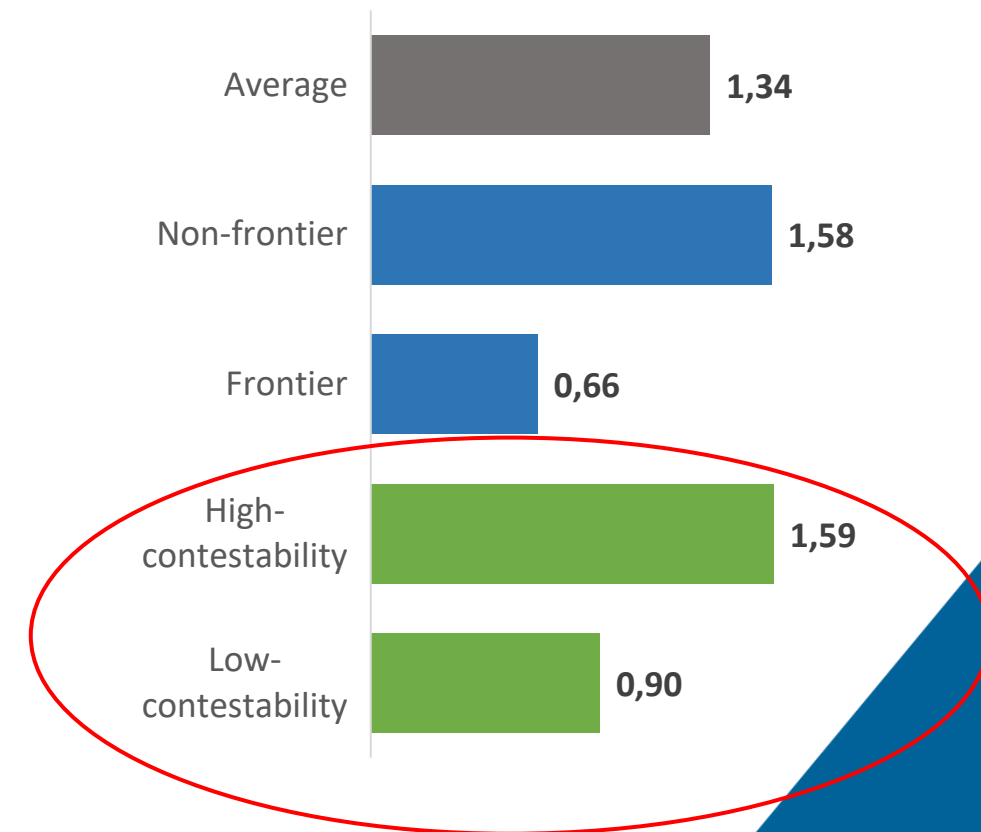




The potential employment benefits from productivity growth rely on firms' ability to compete based on efficiency

- On average firm-level productivity growth and employment growth are positively associated
- This positive relationship relies on an indirect competition mechanism:
 - Firms that improve their relative productivity increase their sales and therefore labour demand
- This relationship is stronger for non-frontier firms
 - Higher potential employment gains associated with competing with the frontier
- This relationship appears stronger in more contestable markets (Measured as lower gap between firms' markups)
 - Asymmetries in market power may prevent firms to gain market shares when improving their relative productivity

Firm-level employment growth (percentage points) after a 10% productivity increase





INDUSTRIAL POLICIES SHOULD BE MULTI-FACETED TO PRESERVE COMPETITION



Policies tools complementary to competition

Policy areas			
New Industrial Policy (horizontal and targeted)	Supply-Push measures		<i>Demand Pull tools</i>
	<i>Within</i>	<i>Between</i>	
	<i>Tax expenditures, grants, subsidies; Financial instruments; Skills policies; public R&D, infrastructure, energy</i>	<i>Entrepreneurship Policies</i>	<i>Product standards, Public procurement, Awareness raising campaigns</i>
Regulations and framework conditions	Increase business transparency, remove regulatory barriers (at country and EU level) and red tape (especially important for “potential” entrants), Intellectual Property Systems, judicial efficiency, financial markets, tax system		
Trade policy	Openness, level playing fields Single Markets (in products and services) Bilateral agreements		
Education/Skills Policies, research and Migration	STEM, training, Apprenticeships, Visas, etc.		
Ecosystem/Coordination	University-Business linkages ; University entrepreneurship / incentives for commercialisation		



Industrial policy must preserve contestability of markets

- Risk: Innovation policies may favour incumbents and firms that already have the capacity to innovate
- Solution: Design of policies matters. Industrial policies should:
 - Not discriminate against entrants and potential entrants
 - Facilitate exit of inefficient firms
- Insights from theory: Innovation support policies risk reducing growth and welfare, if not coupled with policies encouraging the exit of inefficient firms and entry of innovative ones (Acemoglu et al., 2018)



THANK YOU!

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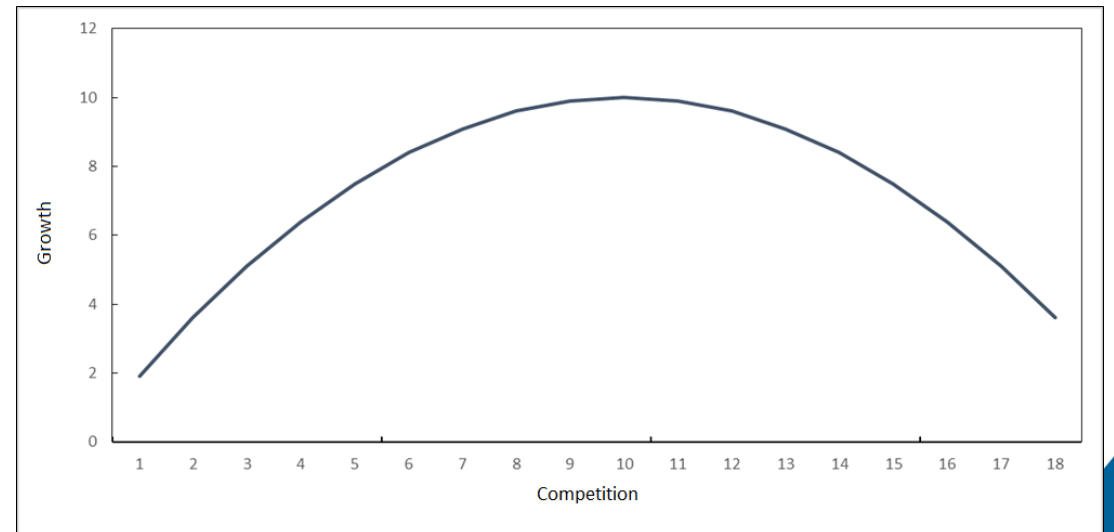


