EUROPEAN CENTRAL BANK

EUROSYSTEM

CompNet The Competitiveness Research Network

Assessing European Competitiveness: the CompNet approach

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"*French competitiveness: new challenges, new measures*"

Paris, December, 16th 2015

***Disclaimer**: the opinions expressed in this presentation are those of the authors and do not necessarily reflect the views of the ECB, the European system of Central Bank, and the ACI*

Outline

1. **Motivation**
2. A short overview of CompNet **holistic** approach
3. CompNet **micro-aggregated database**:
   - methodology and few stylized facts;
   - examples of recent research works;
4. **Concluding remarks**

1. Motivation

Policy motivation

Why is competitiveness analysis important, also for a Central Bank?

- Trade liberalisation and - globalisation in general - increase **international competitive pressures**
- Within the euro area, competiveness asymmetries are at the **bulk of the crisis**
- Need to assess competitiveness issues in order to identify the appropriate **structural reforms**, i.e. those that "[…] *lift the path of* ***potential output****, either by raising the inputs to production or by ensuring that those inputs are used more* ***efficiently***" and *"make economies more* ***resilient*** *to economic shocks by facilitating price and wage flexibility and the swift* ***reallocation*** *of resources within and across sectors*"

M. Draghi, Sintra - May 2015

Inspiration

*What is **competitiveness**?*

- "*A competitive economy, in essence, is one in which **institutional** and **macroeconomic** conditions allow **productive firms** to thrive. In turn, the development of these firms supports the expansion of employment, investment and trade.* "

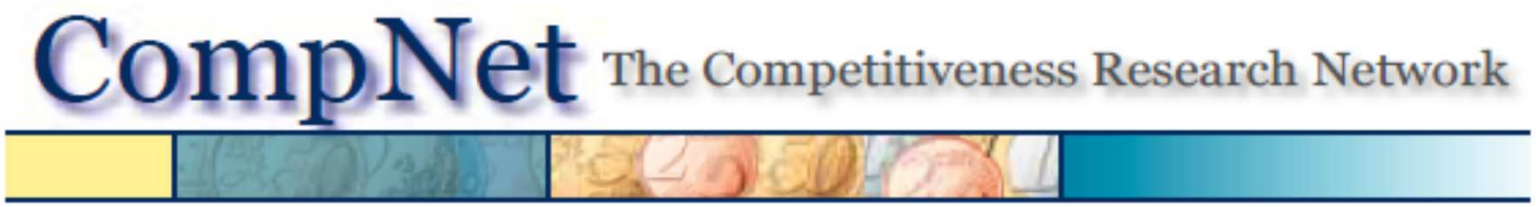
M. Draghi, Paris - November 2012

- *" In the global economy the euro area **cannot compete on costs alone** with emerging countries. Our comparative advantage has to come from **combining cost competitiveness** with **specialisation in high-value added activities**."*

M. Draghi, Jackson Hole - August 2014

CompNet goals

- The EU system of Central Banks set up the Competitiveness Research Network (**CompNet**) in March 2012

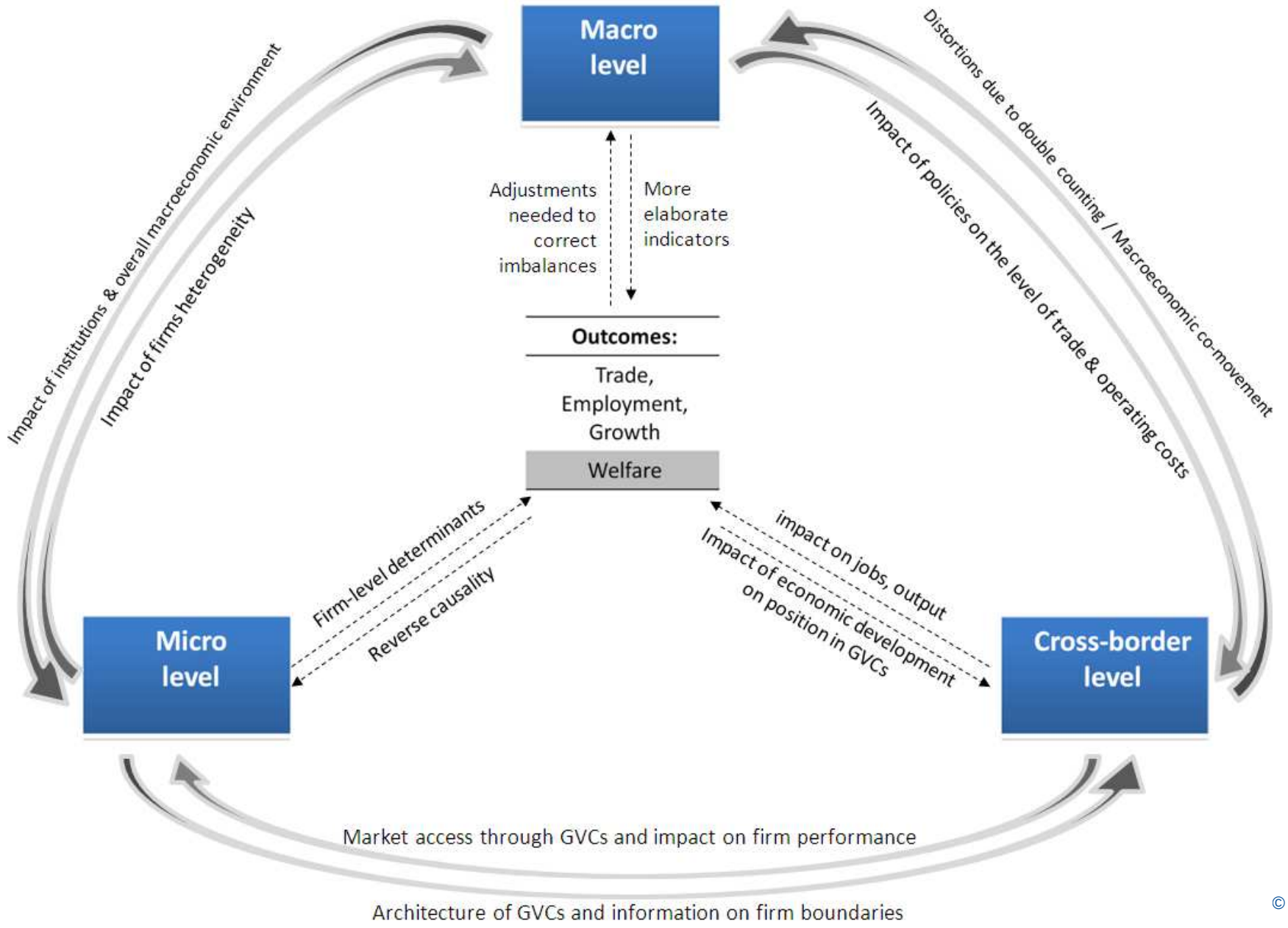


1. Provide a robust theoretical and empirical link between the drivers of competitiveness and macroeconomic performance for **research** and **policy analysis**

2. Using cross-country benchmarking and adopting a **multi-dimensional** approach (i.e. a set of complementary macro, firm-level and cross-border indicators)

