

## Switzerland in CompNet

**Swiss Statistics**

**Filippo di Mauro**  
*Chairman of CompNet*

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# Motivation

- We are about to see some light after an Epochal crisis
- All of us are now engaged in assessing impacts and formulating solutions
- Ultimately, this implies creating economies which are more efficient and productive.
- The Competitiveness research network (CompNet) is well placed to contribute to this debate

**➔ A warm welcome to the Swiss team at BFS and SNB**

# Outline

- 1. CompNet: Organization and mandate**
2. The CompNet firm-level based dataset
3. Productivity developments
4. Allocative Efficiency
5. Trade developments and productivity
6. Financial Constraints and productivity
7. Firms Concentration in Europe and Aggregate Productivity
8. COVID and Productivity: a map of action and first results
9. CompNet and Switzerland: few stylized facts from the 7<sup>th</sup> Vintage

# What is CompNet?

1. We started in 2012 as a research network of the European Central Bank to:
  - Provide a forum for research on productivity/competitiveness within and outside the EU system of central banks
  - Generate top standard indicators on productivity drivers, which are firm-level based.
2. Since early 2017, all major European institutions joined the initiative in addition to the ECB (EIB, EU Commission, EBRD) and many statistical institutes (NSIs) have now become our data providers, in addition to several National Central banks.

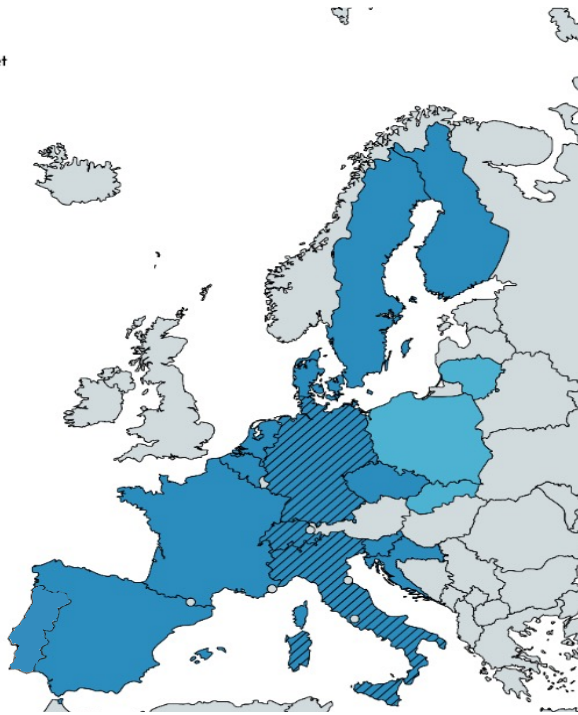
This allowed us to improve dramatically overtime the quality of the dataset and its cross-country comparability. This is for us top priority.

- ➔ Our members use systematically and independently our dataset for policy and research
- ➔ We encourage also external researchers to use our dataset. [www.comp-net.org](http://www.comp-net.org)

# The 7<sup>th</sup> Vintage of the CompNet Dataset

Countries included in the 7<sup>th</sup> Vintage of the CompNet Dataset

- All and 20e Sample available
- 20 Sample available
- New Data Sources



- Unbalanced panel of 19 European countries for the period 2000-2017
- Micro-aggregated indicators on productivity and drivers (including concentration and competitiveness)
- The indicators are computed using mostly administrative data which have better coverage than other sources (e.g.: ORBIS)

Countries	Macro – Sectors
Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Lithuania, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland	Manufacturing, Construction, Wholesale and retail trade, Transportation and storage, Accommodation and food service, ICT, Real Estate, Professional activities, Administrative and service

# CompNet: output and value added

- Productivity is **key for welfare**. The Covid crisis has further underlined the need for sustainable development and higher productivity.
- ➔ our focus today: discuss how and why our **micro-perspective** can help, looking particularly at Switzerland in comparison to other European economies
- Will look at **stylized facts** related to
  - Productivity
  - Allocative efficiency
  - Trade
- Will show research on firm concentration
- Plans of research on COVID
- More on Switzerland: Unit labor costs and productivity

## 2. What is new in the 7th vintage dataset

- Introduced more variables
- Added new countries

## 3. Productivity developments

## 4. Allocative Efficiency

## 5. Trade developments and productivity

## 6. Financial Constraints and productivity

## 7. Firms Concentration in Europe and Aggregate Productivity

## 8. COVID and Productivity: a map of action and first results

## 9. CompNet and Switzerland: few stylized facts from the 7<sup>th</sup> Vintage

# The 7<sup>th</sup> Vintage of the CompNet Dataset - variables



## Previously we had added

- Zombie firms
- Regional dimension within countries
- Intangibles proxies



# CompNet Productivity report: key messages

## 2. What is new in the dataset

## 3. Productivity developments

- Productivity growth has been muted in the latest years within sectors
- Constant dispersion of productivity (top vs bottom performers)
- Positive contribution of intangible assets to TFP

## 4. Allocative Efficiency

## 5. Trade developments and productivity

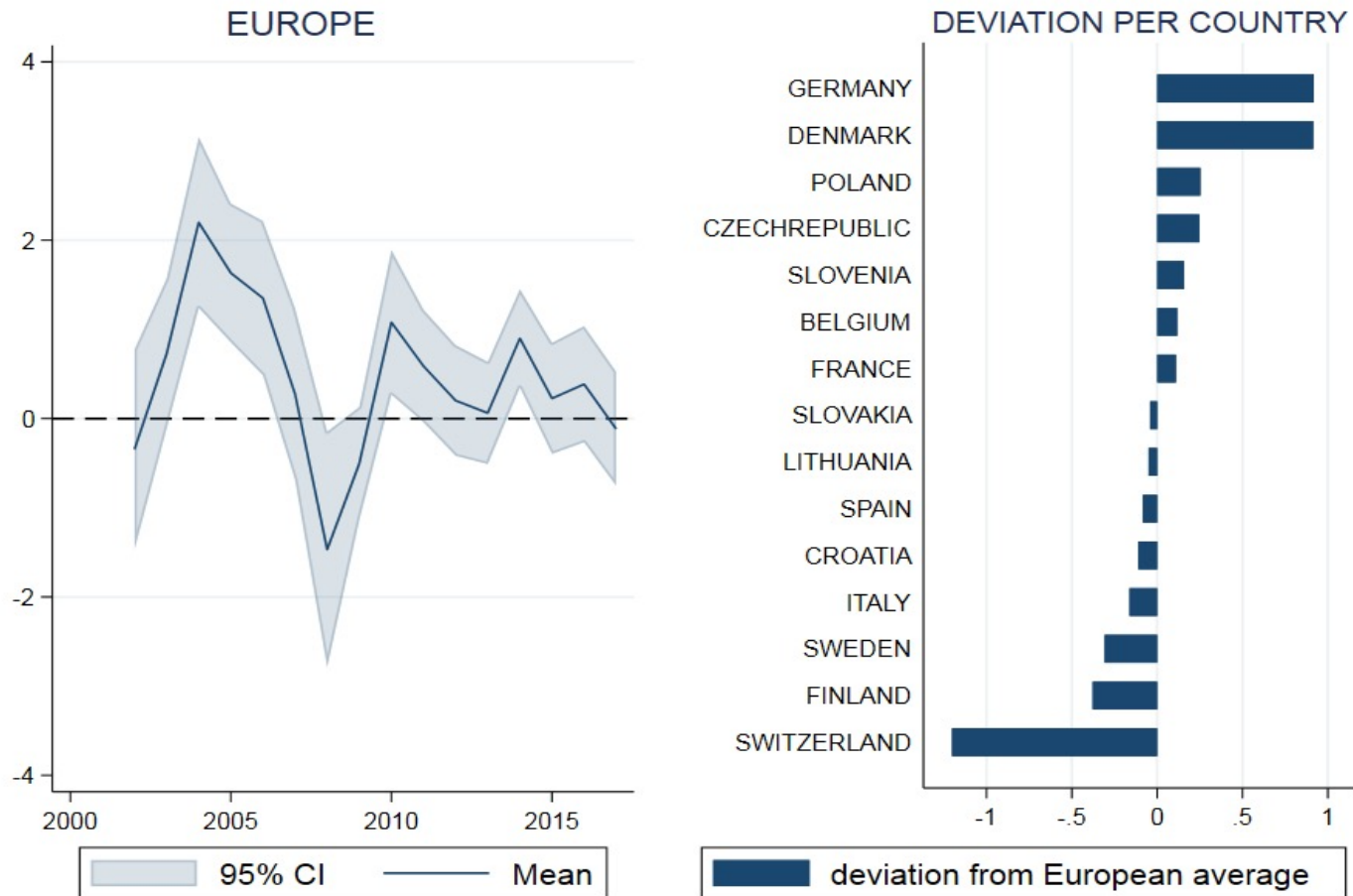
## 6. Financial Constraints and productivity

## 7. European Firm Concentration and Aggregate Productivity

## 8. COVID and Productivity: a map of action and first results

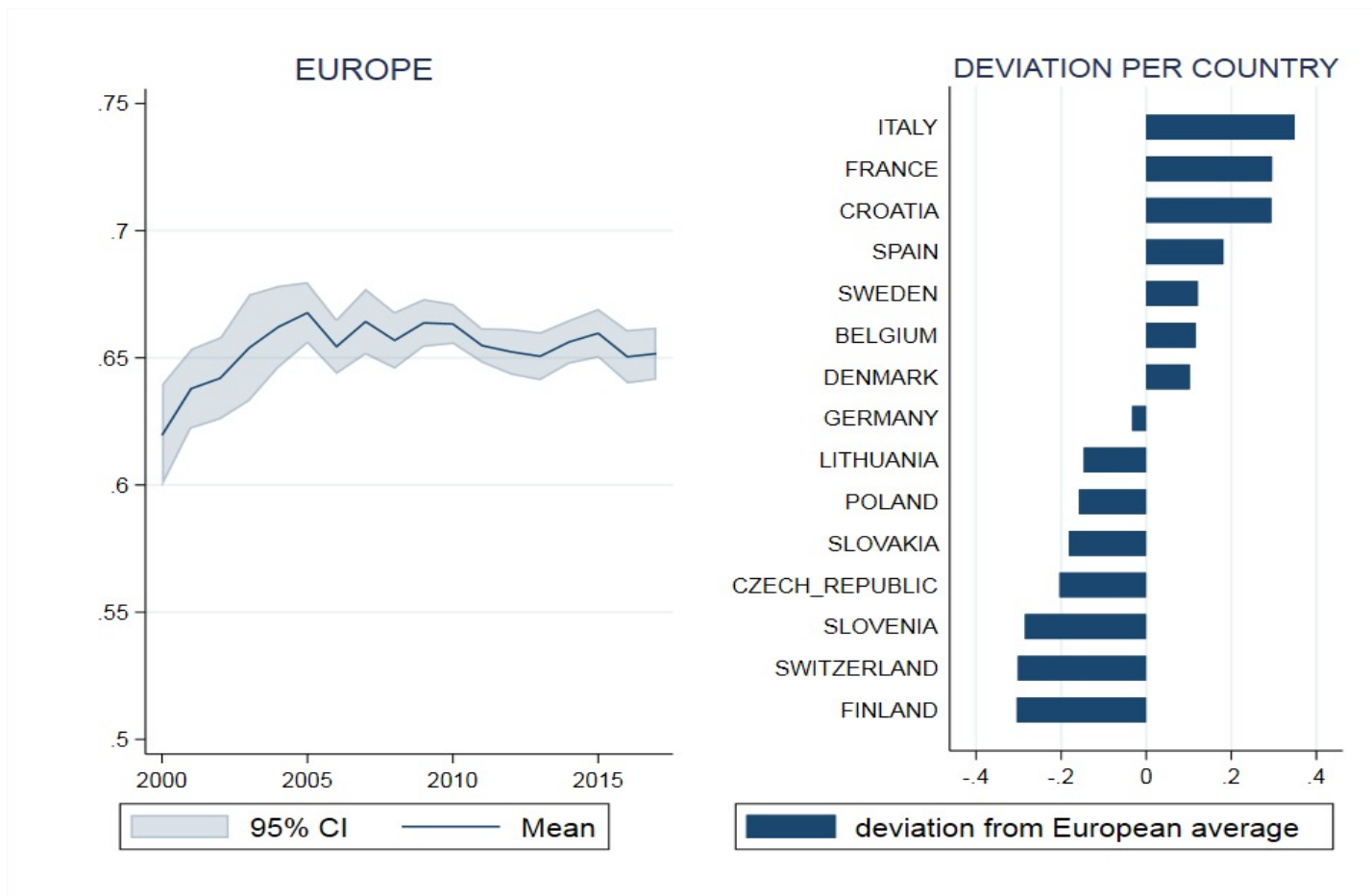
## 9. CompNet and Switzerland: few stylized facts from the 7<sup>th</sup> Vintage