APPENDIX



Innovation requires some level of competition

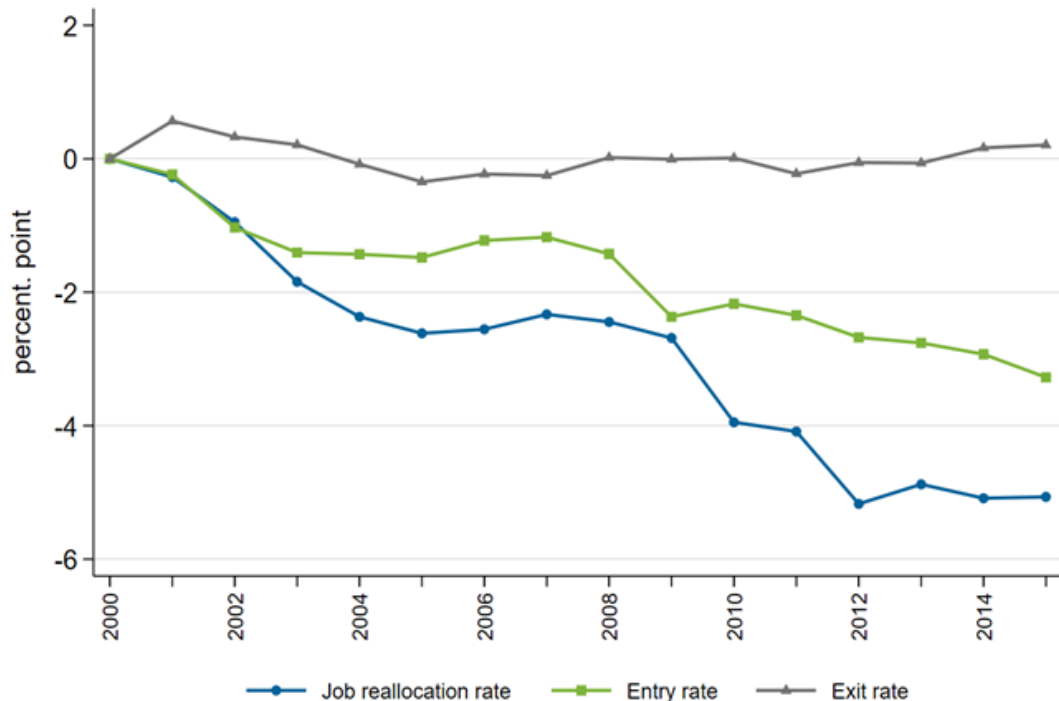
- Firms that compete neck and neck may innovate to escape competition (Aghion et al., 2005)
- Monopolists may find it less beneficial to innovate given their pre-existing ability to make profits
- So, competition is necessary





...as well as declining business dynamism and increasing industry concentration

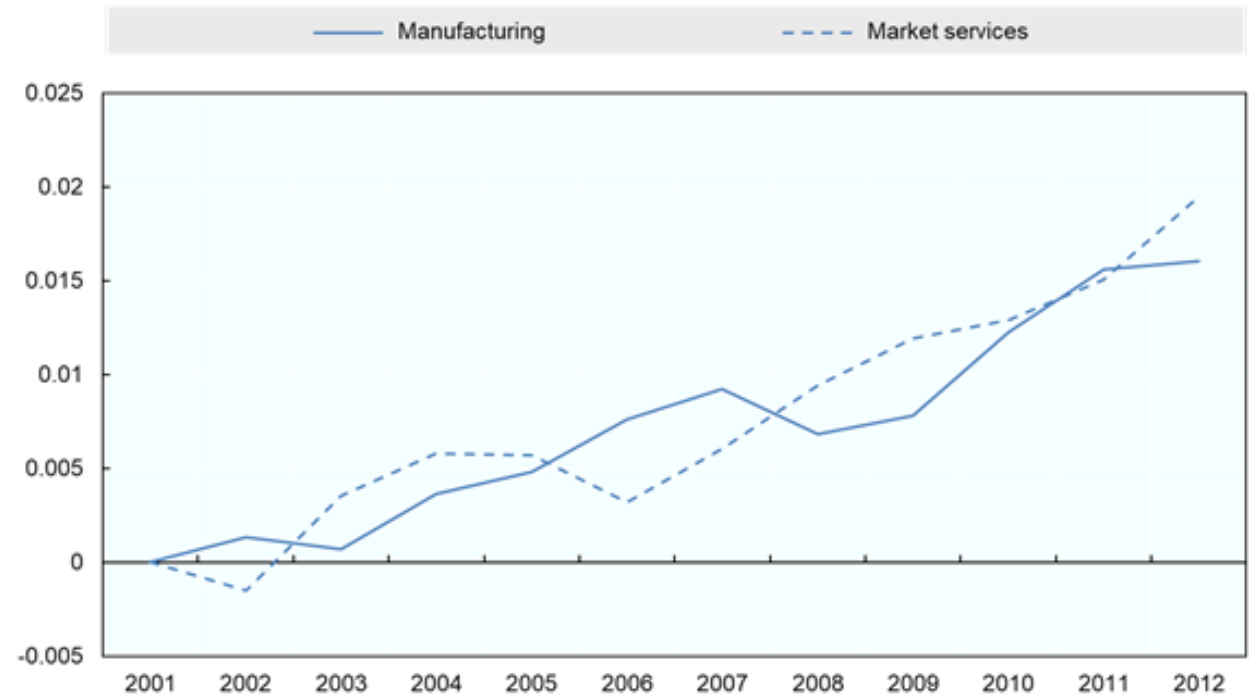
Entry rates and job reallocation rates have decreased over time



Notes: Averages within country-sectors. Cumulative changes in percentage points.