2. Overview of the holistic approach

CompNet approach: merging three dimensions

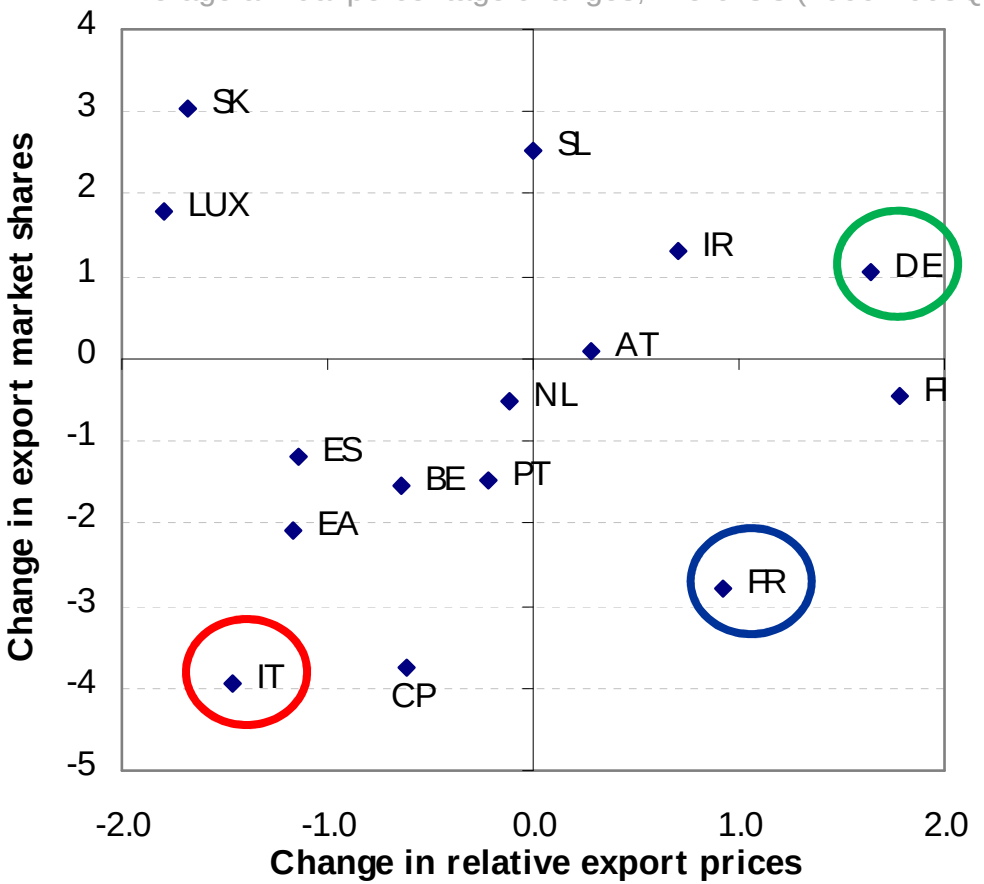


Assessing competitiveness: the macro perspective

- Traditional macroeconomic **price/cost** indicators alone are **unable** to provide a comprehensive explanation of trade developments.

Price competitiveness and export market shares

Average annual percentage changes, Pre-crisis (1999-2008Q3)



Source: ECB calculations.
Note: Price competitiveness is proxied by relative export prices (competitors over domestic prices). **A positive value corresponds to a gain in price competitiveness.**

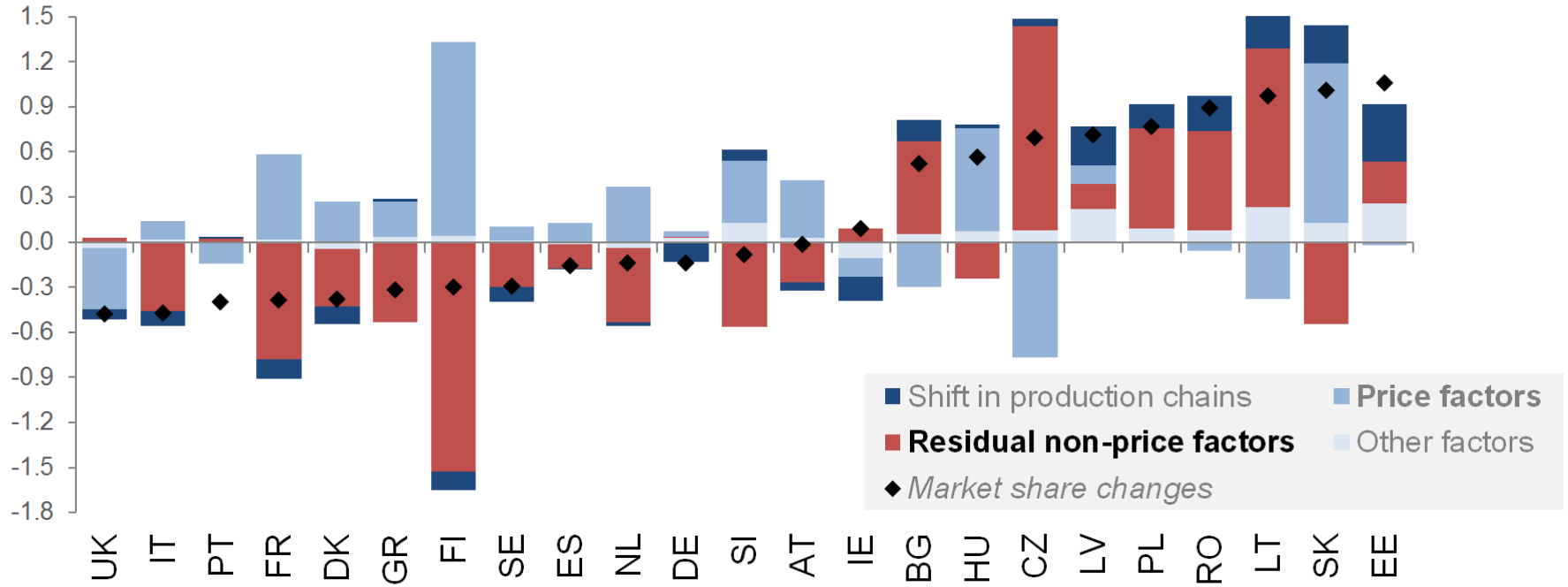
Pre-crisis export performance in **Germany** and **Italy** is positively correlated with changes in price competitiveness (gain for Germany, losses for Italy).

This is not the case for **France** (which lost export shares though it gained price competitiveness).

Other factors must have been at **play**

Non-price factors are relevant for trade results

- As can be seen by decomposing the changes in value-added export market share



Notes: 1996-2011 period
Sources: Benkovskis, K. and Wörz, J. (2015)

CompNet papers focused on a number of **non-price factors** such as:

i) **quality** and consumer **taste**
ii) the extent of the **globalisation** of **production** processes
iii) **domestic conditions** faced by exporters
iv) the role of the **geographical** and product structure of exports

Novel macro-indicators of competitiveness

- One of the main outcomes of CompNet since its creation has been the building of **innovative indicators** that are essential in going **beyond the traditional price-based measures** in understanding short and medium-term developments in competitiveness.