# Growth of TFP within sectors is declining



- Growth of TFP within sectors has further slowed-down lately. The trend is quite homogeneous across countries, with just a few deviating from the average.
- E.g. in Denmark, TFP growth was on average **almost one percentage point higher**

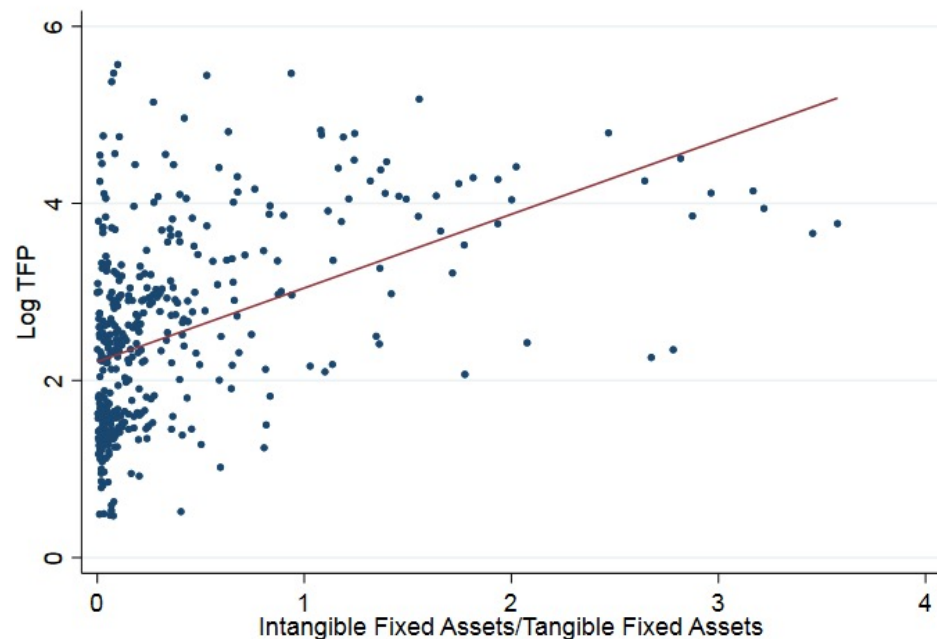
# Dispersion of TFP is stable but more heterogeneous



- The EU difference between top and bottom performers is stable lately at around 90%
- However, it varies a lot across countries, which is critical as we look at COVID impacts
- (e.g. in Italy the best firms are 170 percent more productive than the worst, in Finland just about 40%)

# Intangible Input Use and Productivity in Europe

## Productivity and intangible inputs use across sectors (2016)



Notes: Figure plots the relation between aggregate intangible fixed asset intensity and revenue-based log total factor productivity. All available sectors and countries are pooled. 20e sample.

- Intangibles – patents, licences, copyrights, trademarks and goodwill - are increasingly important for production process and
- ..are positively related to productivity,
- ...but are also highly concentrated
- COVID: what are the possible impacts?
  - Widening the adoption of intangible input use (Productivity +)?
  - Simple reallocation of economic activity to firms able to adjust to new modes of production?

2. What is new in the dataset

3. Productivity developments

## 4. Allocative Efficiency

- Productivity-enhancing reallocation processes appear to have stopped in the latest years
- Lower Job dynamism in EU may have contributed as it is negatively related to both reallocation and aggregate TFP growth

5. Trade developments and productivity

6. Financial Constraints and productivity

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# Reallocation in European sectors

Olley & Pakes (1996) decomposition

**Within-firm component**  
(unweighted avr.)

$$\Omega_{jt} = \sum s_{it} \omega_{it} = \bar{\omega}_{jt} + cov_{jt}(s_{it}, \omega_{it}).$$

**Aggregate  
Productivity**

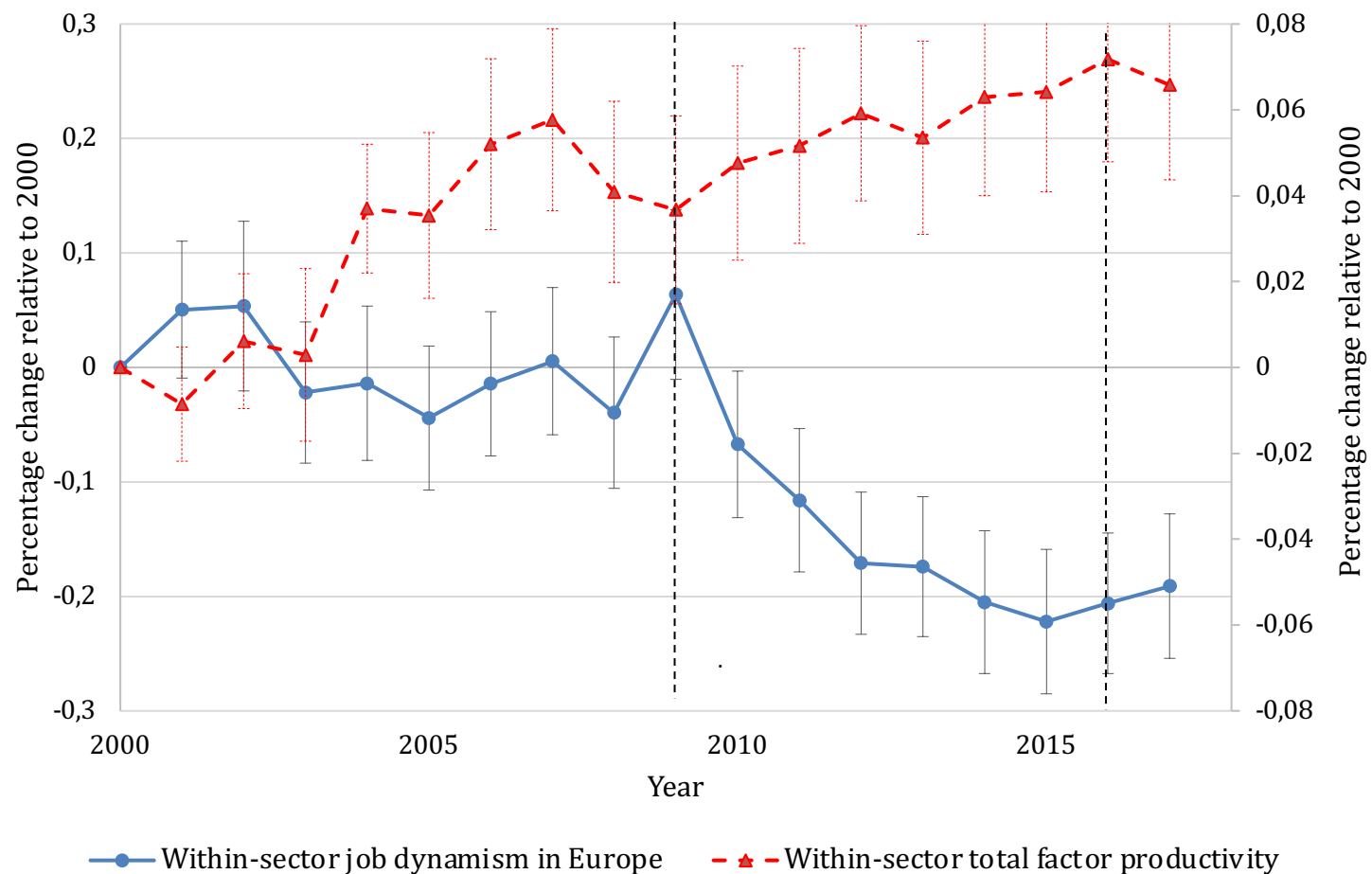
**Between-firm component**

# Reallocation in European sectors



- Allocative efficiency growth has stopped in the latest years.
- This might have contributed to the slowing of TFP aggregate growth

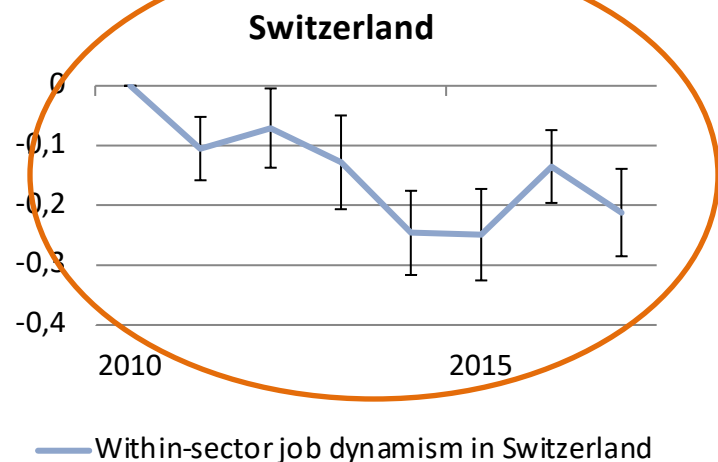
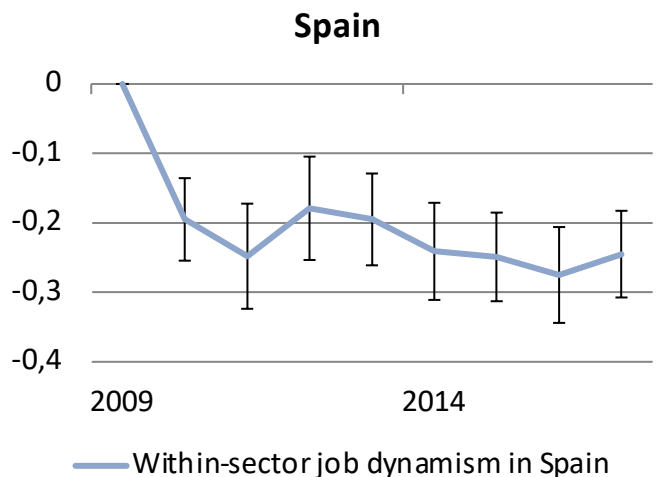
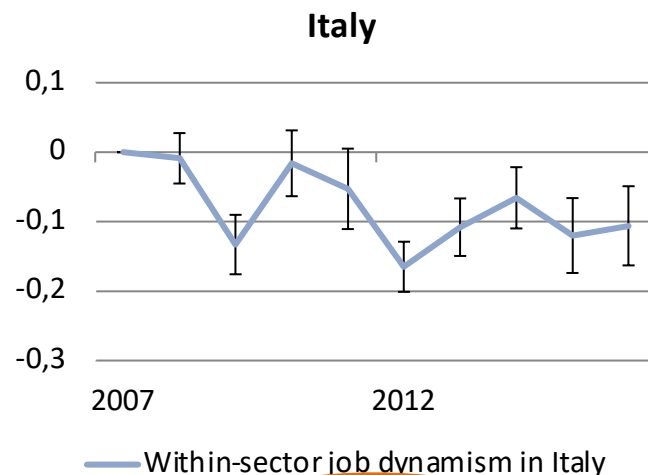
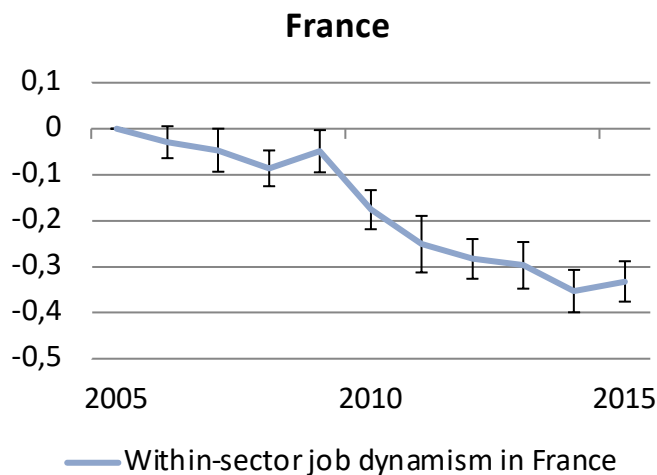
# Slowing job dynamics coincide with slowing TFP growth