Source: [Calvino, Criscuolo and Verlhac \(2020\)](#)

The share of sales accounted for by 10% largest firms has been increasing



Note: share of sales of the firms in the top decile of the sales distribution in each country and 2-digit industry from the MultiProd dataset.

Source: elaboration based on

[Bajgar, Berlingieri, Calligaris, Criscuolo, Timmis \(2019\)](#)

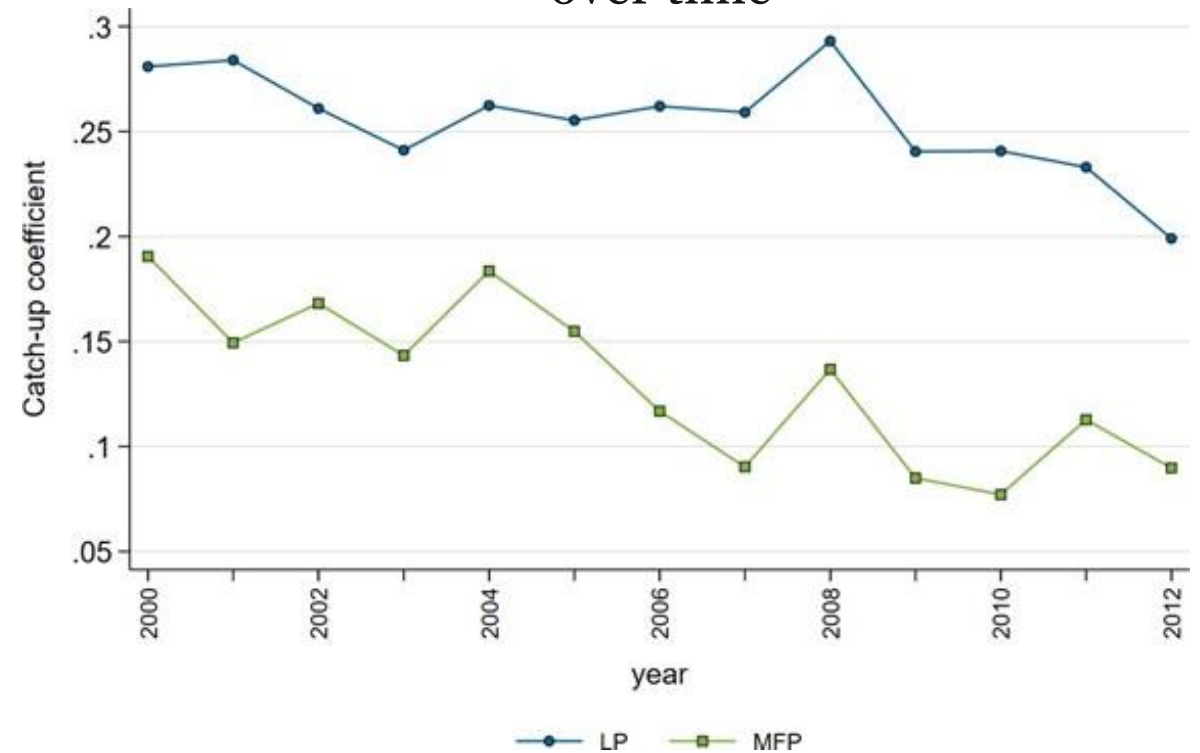


Cross-country evidence of increasing divergences, decline in the speed of catch-up...

Productivity dispersion has increased over time



The speed of catch-up of laggards has slowed down over time



Notes: productivity dispersion (90-10 ratio in MFP à la Woolridge) within manufacturing and market services, normalised to 2000.

Source: [Corrado, Criscuolo, Haskel, Himbert, Jona-Lasinio \(2020\)](#)

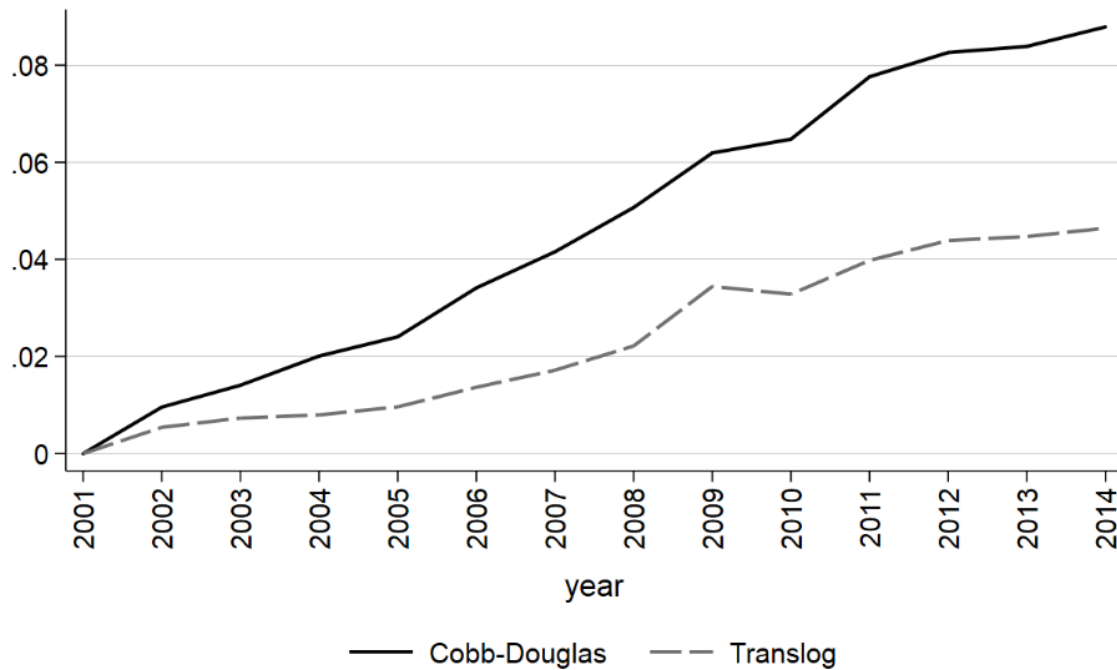
Note: estimates for the catch-up effect over time in manufacturing and market services.