- The compendium to this new "**Diagnostic Toolkit for Competitiveness**", a comprehensive database of innovative and traditional macro-indicators of competitiveness, is available here

- Important sources of information have been **trade data (e.g. UN Comtrade data)**

- Example of novel indicators available:
  - Sophistication indices
  - Relative export prices adjusted for quality and taste
  - Dynamic Trade Link Analysis

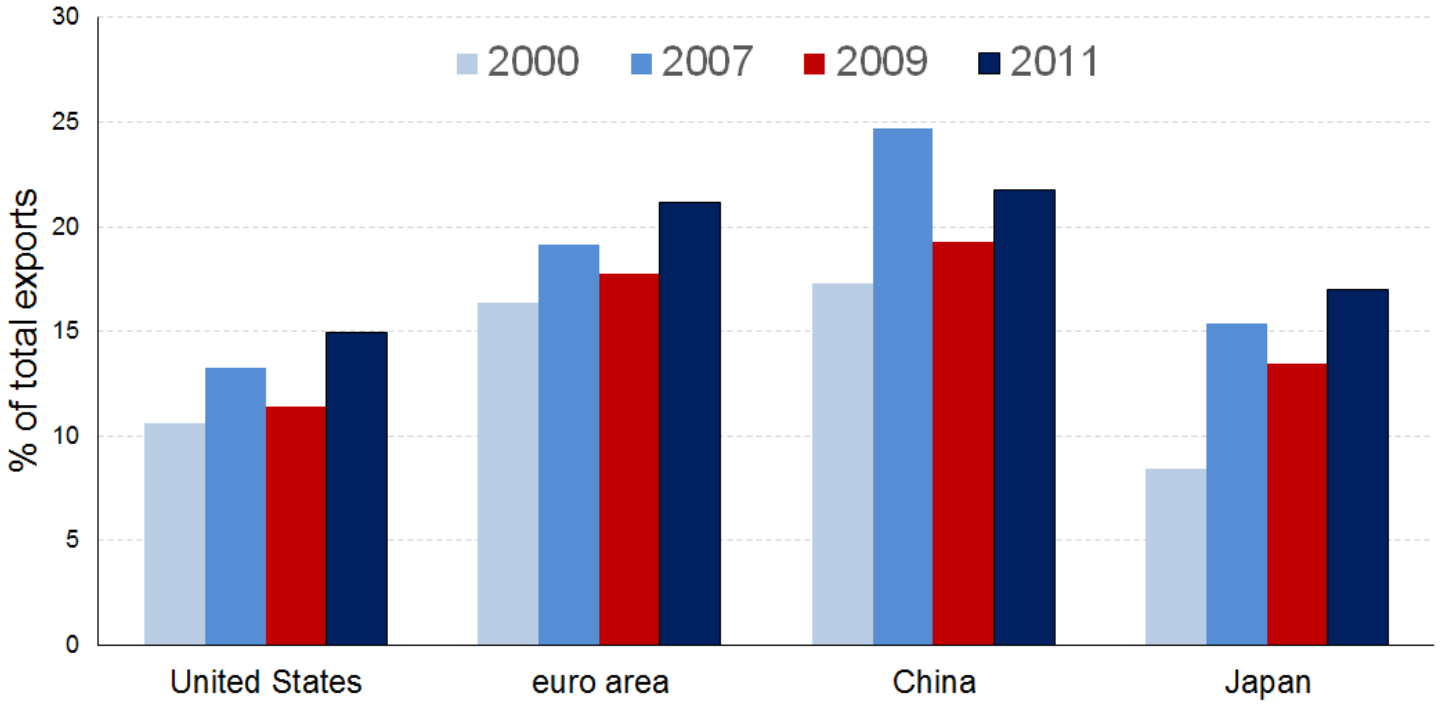
The Global Value Chain (GVC) dimension

- **Production** of most goods and services around the world is **vertically fragmented along GVCs**…

- Exports incorporates a **large foreign value added** component

The Global Value Chain (GVC) dimension

- **…which is increasing** in all major economies, as share of total exports



Source: Amador et al. (2015).
Note: The euro area is taken as a whole (i.e. intra-euro area trade flows are disregarded).

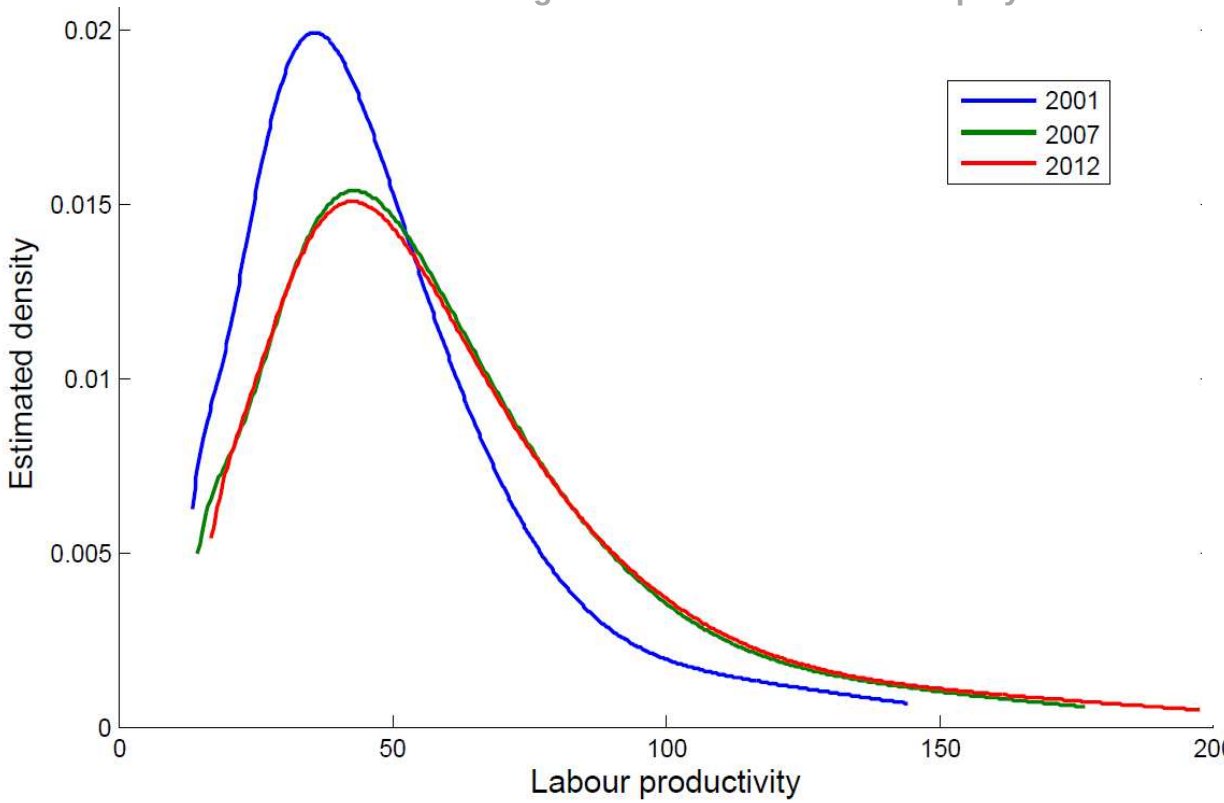
Traditional trade indicators must be **complemented** with **value-added** based measures