- Job dynamism (job creation and destruction; blue line) fell
- econometric estimation show that had a negative impact both on TFP growth and reallocation processes



# Slowing job dynamism in nearly ALL countries



2. What is new in the dataset

3. Productivity developments

4. Allocative Efficiency

**5. Trade developments and productivity**

- COVID: Disruptions in GVCs may harm the already sluggish productivity growth

6. Financial Constraints and productivity

7. European Firm Concentration and Aggregate Productivity

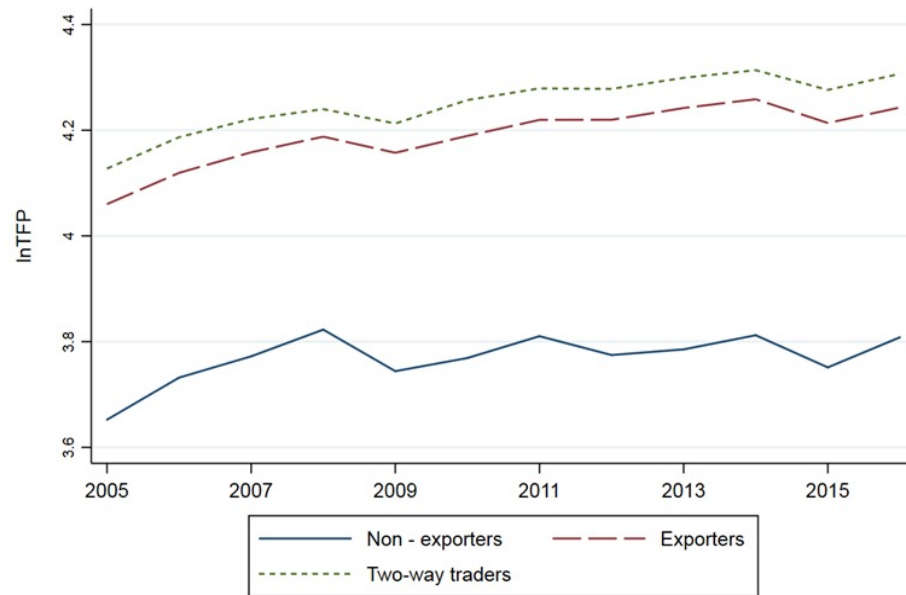
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# Disruptions in GVCs is a threat for productivity growth

- The most productive firms are engaged in GVCs by both exporting and importing (enjoying large premia)

Productivity premium by export status



- ↓
- They are overall financially healthy, but disruptions in GVC due to Covid (trade barriers/ lockdowns) may have strong adverse effects on these firms (and thus on aggregate productivity).

↓

➔ It would be critical to have also for Switzerland business registers data matching customs data at the firm level

2. What is new in the dataset

3. Productivity developments

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6. Financial Constraints and productivity

**7. Firm Concentration in Europe and Aggregate Productivity** (*Special chapter*)

- Is concentration due to more efficient markets or excessive market power?
- Covid Shock might increase concentration. What would be the impact on productivity? E.g.: large vs small firms

8. COVID and Productivity: a map of action and first results

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# Research application: Firms Concentration

There is evidence of rising firm concentration in both the US and Europe, and increasing concerns

## What is firm concentration?

→ too few firms serving an individual market.....  $HHI = \sum_{i=1}^T \left( \frac{r_i}{\sum_{i=1}^T r_i} \right)^2$

## What are the consequences?

- **Negative view**

- Firm concentration reflects higher market power and markups (which hampers consumers welfare), and
- Too lax antitrust enforcement

- **Positive view**

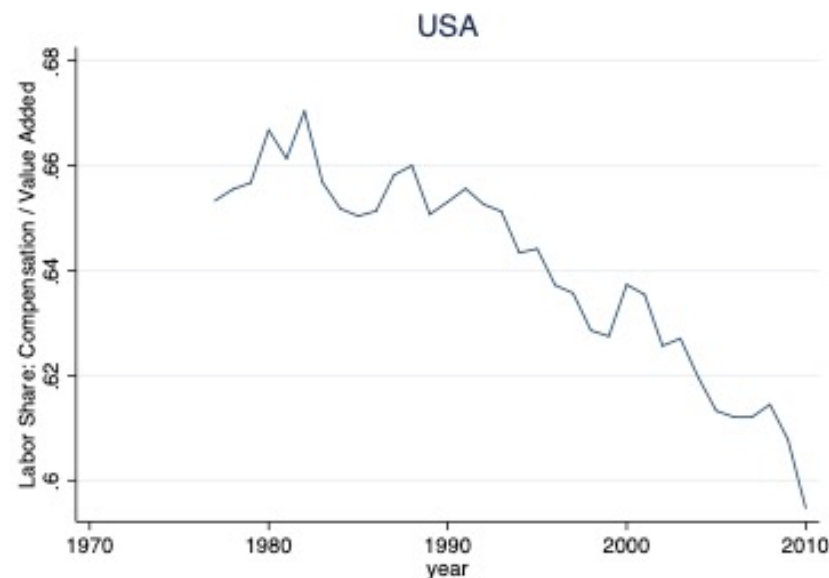
- The nature of competition is changing ...more efficient firms are rewarded with higher market shares
- “Winner take all/most” Van Reenen (2018)

→ *forthcoming paper with M. Melitz (Harvard), T.Bighelli and M. Mertens (IWH)*

# Trends in Europe and in the US: the evidence so far

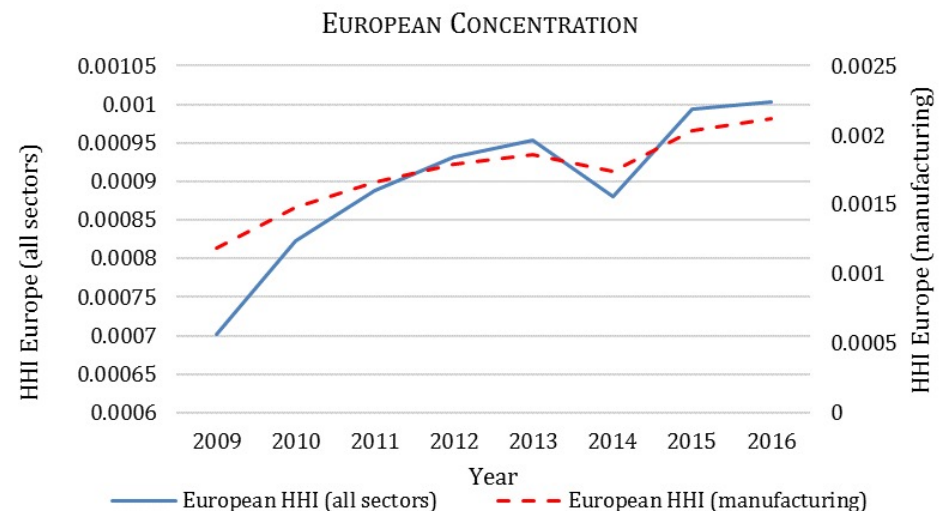
## US

- **Increases in aggregate markups** driven by market share reallocations towards high markup firms (DeLoecker et al, 2020)
- **Decreases in labor share** also driven by market share reallocations (Autor et al, 2020)

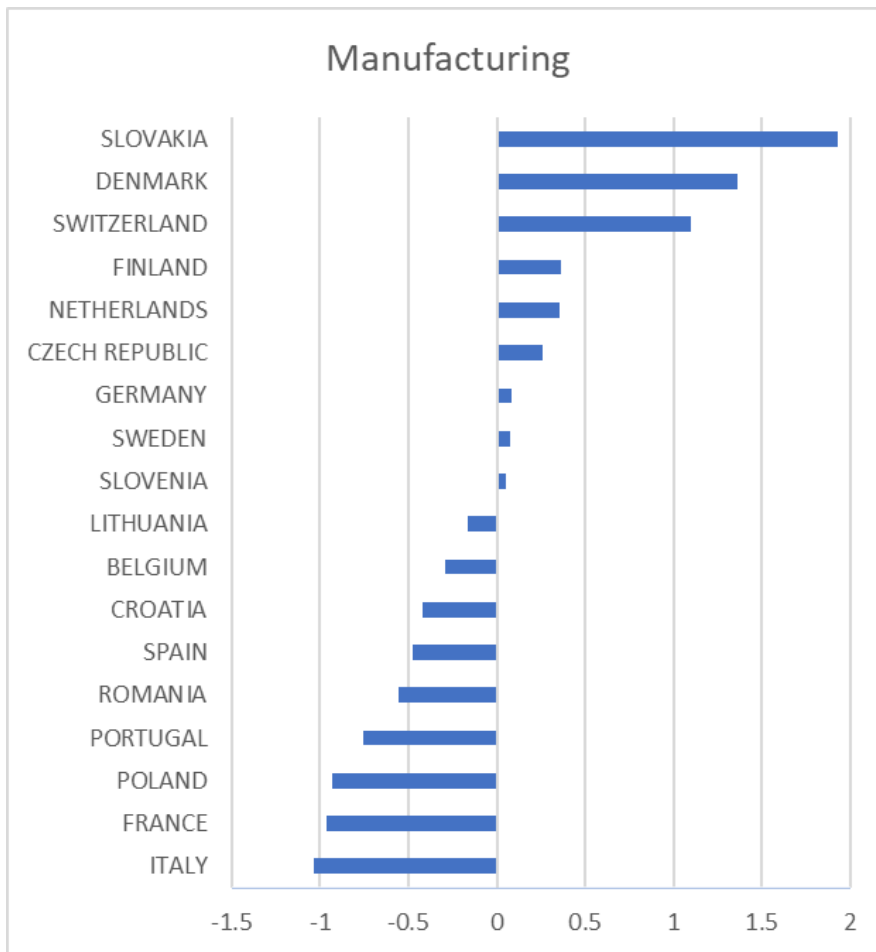
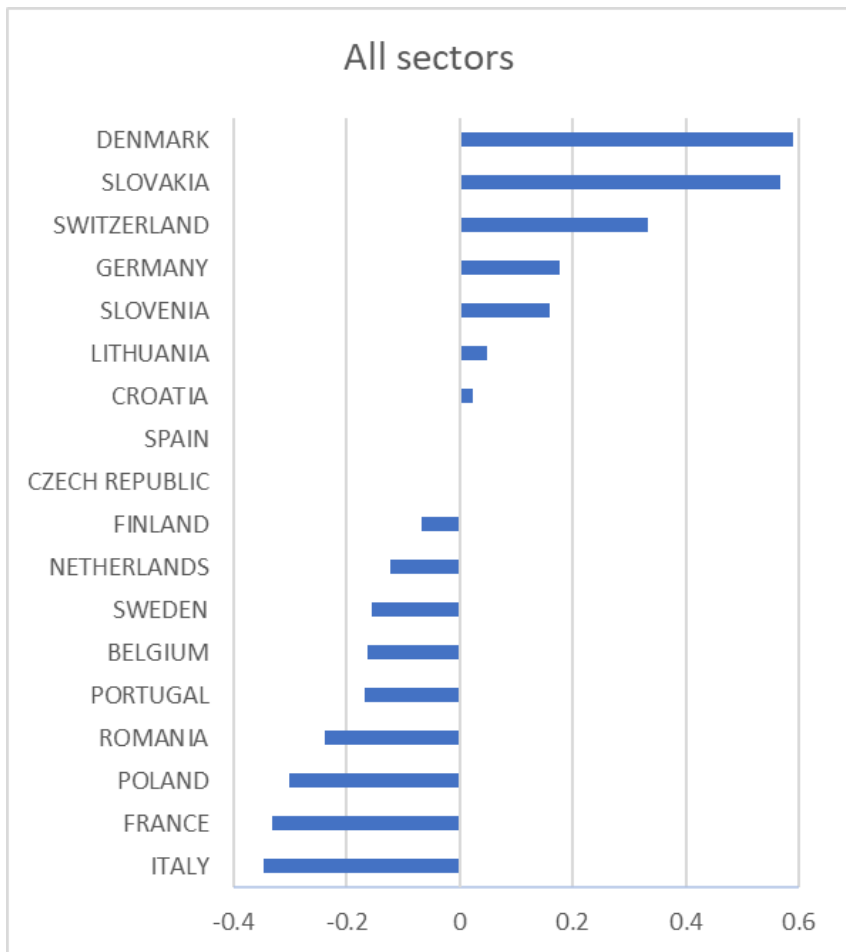