Source: [Berlingieri, Calligaris, Criscuolo and Verlhac \(2020\)](#)

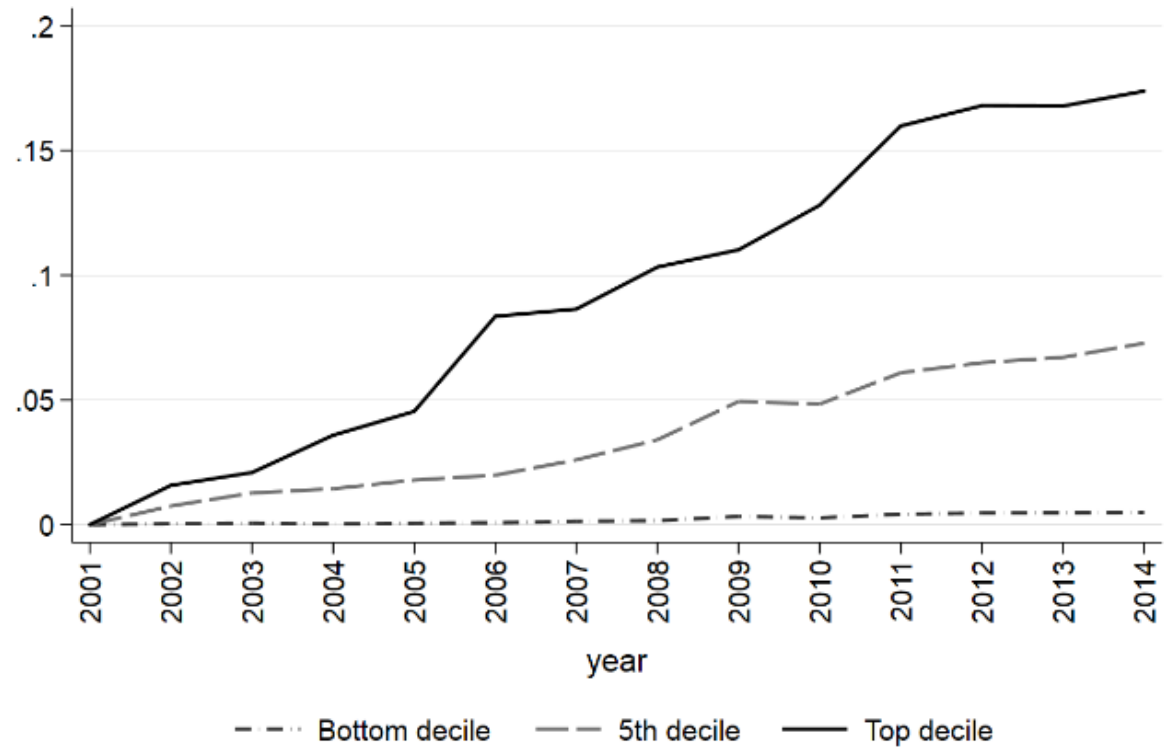


Markups are rising, driven by the highest markup firms

Average mark-up growth



Mark-up growth across the distribution

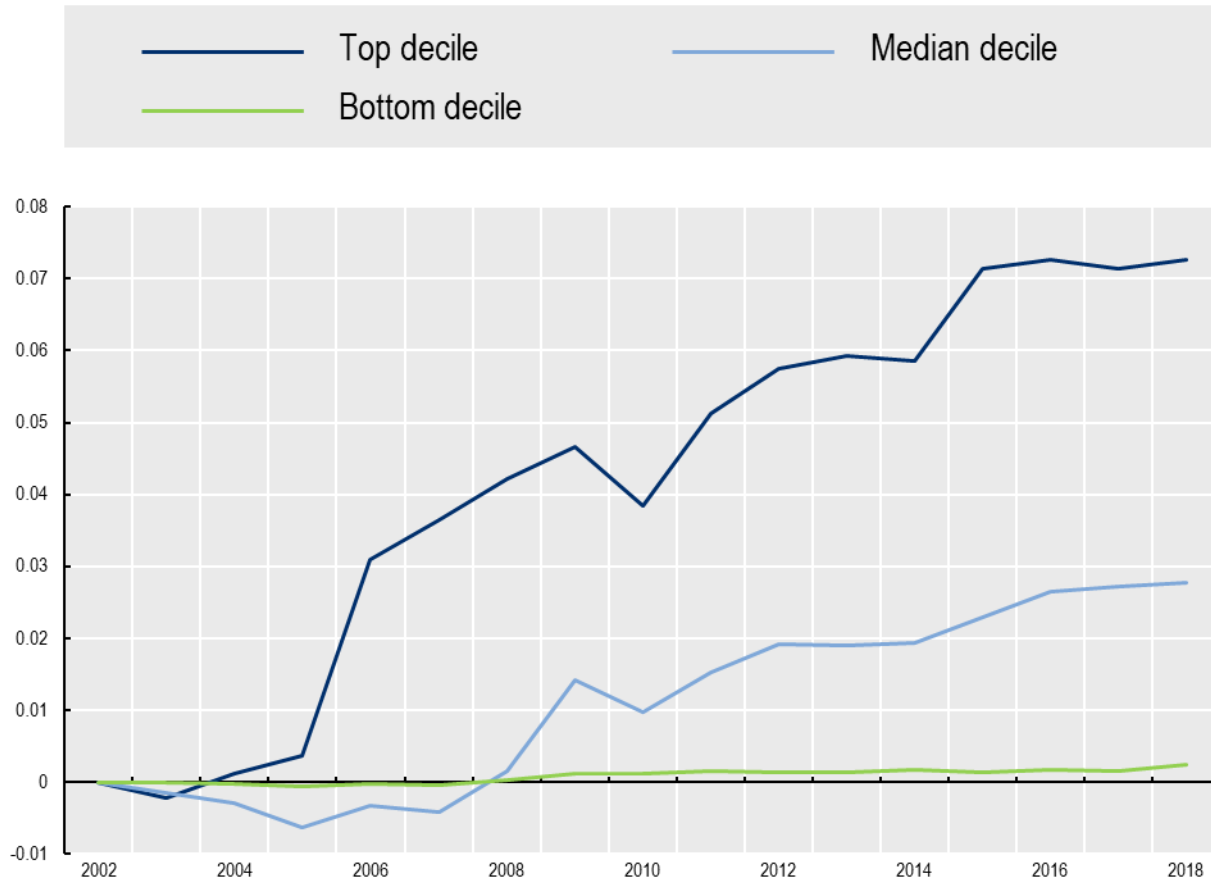