The rational of firm-level perspective

- Firm performance distribution is **very disperse** and **asymmetric**
- Rather than most firms around an "average" performance, there are lots of firms which have low productivity and **only** a **few** which are **very productive** in the "**right-tail**" of the distribution (the so called "*happy few*")

Evolution of labour productivity distribution in France

Manufacturing sector - firms with 20+ employees



Implications for research and policy

1. **Aggregate** indicators alone, when interpreted as if they had been generated by the behavior of a **representative firm**, risk to give **partial** (if not wrong) messages and consequently **incomplete policy recommendations**
2. **Impacts** of a macro **shock** or **policy** depend on the shape of the **underlying distribution**

CompNet set up in the last years a **novel firm-level micro-aggregated database** in order to:

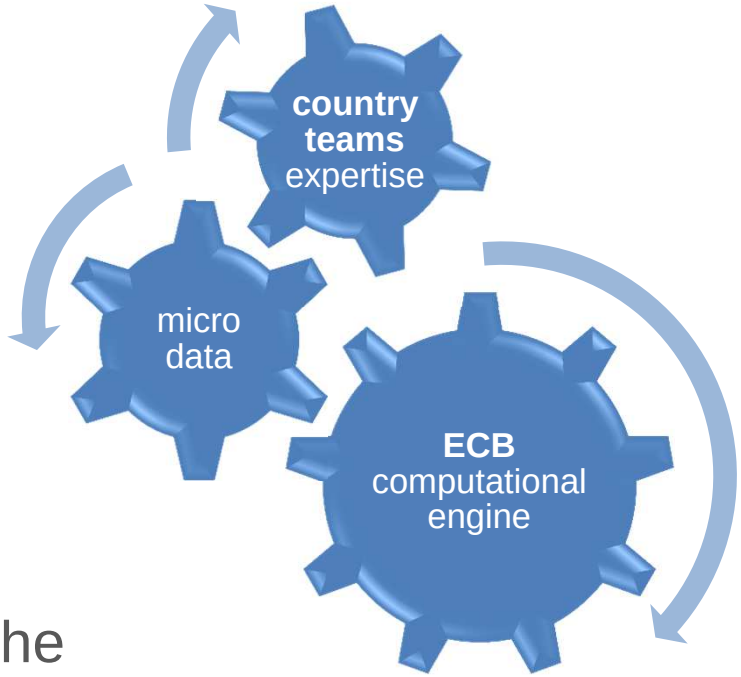
- set up a new research infrastructure **to overcome confidentiality** and **comparability** issues of balance-sheet information of European firms
- take into account the **link** between their **productivity** and **trade/financial/labour/regulation conditions**

3. CompNet micro-aggregated database

Data collection approach

- ✓ **Common protocol** to **extract information** from **existing firm-level datasets** available within each NCB or NSI

- ✓ **Common codes** to **aggregate indicators** at industry, macro-sector and country level in order to solve confidentiality issues



- ✓ **Common methodology** to **harmonize** the resulting set of indicators across countries in terms of measures **definition**, treatment of **outliers**, **deflators** (based on Eurostat sectorial value added) and **PPPs**.

Coverage of the database

Participants:

17 EU countries

13 of which in EA

+ 3 just joined (CZ, DK and LV)

Target population:

non-financial corporations (S11)

Period:

1995-2012

with delayed entrance of some countries

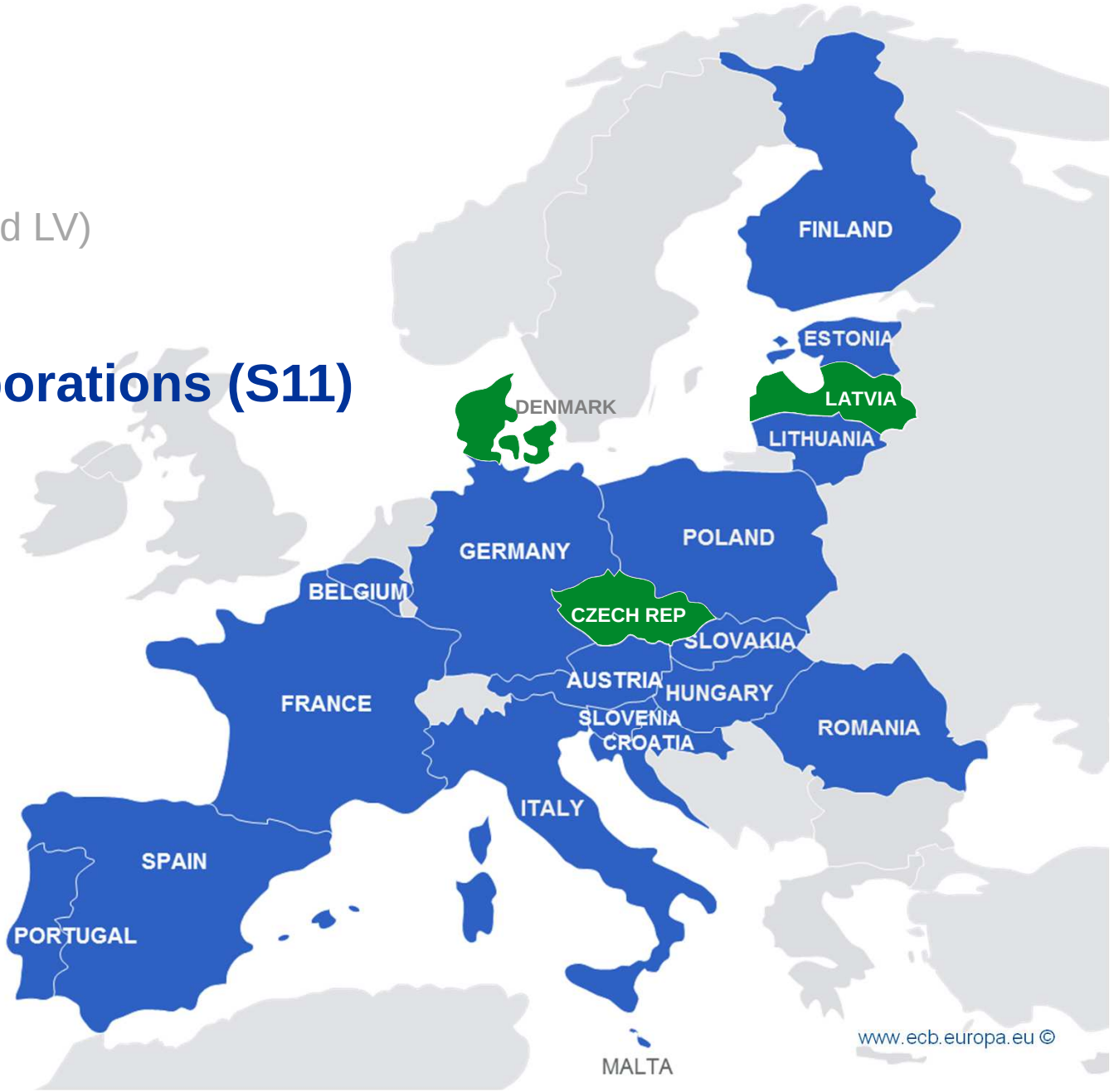
Sector:

9 macro-sector

1-digit industry

≈ 60 sectors

2-digit industry (NACE rev.2)



Relevant indicators are now available across countries

Productivity and **allocative efficiency**	Financial	Trade	Competition	Labour
Labor productivity	Investment Ratio	% permanet exp.	Weighted PCM	% firms that increase/decrease employment productivity or ULC between t and t+3
TFP	RoA	% sporadic exp.	Sector-specific mark-ups	
ULC	Cash holdings	Export value		
LC per employee	Leverage	Export value added	Sector-specific collective bargaining power	Characteristics of growing and shrinking firms
Firm size	Financing gap	Productivity premium of exporters		
Capital intensity	Collateral		Concentration measures	Share of High-growth firms
Static Allocative Efficiency	Equity to Debt			
	Cash flow			
Dynamic Allocative Efficiency	Implicit interest rate			
	Trade Credit/Debt			
	Debt burden			
	Credit constraint index			

Not only averages…

- For each indicator we get:
  - **Full distribution** considering all firms operating in a given industry, or level of aggregation (country, macro-sector, size class)

    i.e. information on **all the deciles of the distribution**
  - **Other statistics**: like mean, median, skewness, sd and IQR
  - **Full set of firms' characteristics** within a given level of aggregation for:
    - Exporting/non-exporting firms
    - Financially constrained/unconstrained firms
    - Growing firms/downsizing firms

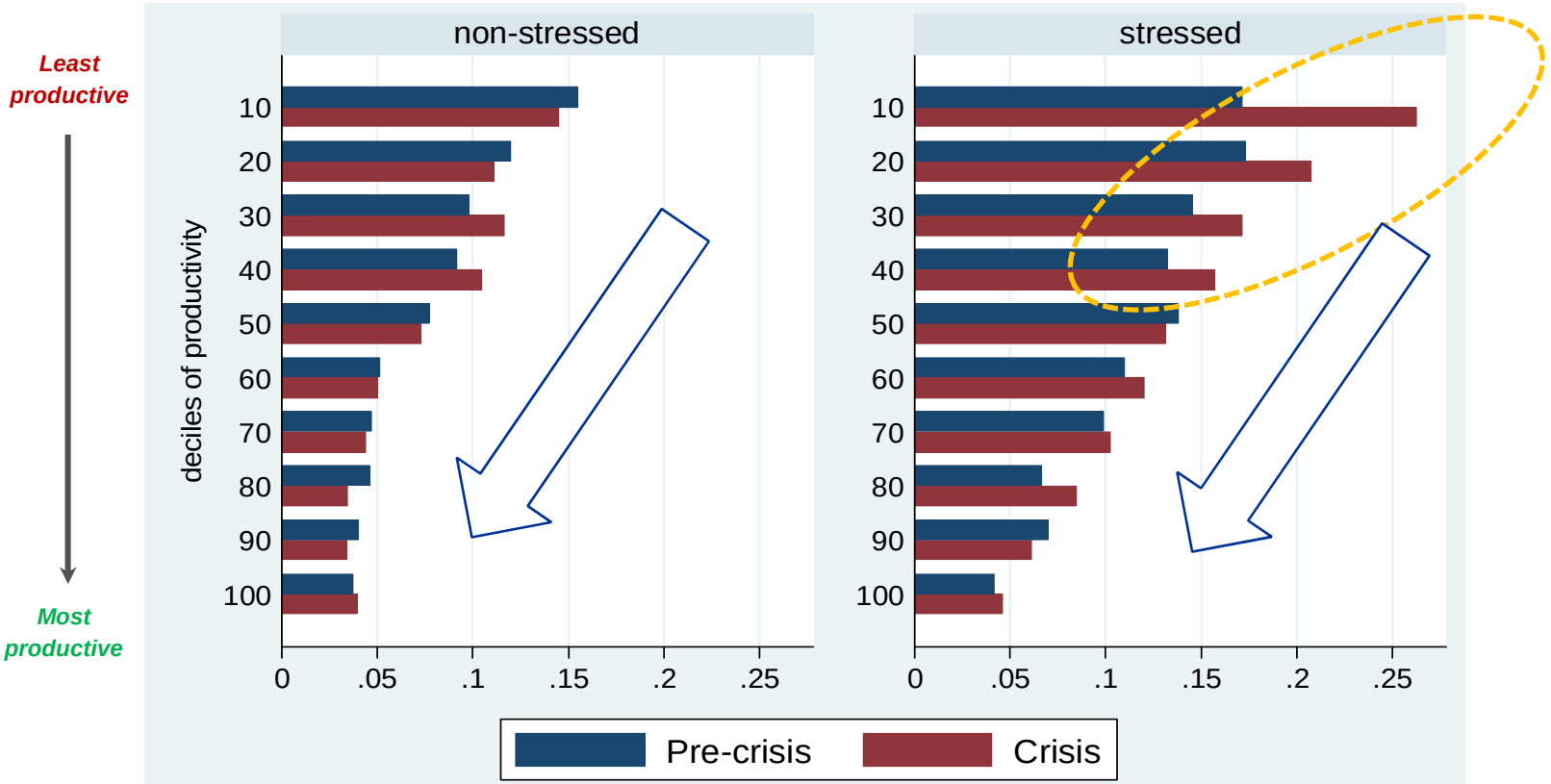
- But also **joint-distributions**, useful to investigate the dynamics and characteristics of firms located at the different tails of the performance distribution.