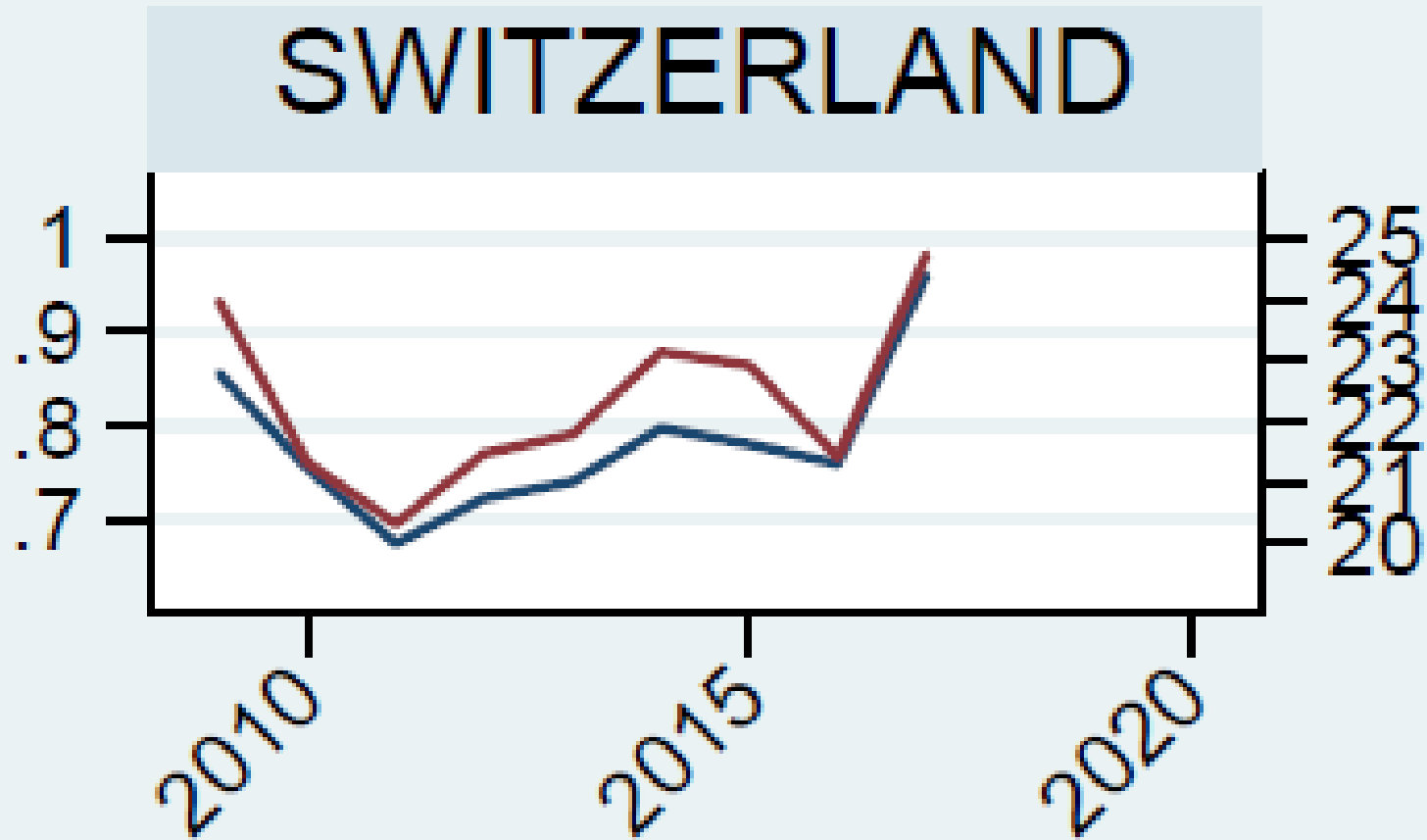
## EU

- **Conflicting trends in last 20 years** based on data source
  - OECD Multiprod: Increasing concentration
  - Orbis: Decreasing concentration
- **CompNet** dataset,
  - trend for **increased concentration** at the *aggregate* level after 2008 (including DEU)



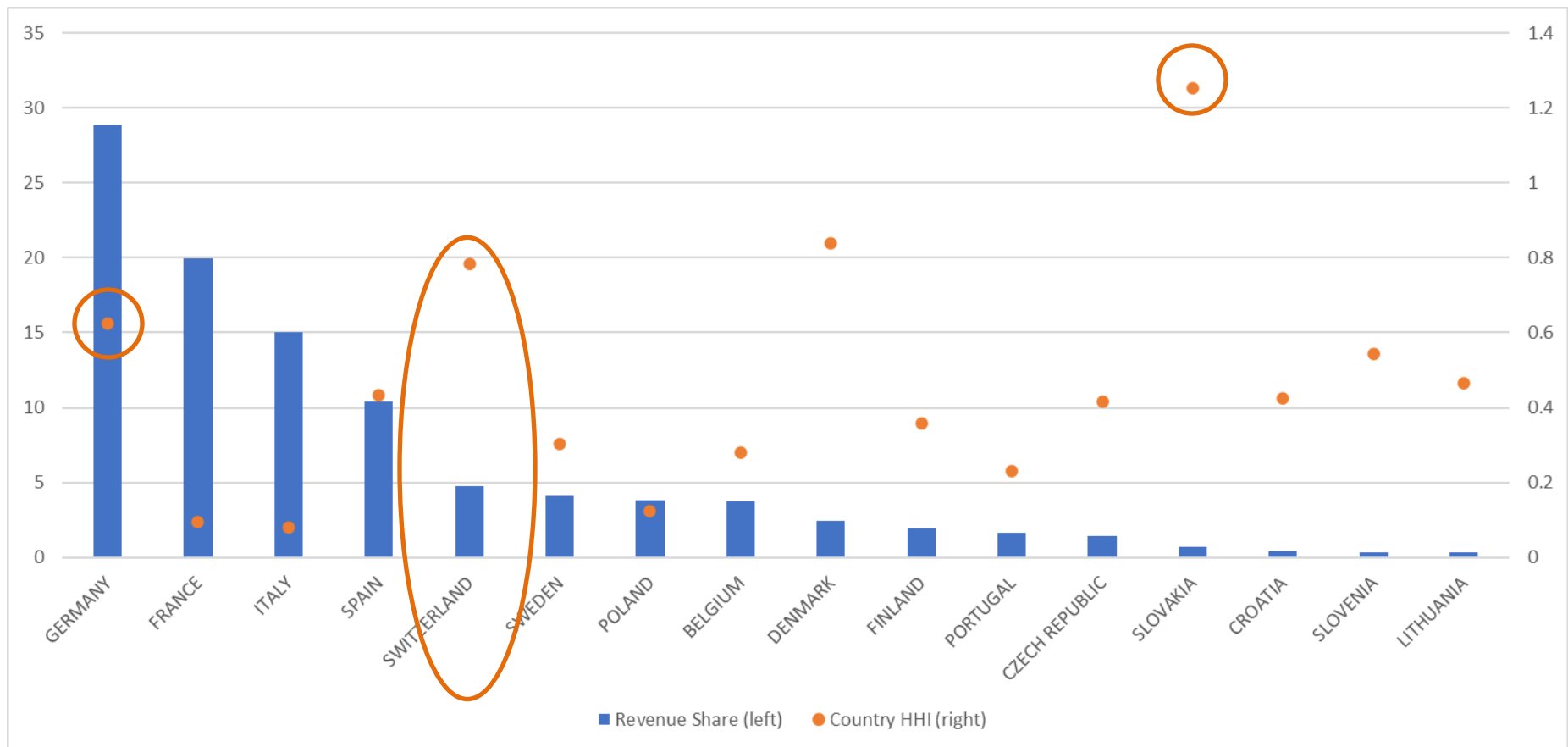
# Country HHI deviation from European countries average (2009-2016)





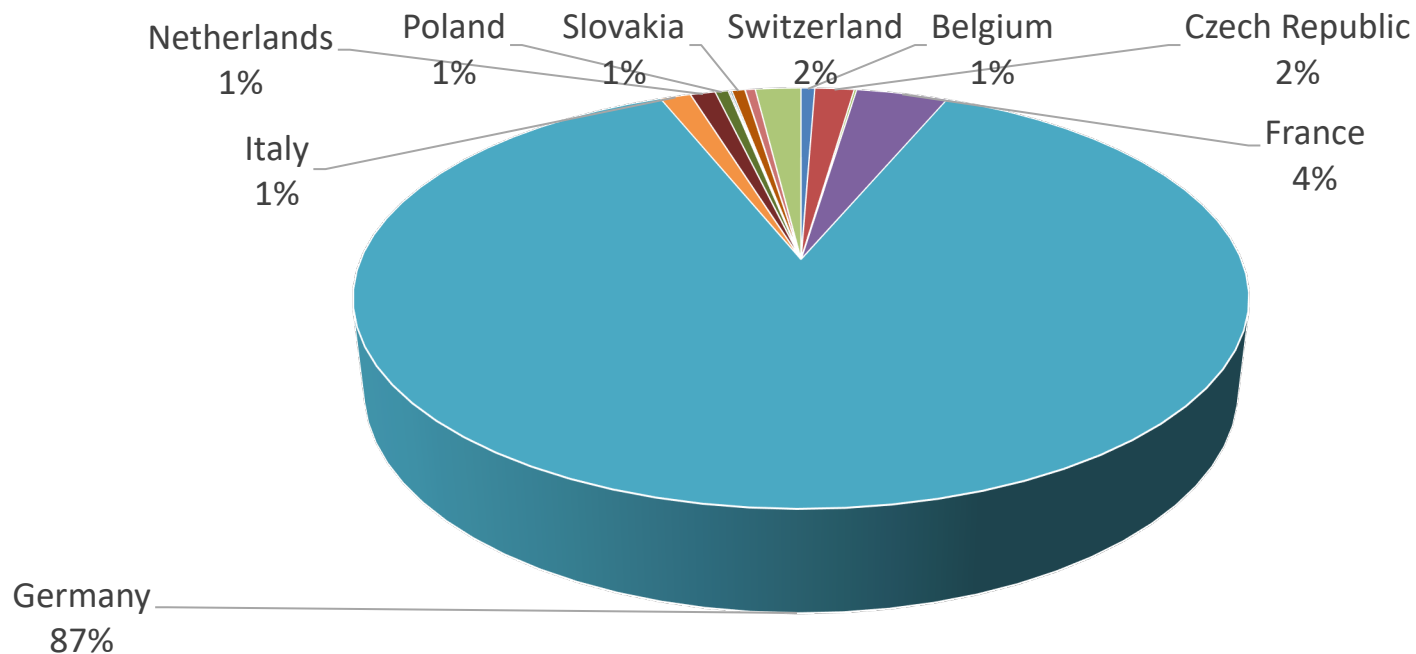


# Concentration and revenue share by Country



- Germany has one of the highest level of market concentration (red dots; right scale)
- ...and it has by far the highest revenue share
- Switzerland is one of the highest national Firm concentration, but 5% of the revenue