Source: Calligaris et al., (2018, 2022) "Mark-ups in the digital era", STI WP

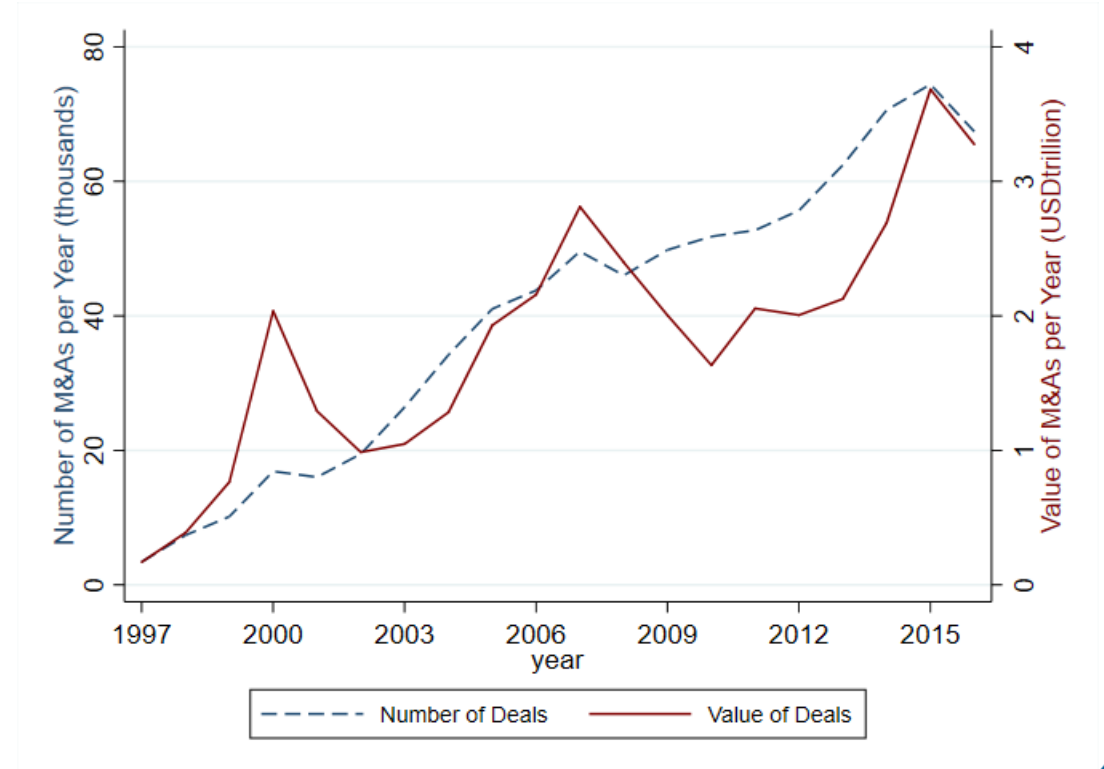


Markups are rising and M&As are more common

Markups by decile



The number and value of M&As

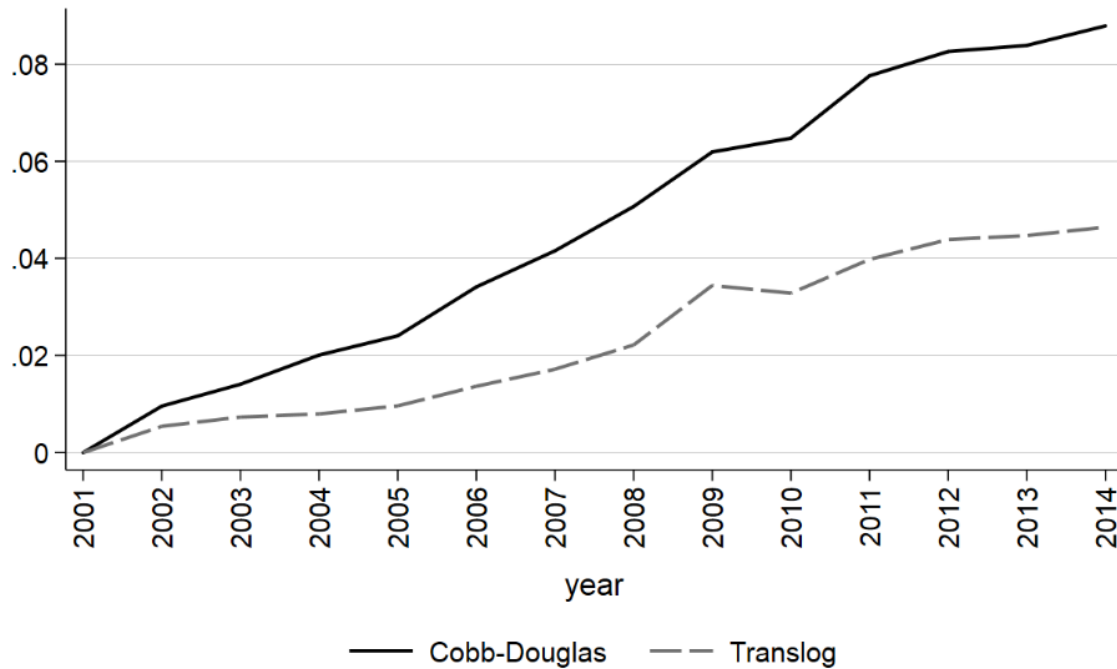


Source: Bajgar et al., (2021) "Intangibles and Industry concentration: Supersize me", STI WP.