3a. **Some stylized facts from CompNet**

Trends in credit constraints across productivity deciles

Share of credit contrained firms by deciles of labor productivity

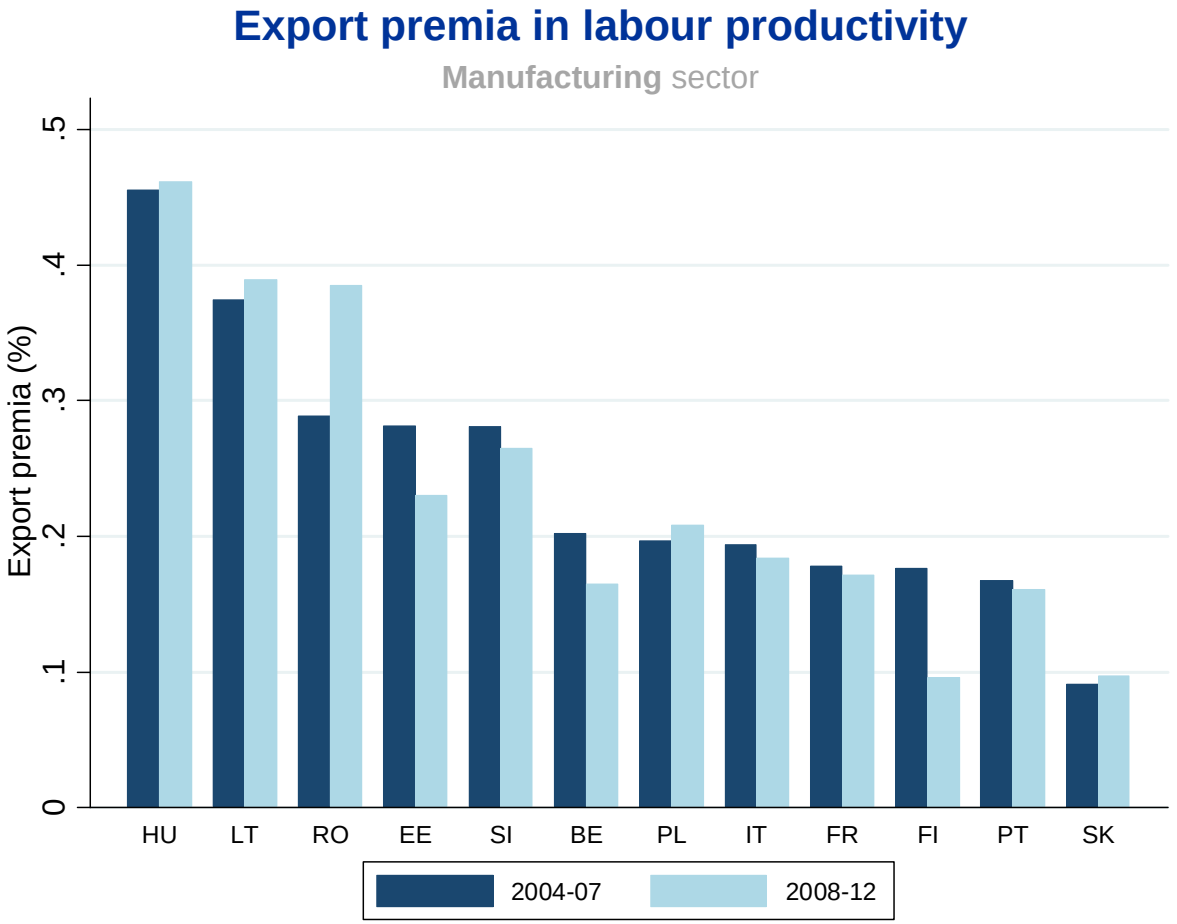
ICC index estimated within CompNet



2004-2008, 2009-2012, 20E sample; non-stressed: BE DE FI FR; stressed: ES IT SI

- On average more productive firms are less likely to be credit constrained
- The **effect** of the **crisis** is **different**: in stressed countries share of credit constrained firms increased more, particularly among least productive

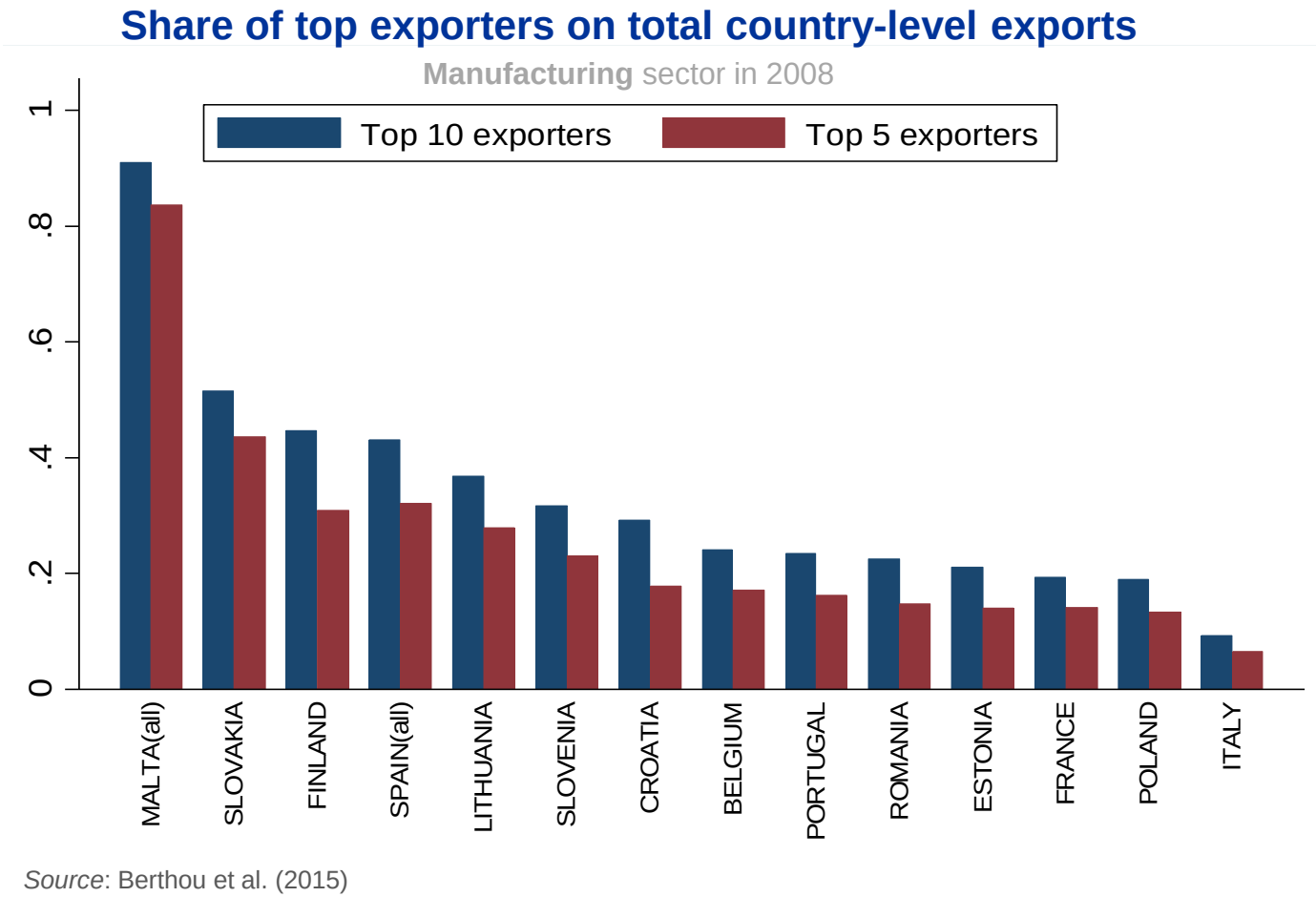
Only the most productive firms export



Source: Berthou et al. (2015)

- On average **exporters** are **20% more productive** than non-exporters in the same sector, although there are wide country differences

Exports are highly concentrated



Source: Berthou et al. (2015)

- **Top-10 exporters** account on avg. for **25%** of aggregate country- exports
- Relevant because idiosyncratic shocks affecting large (exporting) firms have important macro effects.

Wage-productivity growth misalignment

Evolution of wages and productivity of the top 10% and bottom 10% productive French firms with at least 20 employees in the manufacturing sector

Source: Lopez-Garcia based on CompNet data

3b. **Few examples of research works:**

"from micro to macro"

Exchange rate elasticity of export

- **Response** to exchange rate movements are **heterogeneous** across **firms** and therefore aggregate estimates of elasticities can be biased:

a) Berthou et al. (2015) find that export elasticity relative to ULC-REER is **inversely correlated** with **size** and **productivity**

Firm Size	ΔIn(REER)
1st quartile	-1.760***
2nd quartile	-1.165***
3rd quartile	-0.766***
4th quartile	-0.477*

TFP	ΔIn(REER)
1st quartile	-1.678***
2nd quartile	-1.229***
3rd quartile	-0.670***
4th quartile	-0.599**

Sources: Berthou et al. (2015).
Notes: *** p<0.01, ** p<0.05, *p<0.10. Includes controls for macro determinants and sector/firm characteristics.