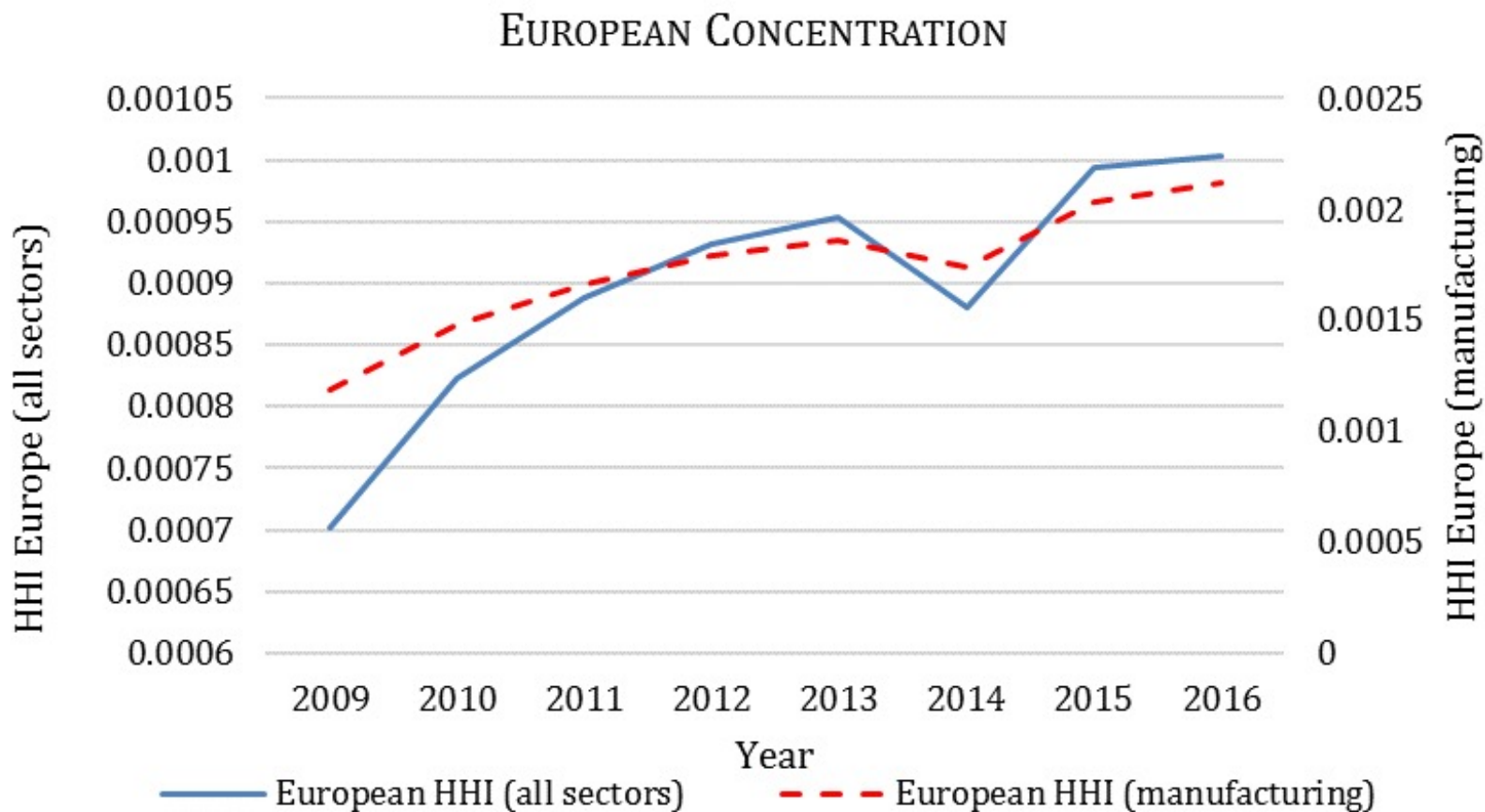
# Aggregated *HHI* decomposition by country



➔ Firm concentration in Europe is mostly explained by Germany

# Concentration in Europe (including Switzerland)

Aggregated HHI revenue concentration in Europe is rising



# Concentration is highly correlated with sector productivity

	All sectors		
	(1)	(2)	(3)
	HHI	HHI	HHI
Aggregate Sector Productivity	0.025*** (0.005)	0.024*** (0.005)	0.025*** (0.006)
Capital Intensity	-0.003 (0.002)	-0.003 (0.002)	-0.002 (0.002)
Log(Average Firm size)			4.493** (1.718)
Log(Sector Markup)		1.457 (1.521)	0.768 (1.496)
Observations	6,364	6,364	6,364
Year FE	YES	YES	YES
Sector- Country FE	YES	YES	YES
R-squared	0.791	0.791	0.799
# of Clusters	47	47	47

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Concentration may boost allocative efficiency

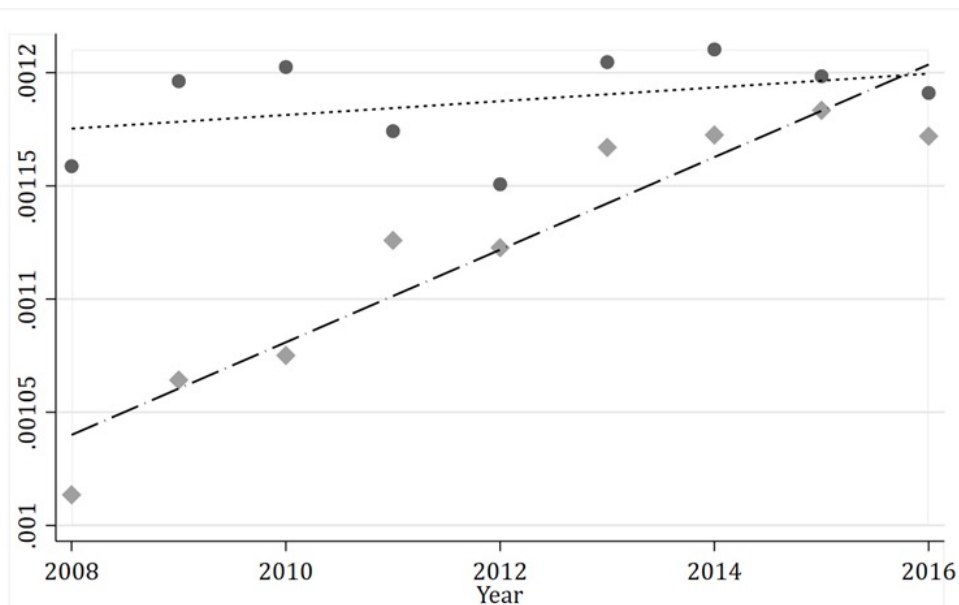
	All sectors		
	(1)	(2)	(3)
	HHI	HHI	HHI
Between-firm Productivity	0.070*** (0.021)	0.069*** (0.021)	0.070*** (0.020)
Capital Intensity	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)
Log(Average Firm size)			4.332*** (1.567)
Log(Sector Markup)		0.409 (1.315)	-0.123 (1.327)
Observations	6,364	6,364	6,364
Year FE	YES	YES	YES
Sector- Country FE	YES	YES	YES
R-squared	0.805	0.805	0.812
# of Clusters	47	47	47

Robust standard errors in parentheses

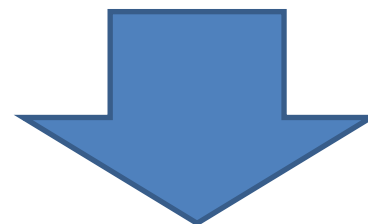
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Firm Concentration and Aggregate Productivity in Europe

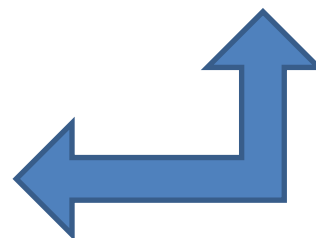
Ratio of p99 to total revenue and value added



- Market concentration is, on average, increasing in Europe
- BUT, it is correlated with Higher productivity and allocative efficiency



- What will be the effect of Covid crisis? Possibly will increase Market concentration



The overall **effect on productivity** is uncertain:

- Positive
  - Adoption of IT and new technologies
  - Reallocation to more productive firms
- Negative
  - Barrier to entry to promising firms
  - No financial help to innovative firms

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# Ongoing research: “Covid State Aid and Productivity”

## RESEARCH QUESTION:

- Are COVID firm subsidies supporting the right “deserving” firms?

## DATA:

- COVID wage subsidies and rent subsidies in 2020
- Firm ID to link the subsidies to the raw data used for CompNet
- The raw data used for CompNet for the period 2015-2019

## METHODOLOGY

- The raw data used for CompNet are used to cluster firms according to their performance before the Covid (2015-2019): big and productive, zombie, start-ups, growing firms, “dying” firms...
- We evaluate the share of subsidies gone to each cluster
- OLS and Logit analysis to see the relationship between Covid subsidies and Firm variables

## OUTCOME

- Regression results and micro-aggregated indicators as for the standard CompNet output