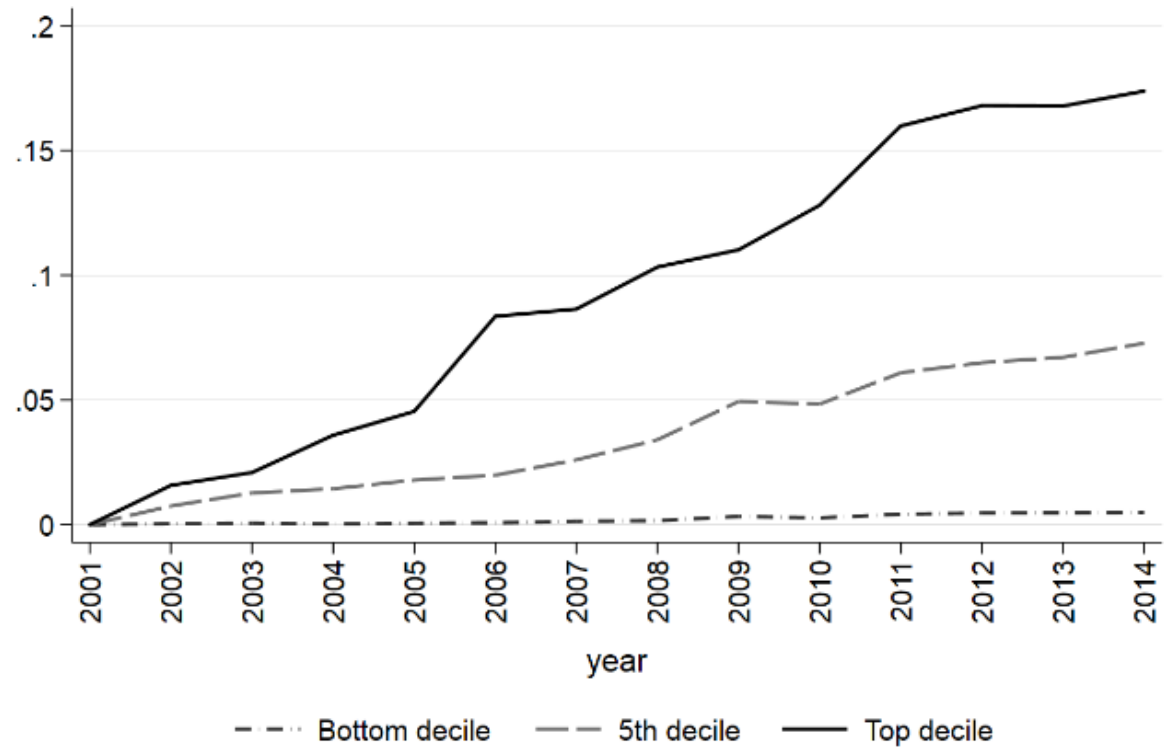


Markups are rising, driven by the highest markup firms

Average mark-up growth



Mark-up growth across the distribution



Source: Calligaris et al., (2018, 2022) "Mark-ups in the digital era", STI WP



Rationale for industrial policies? Market failures

- Knowledge externalities
 - Spillovers across firms but also social returns to innovation may exceed private returns
- Credit constraints
 - Innovation is costly. On average, bigger firms have an inherent advantage
- Coordination role
 - High fixed cost and uncertain returns; missions (S-curve dilemma)
- (Re)direct technological change
 - from dirty to clean technologies, in presence of path-dependency