➔ **Exports** by **largest** and **most productive firms** are **less sensitive** to exchanges rates movements

Asymmetric shocks and asymmetric distributions

b) Work co-authored with Demian (2015) shows that **elasticity** of exports to exchange rate fluctuations is **lower** in sectors with a **higher dispersion** of **productivity**.

That there is an **asymmetry** between responses to an **appreciation** and **depreciation**.

Finally, that **size matters** ➔ only large exchange rate movements appear to have a significant impact on export.

Since there is still not consensus in the literature, we **need further micro-based analysis** on firm responses to exchange rates shocks

4. Concluding Remarks

Policy contributions

- The **interaction** of the three CompNet **work-streams** (macro, firm-level and global value-chains) has delivered substantial **research results** and related policy implications which have been collected in the **report** *"Assessing European competitiveness: the contribution of CompNet research"* published in June 2015.

- Use of it for **policy-making** has **just started**

  - members of **ECB Executive Board** have frequently used CompNet analysis as background for their public speeches;

President of ECB Mario Draghi in Sintra, May 2015

  - we received request of collaboration and data use by researchers in **EC DG-EC/FIN**, **OECD, EIB, IMF** and several academic institutions

Future research plan

- We have identified for the future two directions:

1. Resources allocation and growth

- secular stagnation
- productivity puzzle
- weak investments
- role of intangibles and innovation

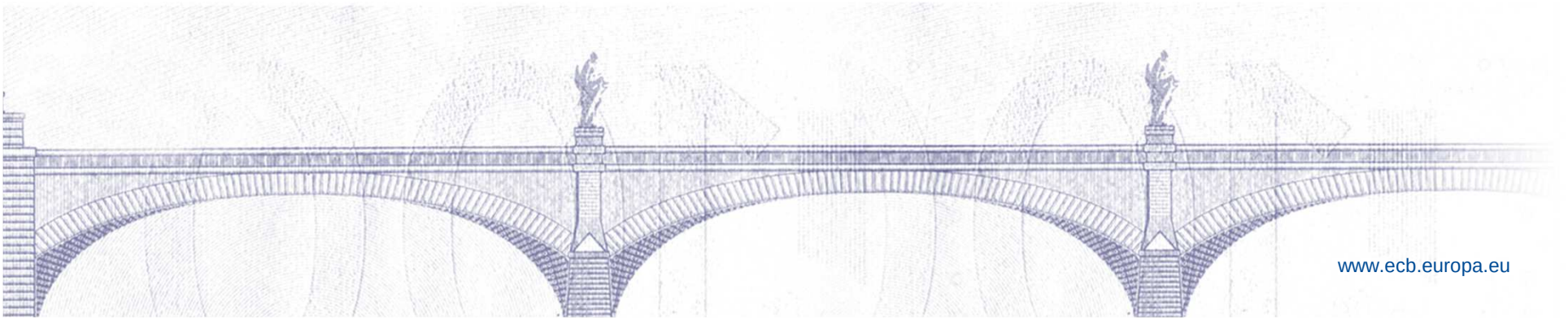
2. International trade and Global Value Chains

- **complementing** the macro-analysis of GVCs with **firm-level** based information
- the role of **skill-matching**

Thanks for your attention

All relevant **information**, documents on objectives and output of the network can be found on CompNet website:
www.ecb.europa.eu/home/html/researcher_compnet.en.html

For further information and research collaborations, please e-mail at
compnet@ecb.europa.eu



CompNet output in 2015

Methodological paper **published**

Lopez-Garcia, P., di Mauro, F. and the CompNet Task Force (2015):
"*Assessing European Competitiveness: The new CompNet micro-based database*",
ECB Working paper no. **1764**.

4 Work-stream modules

Trade	**Financial**	**Labor**	**Mark-up**
Export status of the firm, export value	Firms position and indicator of credit constraints	Employment, productivity and transition matrices	Sector level mark-ups and bargaining power
ECB WP **1788**	ECB WP **1836**	ECB WP ***forthcoming***	

✓ Which add to **36 already published** ECB Working Paper

5 recent Journal Publications

Final report published (available here)

Timeline for research and policy use of dataset

September 2015

New Round of Do-file data collection

- Same data set
- Additional Countries:
  - Latin America (with World Bank?)
  - Singapore (with ACI?), Other ASEAN?

January 2016

2013 CompNet data available for Cross-country analysis

Completion of CompNet on-going research projects

April 2016

CompNet Conference in Prague

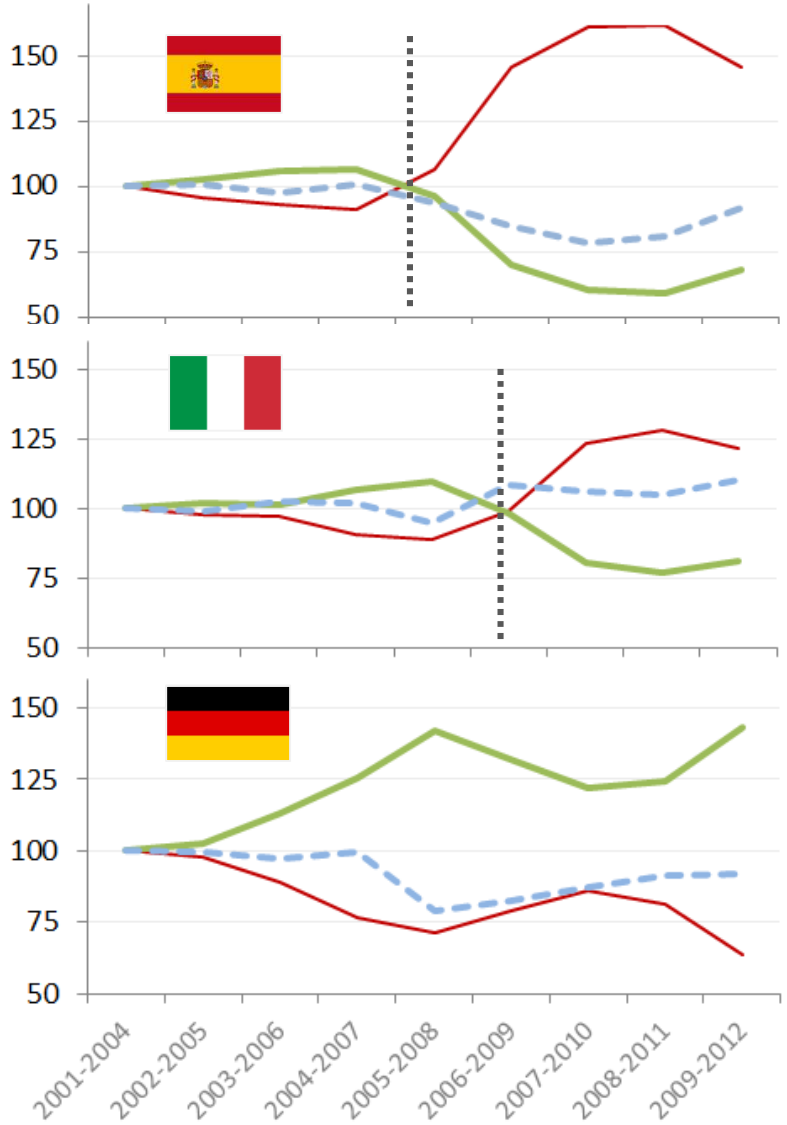
October 2016

CompNet-World Bank Conference in Washington (DC)

Reserve Slides

Ex. 3 - Institutional factors and job reallocation

- Proportion of firms **expanding**, staying **equal** or **shrinking** in size over the period 2001-2012 (with base-year 2001)



1. **Pre-crisis: stable** firms' growth dynamics

2. **After crisis: generalized increase** of the proportion of firms **cutting employment**

3. **Different** impacts across countries in **timing** and **intensity**

Ex. 3 - How is job destruction related to wage-setting set-ups?