**➔ It would be great if the Swiss Statistical Institute would participate**

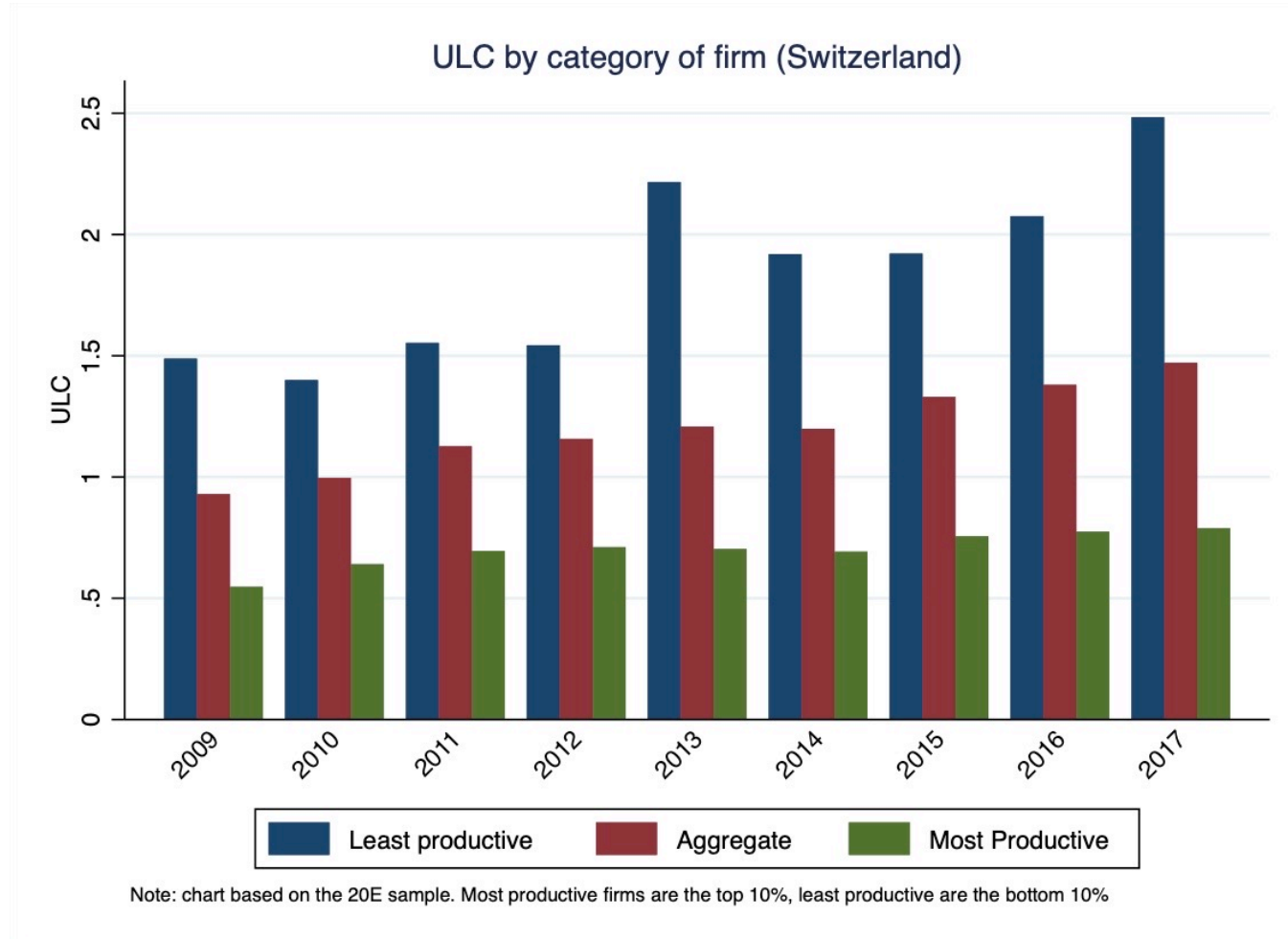


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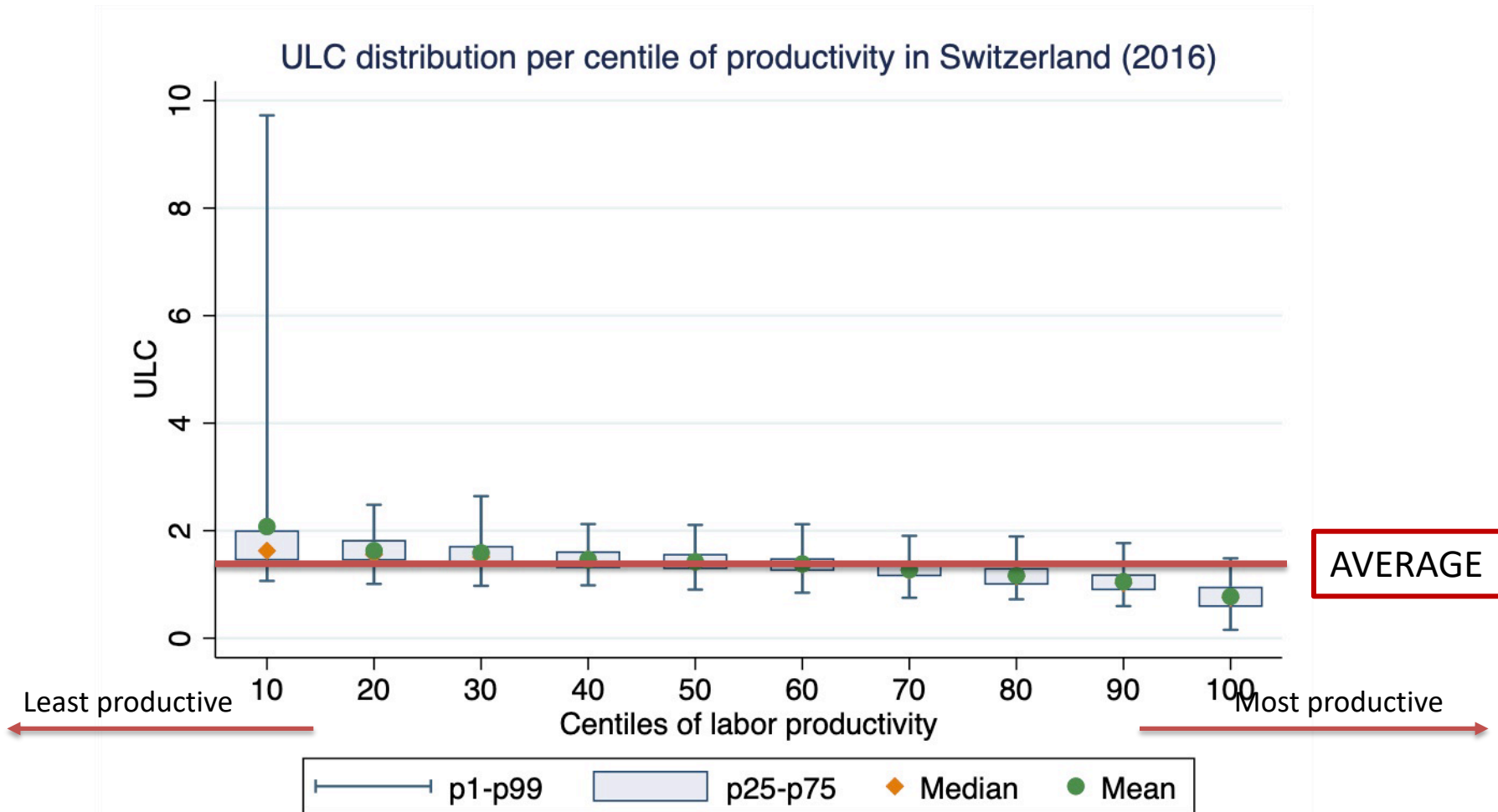
# Unit Labour Cost in Switzerland

- Distribution matters: on average, the ULC seems to have been growing significantly during the last years.
- Separating the most productive from the least productive firms, we uncover different trends.



# Unit Labour Cost in Switzerland

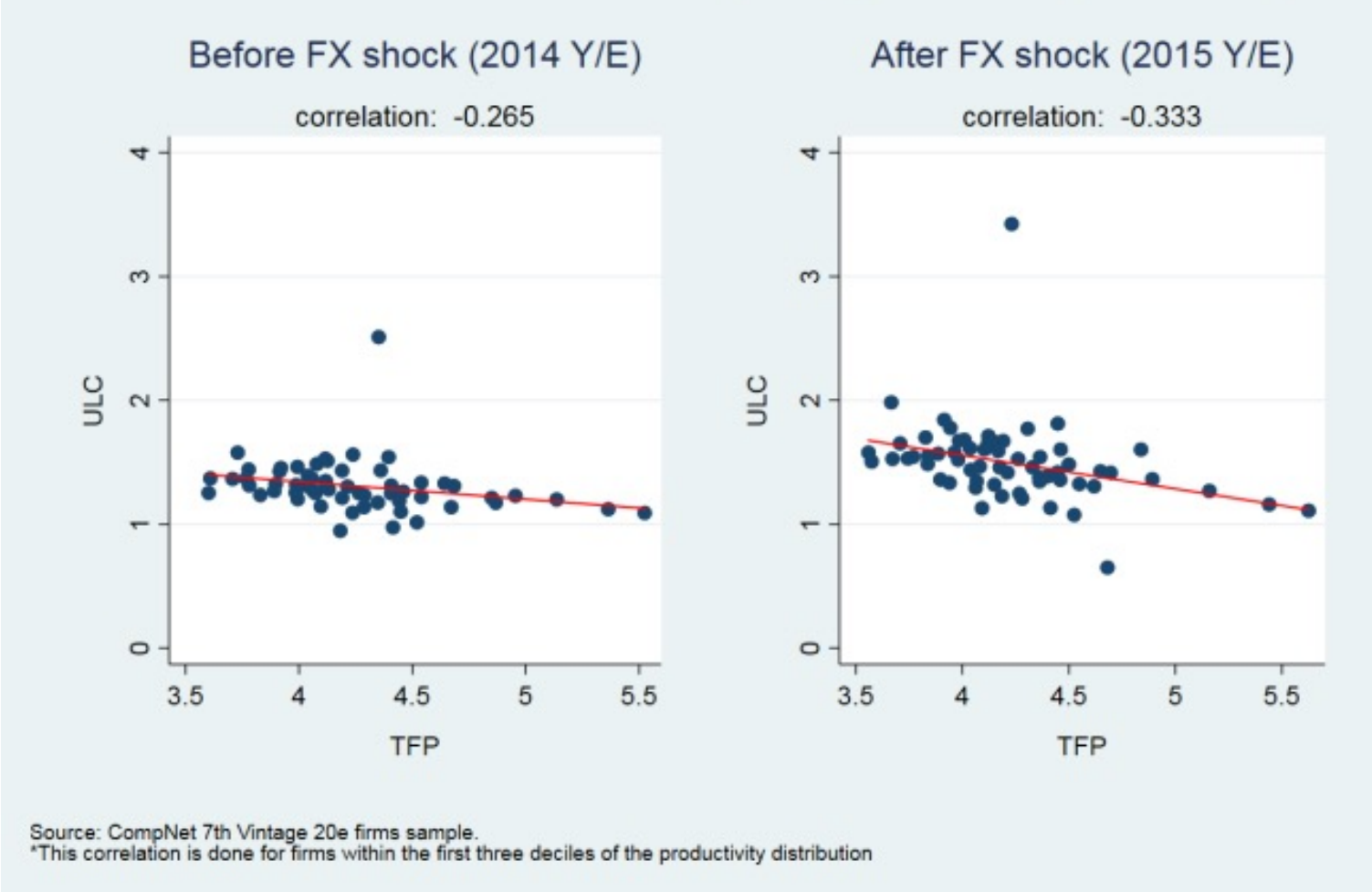
- Through more granularity, we uncover even larger heterogeneity within different groups of firms.



Note: chart based on the CompNet 20e Sample.

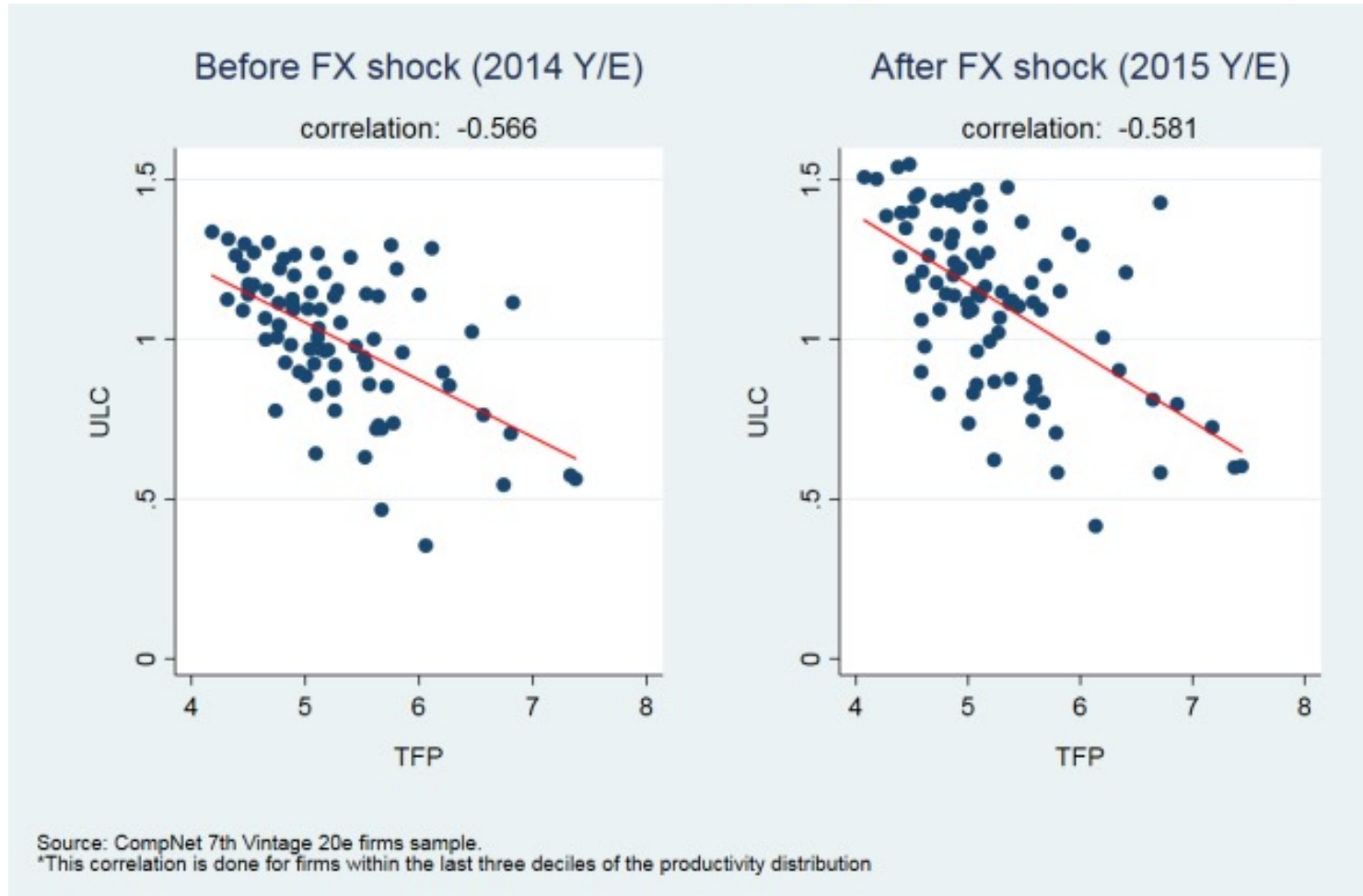
# Correlation between TFP and ULC

The correlation between TFP and ULC seems to be low at the bottom 30% of the productivity distribution...