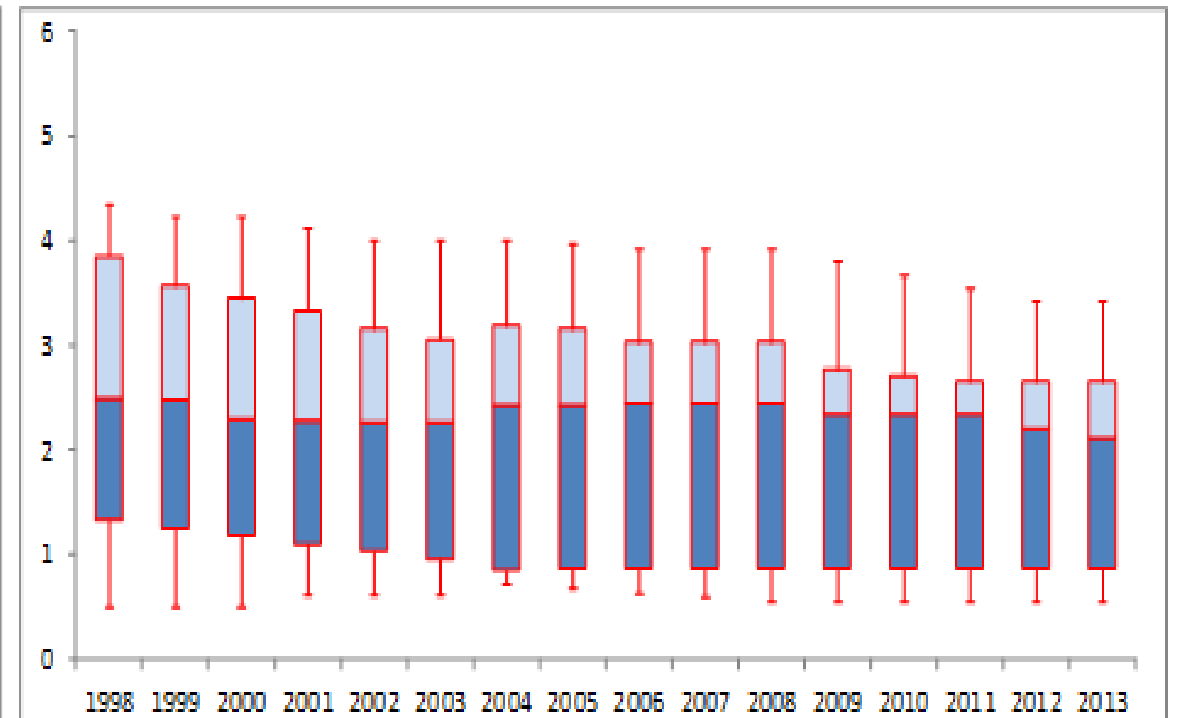
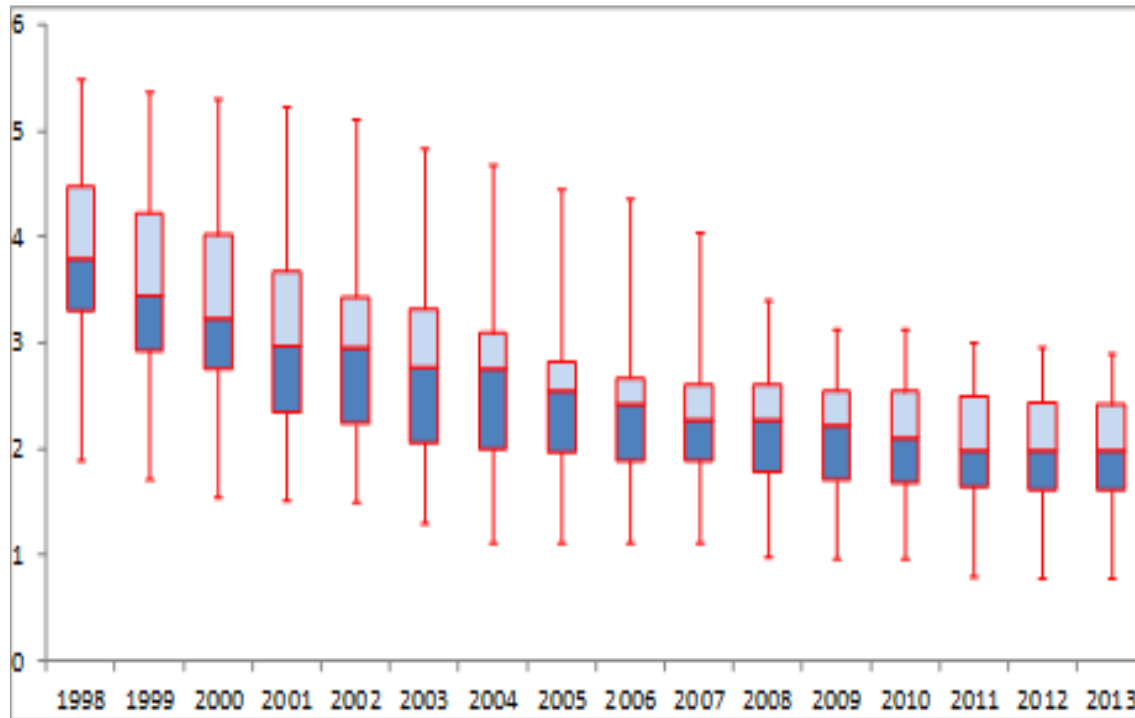


Measuring pro-competitive regulatory reforms by the PMR subindices for specific sectors

PMR subindices for two broad sectors

A: Network industries (transport, energy, comm.)

B: Professional Services (legal, accounting, etc.)



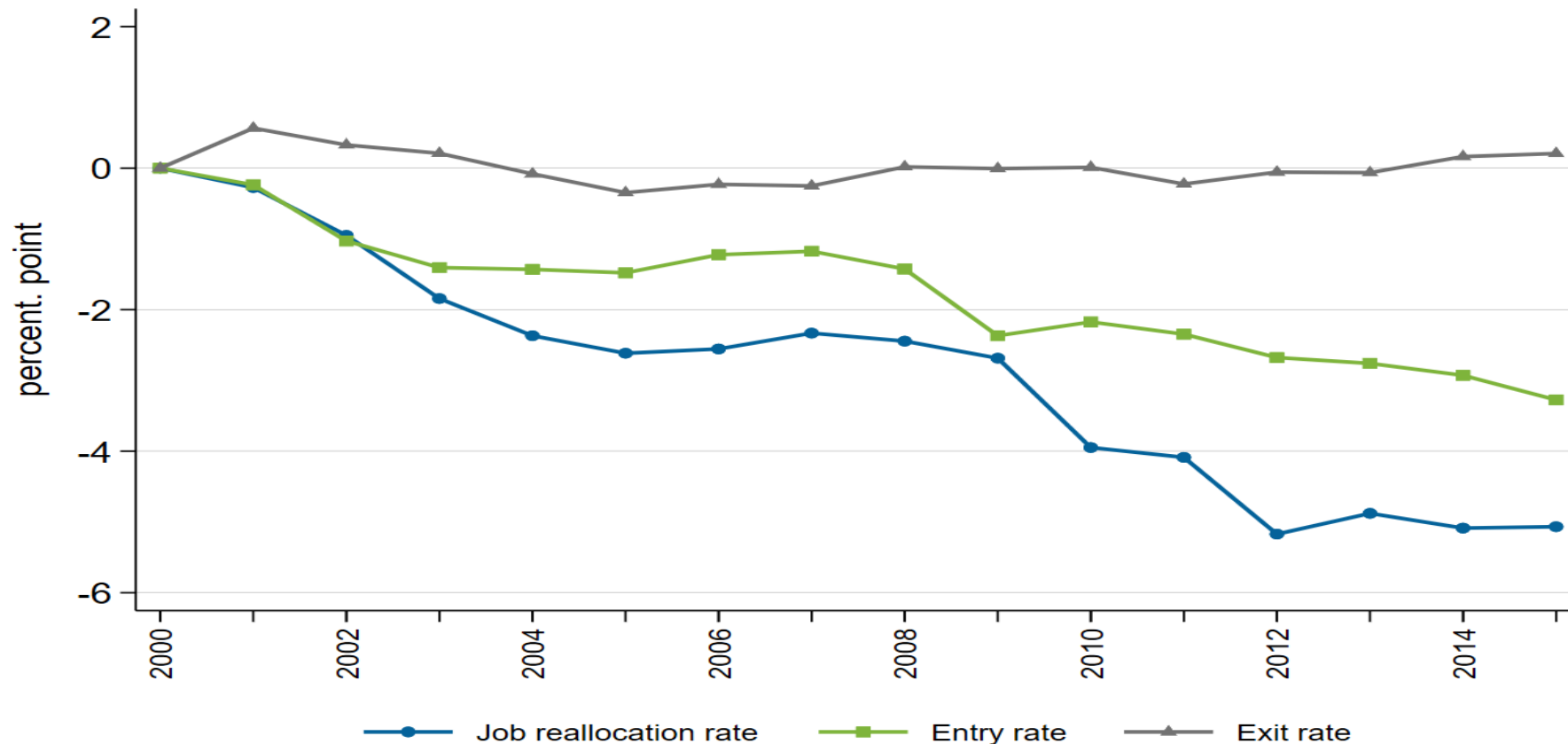
Notes: The horizontal line in the boxes represents the median, the upper and lower edges of each boxes reflect the 25th and 75th percentiles and the markers on the extremes denote the maximum and the minimum across countries.