- Within ECB we have **merged WDN** and **CompNet** database to analyze if cross-country heterogeneity in labour market response to the crisis (*see previous slide*) can be explained by the relationship between

Different **levels** at which **bargaining negotiations** take place across firms in the euro area

Different **firm-level cost cutting strategies** (employment vs. wages) following the Great Recession

- Important from a policy perspective:

Whether and to what extent wage setting institutions **amplified** the **impact** of the economic crisis **on employment** through the **limitations they impose on wage adjustments**

Ex. 3 - Employment adjustment

The higher the share of firms **engaging** in multi-level/employer (i.e. **centralized system**, sectorial) bargaining

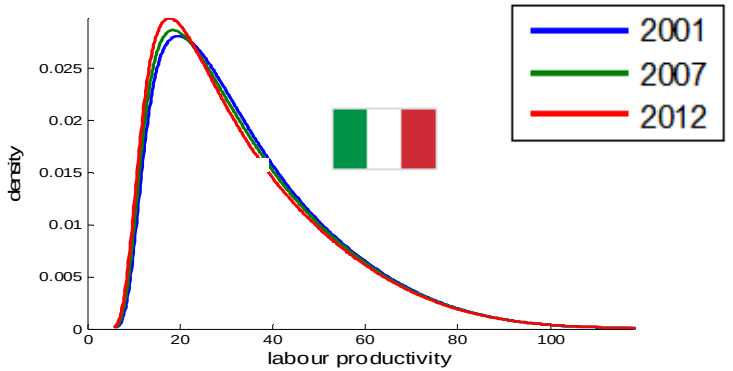
The greater the employment reduction at the firm-level over the Great Recession

Share of shrinking firms	
% of firms in **multi-level** bargaining	**0.2025***** (0.0459)
% of firms in **multi-employer** bargaining	**0.112***** (0.040)
% of firms in p**lant-level** bargaining	0.0697 (0.0537)
Constant	0.265*** (0.0219)
Country, sector dummy	yes
Size, time dummy	yes
N. Observations	362
R-squared	0.78

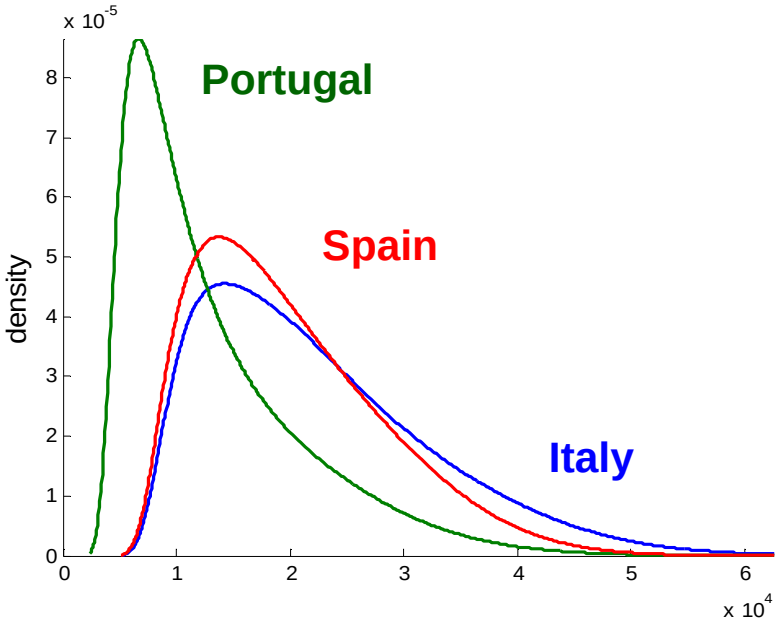
N.B. Robust also when controlling for sectorial TFP

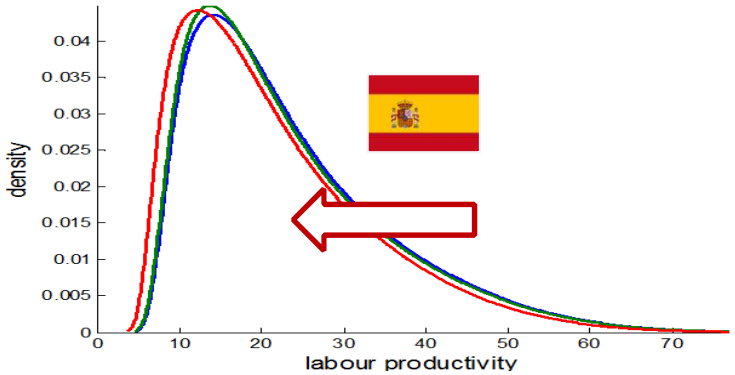
1- Stylized facts: Role of productivity distributions…

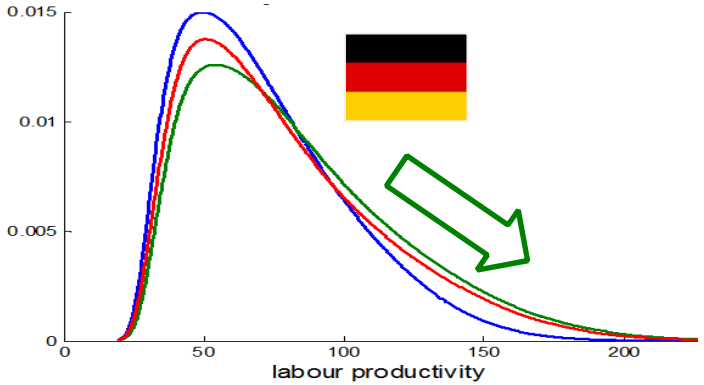
…over time…



..and across countries







An example: investment ratio across productivity levels

We can **connect** the **value** of selected **indicators**:

Real value added	Labour	**Investment ratio**	Collateral
TFP	Labour Costs	Leverage	Debt burden
Capital	ULC	ROA	Equity debt ratio
Capital intensity	Total Employment	Cash holdings	% of credit constrained
	Labour Productivity	Financing gap	

with the **different deciles** of

- Real value added
- ULC
- TFP
- Capital
- Capital intensity
- Labour
- Labour costs
- Labour growth
- Labour productivity
- Labour productivity growth