# Correlation between TFP and ULC

... however, this evidence is different when looking at the top 30% of the productivity distribution



# CONCLUSIONS

- Firm level data are essential to study productivity and in general to provide solid foundation to structural policies
  - Some of the results out of the observation on the Swiss data include:
    - Sluggish productivity developments, possibly connected with slow job dynamism
    - Higher firm concentration
    - ULC dynamics an issue for less productive firms
- ➔ the newly created dataset has a tremendous potential of use

# CompNet: how apply for the data

- All researchers can apply to have access to the CompNet competitiveness data by submitting the data request form to the CompNet team via the IWH Research Data Centre at the following link: <https://www.iwh-halle.de/en/research/data-and-analysis/research-data-centre/compnet-database/request-form/>
- There, you just need to provide basic information about you and your research project.
- The sections to be filled are 8, including the bureaucratic ones (data privacy, terms and conditions, etc.)



## Request Form for Use of CompNet Competitiveness Database

Please fill in the blanks below with all required information. Fields that are marked with an asterisk (\*) are mandatory. The request will be reviewed by the Executive Committee of CompNet and you will be informed about the acceptance of your application.

### 1. Personal details

First name\*

Last name\*

Email\*

Telephone

### 2. Professional affiliation

Job title\*

Name of institution\*

Department\*

### 3. Research plan

(Working) Title of project\*

Detailed description of research project / question\*

meaningful description up to 500 words

Planned Methodology\*

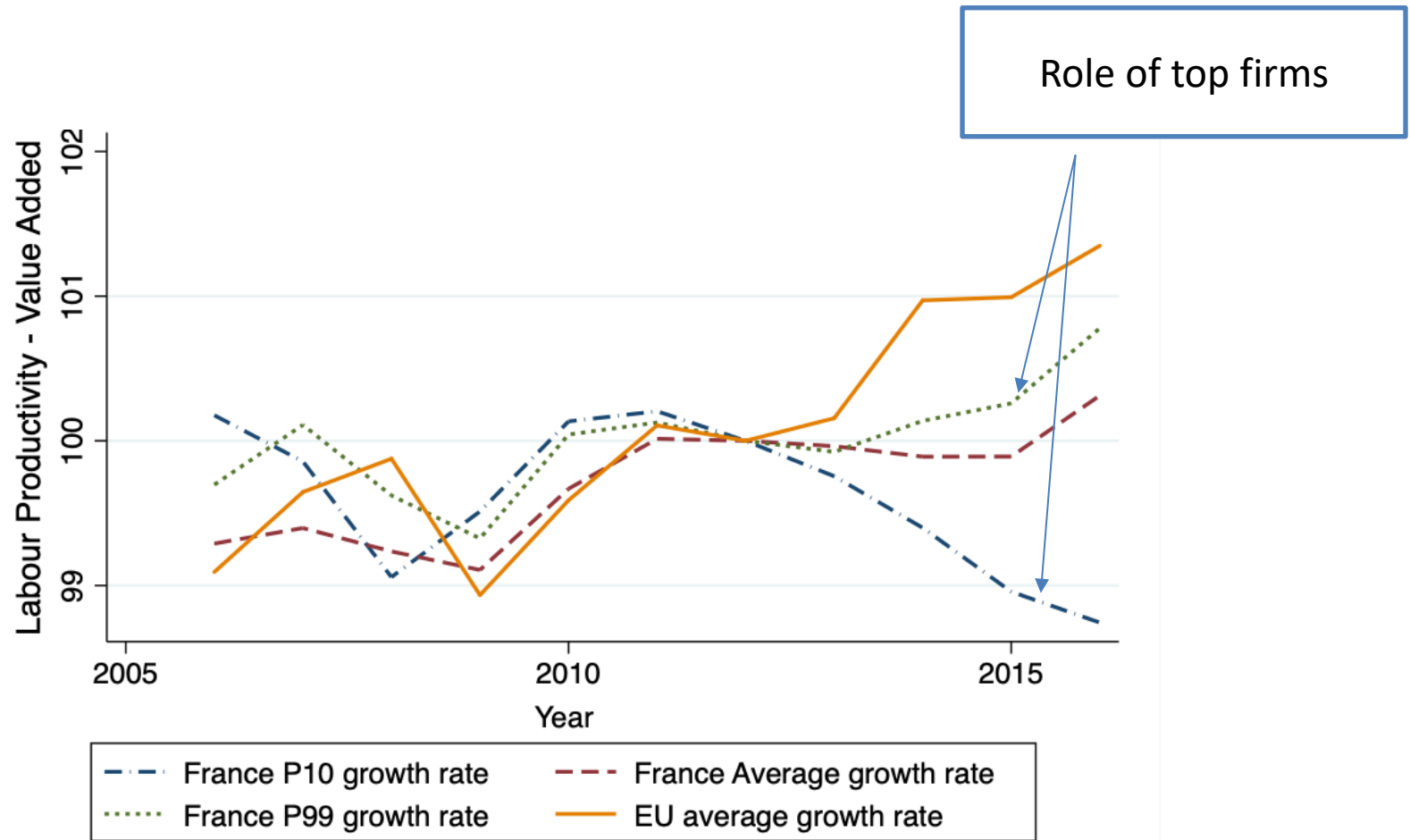
Description of data to be used\*

**Thanks for your attention.  
Great to have Switzerland  
with us!**



# ANNEX SLIDES

# Unique feature of CompNet Data



# Countries in CompNet

Table 1: Countries, Samples and Time Span

Country	Full Sample	20E	Time Span
Belgium	X	X	2003-2017
Croatia	X	X	2002-2017
Czech Republic	X	X	2005-2017
Denmark	X	X	2000-2016
Finland	X	X	1999-2017
France	X	X	2004-2016
Hungary	X	X	2004-2017
Italy	X	X	2006-2016
Lithuania		X	2000-2017
Netherlands	X	X	
Poland		X	2005-2017
Portugal	X	X	
Romania	X	X	
Slovakia		X	2000-2017
Slovenia	X	X	2002-2017
Spain	X	X	2008-2017
Sweden	X	X	2003-2016
Switzerland	X	X	2009-2017
Germany		X	2001-2016

# Job dynamics and productivity

Job dynamics positively associated with TFP and allocative efficiency

	(1)	(2)	(3)	(4)
	$\log(\text{cov}(\text{TFP}, \text{size})_{jt})$	$\log(\text{cov}(\text{TFP}, \text{size})_{jt})$	$\log(\text{TFP}_{jt})$	$\log(\text{TFP}_{jt})$
$\log(\text{Job\_dynamism}_{jt})$	0.0366*** (0.0104)	0.0361*** (0.0101)	0.107*** (0.0400)	0.124*** (0.0417)
$\log(\text{Avr\_Firmsize}_{jt})$		0.0171** (0.00687)		0.152*** (0.0577)
$\log(\text{Capital\_Labour}_{jt})$		-0.00204 (0.00666)		-0.0951** (0.0399)
Obs.	6,923	6,477	6,925	6,479
R-squared	0.354	0.414	0.834	0.839
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES

Notes: Table 4.1 shows OLS-regression results from projecting i) the log of sector-level covariance terms capturing the covariance between firms' size and TFP (columns 1 and 2) and ii) the log of sector-level TFP (columns 3 and 4) on sector-level job dynamism. Standard errors are in parenthesis and clustered at the sector level. Significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

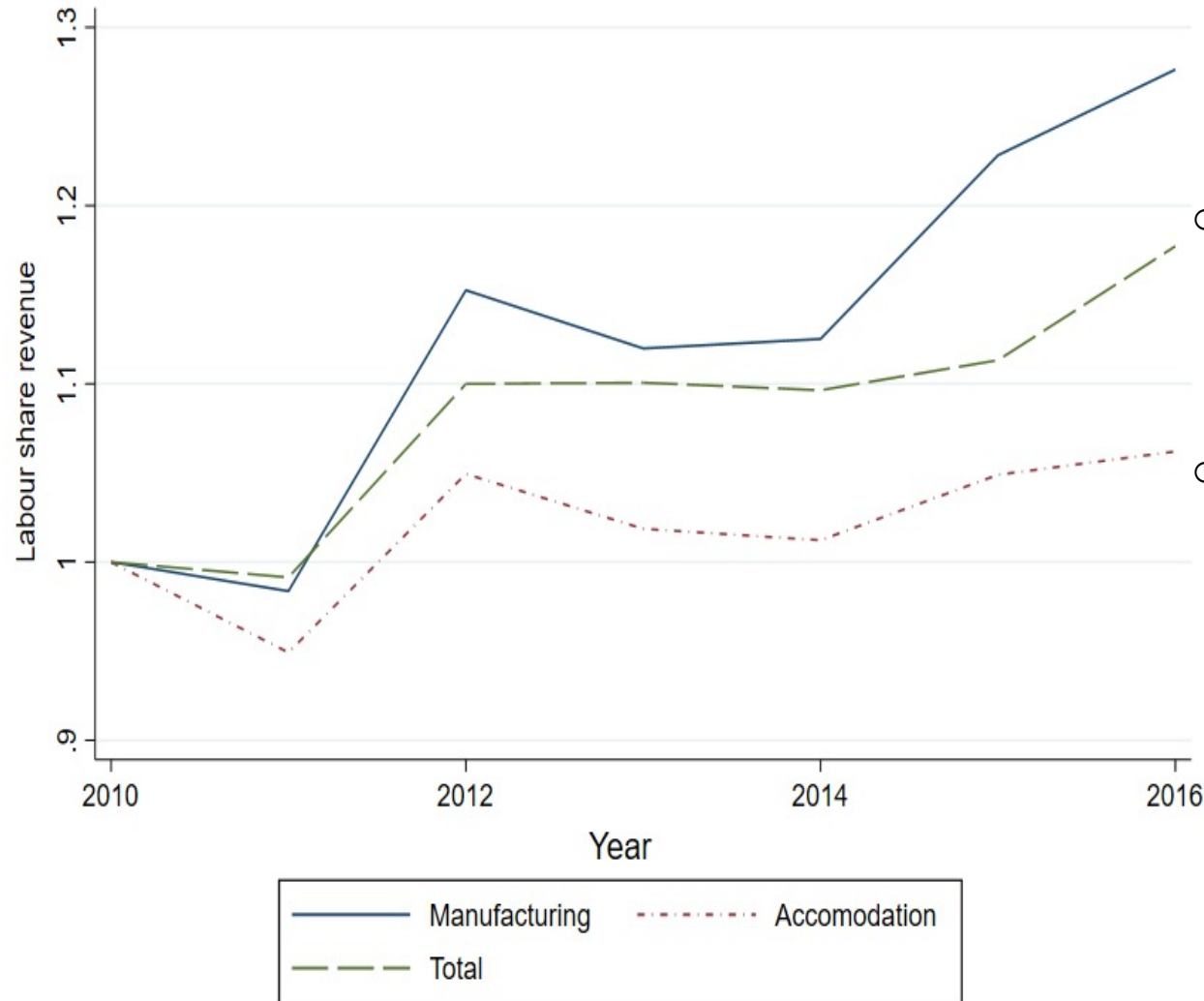
# Financial constraints and productivity and Productivity

A larger presence of financially constrained is systematically associated with lower labour productivity

	(1)	(2)	(3)
	<u>ln</u> (labour productivity)	<u>ln</u> (labour productivity)	<u>ln</u> (labour productivity) EA
ln(safe)	-0.075*** (0.010)	-0.075*** (0.011)	-0.153*** (0.045)
ln(safe)*dummy post 2013		-0.001 (0.013)	0.030** (0.014)
Constant	3.861*** (0.158)	3.860*** (0.158)	5.100*** (0.743)
Obs.	1862	1862	1249
R-squared	0.704	0.704	0.768
Year FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Additional Controls	Yes	Yes	Yes

Note: Standard errors are in parenthesis. Column 3 is based on a model restricted to countries belonging to the Euro Area (BE, ES, FI, FR, IT, LT, SL, SK). Other countries included in the other models are HR, DK, SE. Time span is limited at 2009-16 in order to have a balanced sample. All-firms sample.