Source: Calculations by Gal and Hijzen (2016) based on OECD indicators on product market regulation (PMR; Conway and Nicoletti, 2006; Koske, Wanner, Bitetti and Barbiero, 2015) and additional information on the timing of reforms for retail and professional services (Duval, Furceri, Jalles and Nguyen, 2016).



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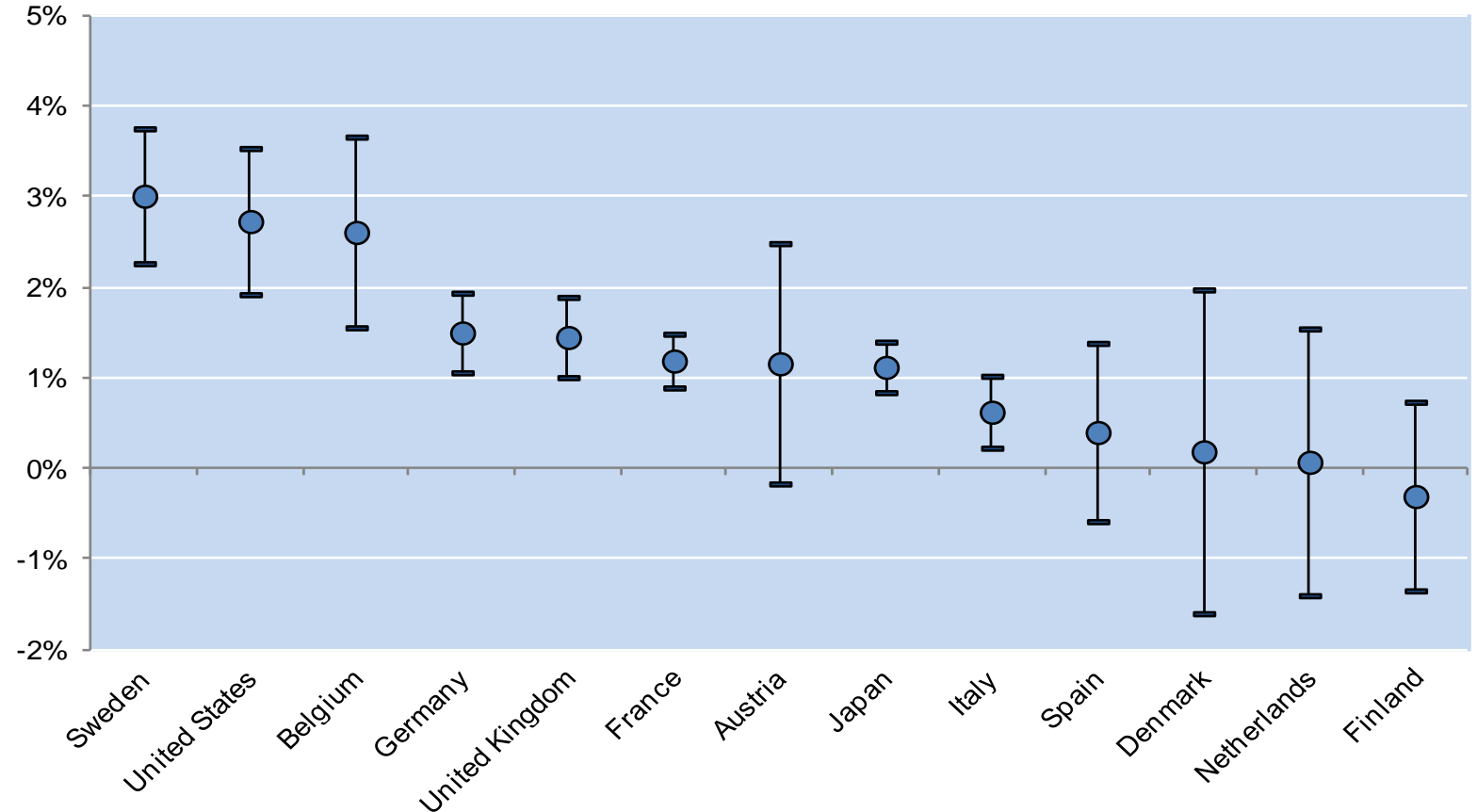
Source: Calvino et al. (2020) "Declining business dynamism: structural and policy determinants", STI Policy Paper.



How successful are **innovative** firms in attracting capital and labour so that they can grow?*

- Innovativeness at the firm level is captured by **patenting**
- These innovative firms need to **upscale**, expand and attract resources
- Key finding: large cross-country heterogeneity, some countries are better at channelling resources to more innovative firms
- But what drives this heterogeneity? What can **public policy** do?

Change in firm inputs associated with a 10% change in patent stock; selected OECD countries (2002-2010)
Percentage change in capital stock



*Based on joint ECO-STI work by Andrews, Criscuolo and Menon (2013) "[Do Resources Flow to Patenting Firms? Cross Country Evidence from Firm Level Data](#)"