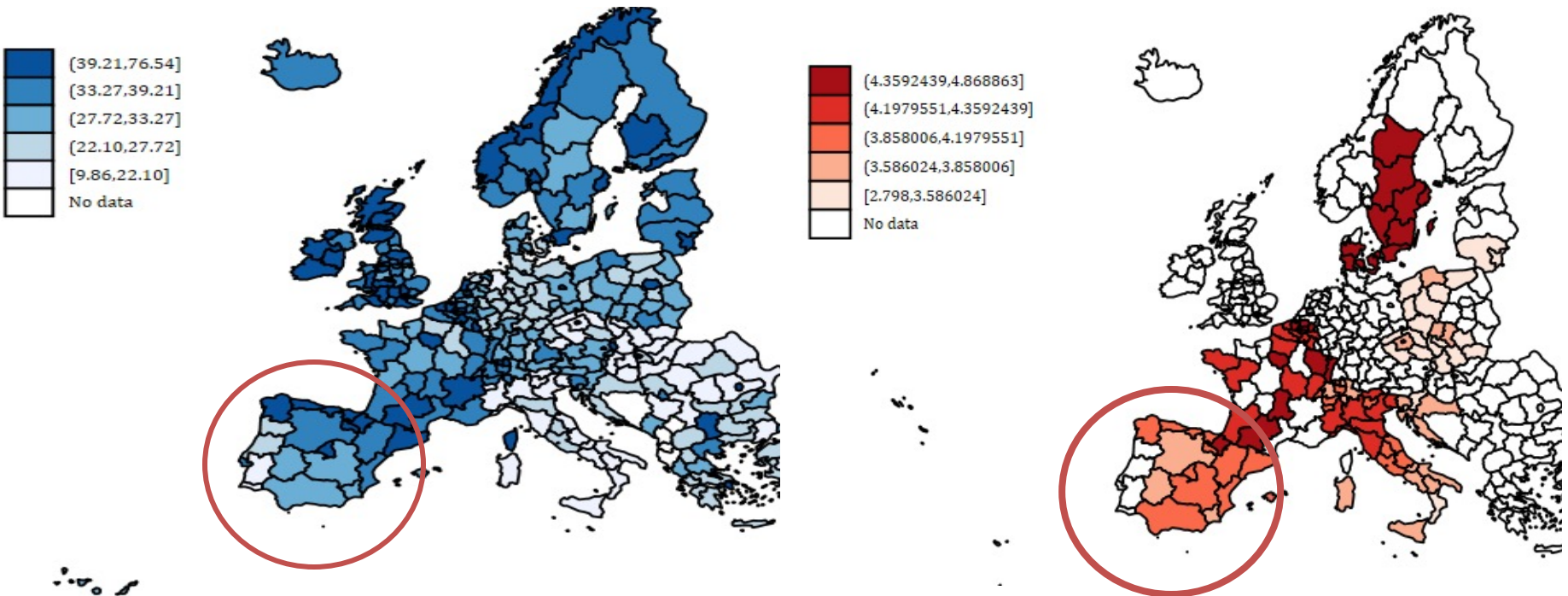
# Labour share stopped falling in latest years in Europe...



- Decrease in labour share was a secular trend in many countries since the 1970ies
- Labour share is actually increasing in EU lately, particularly in manufacturing

# New findings at the regional level

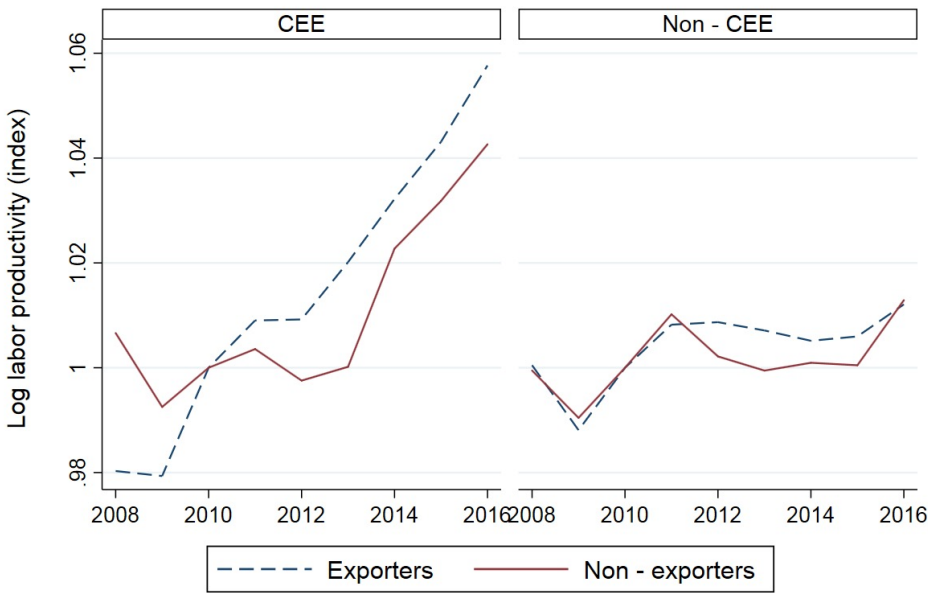
## Share of labour force in tertiary education (left) vs labour productivity (right) NUTS 2 regions



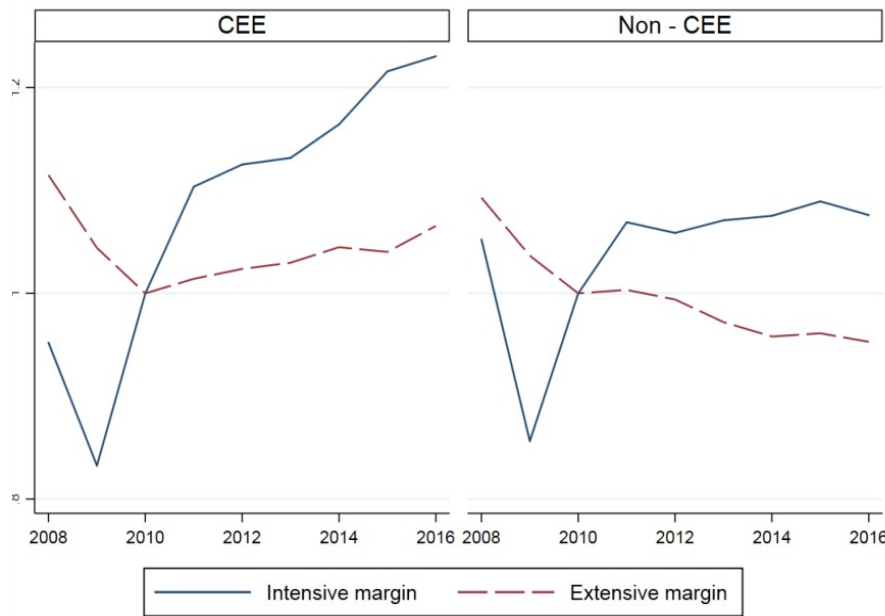
- At regional level the intensity of tertiary education is positively correlated with labour productivity. For a visual correlation, look at Spain, for instance.
- Firms that face a shortage of high-skilled workers, as proxied by the level of education, react by hiring more workers.

# What is behind diverging trade developments? CEE vs non-CEE

Post-crisis export activity was on average **buoyant** in CEE and **poor** in non-CEE countries



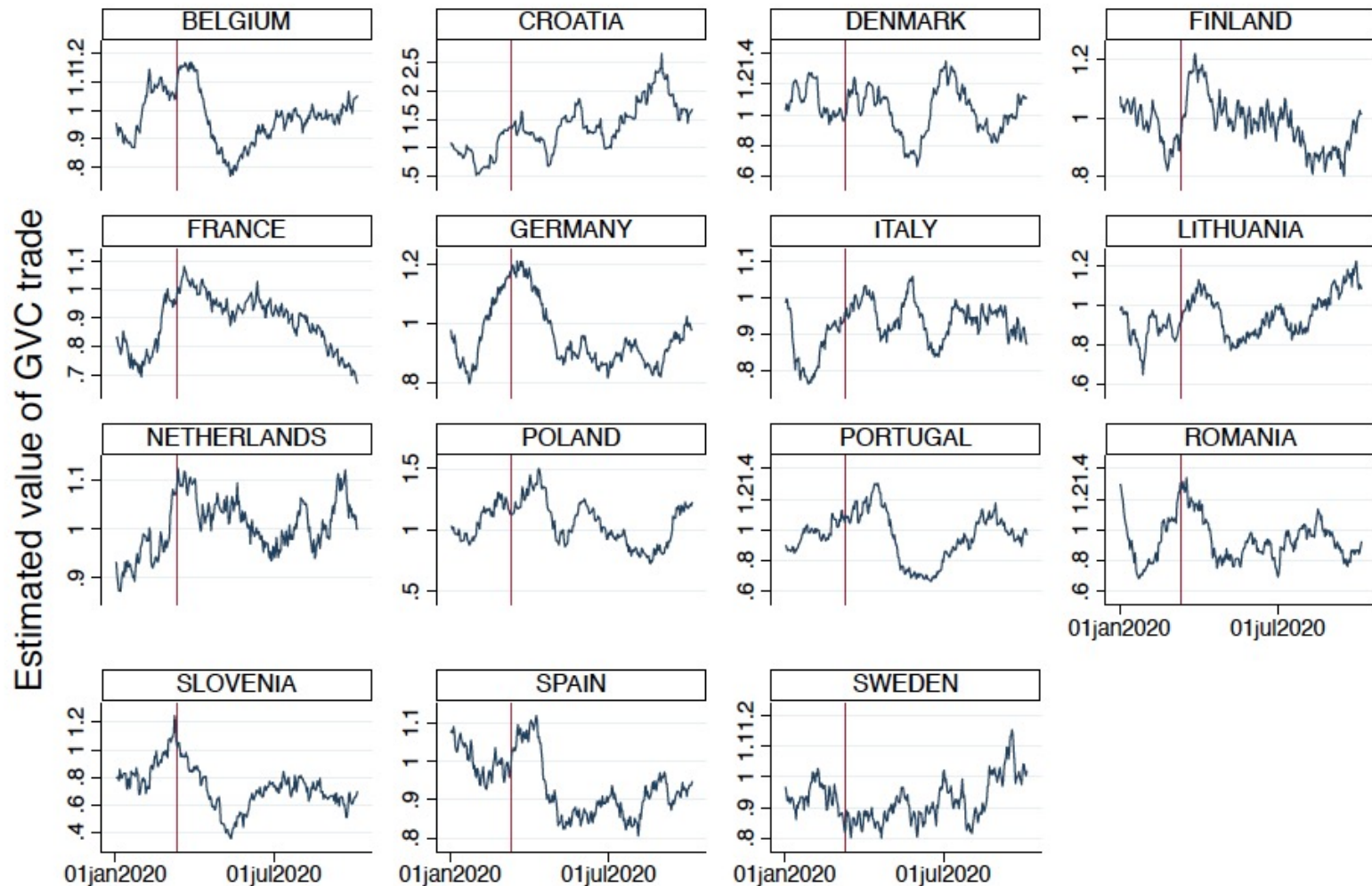
Weak exports for non-CEE mostly due to negative extensive margin



➔ Diverging trade developments in the two country groups coincide with diverging labour productivity developments



# Covid-19 and GVC (3) daily estimates of GVC participation for 2020



Note: the red line indicates the date in which WHO declared the COVID-19 pandemic