

## CompNet and the 6<sup>th</sup> Vintage of the CompNet Dataset

October 2018

# CompNet goals

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



- Now it has expanded to become a network of academics and policy practitioners collaborating to:
  1. Provide a robust theoretical and empirical link between drivers of competitiveness and macroeconomic performance for **research, policy analysis** and **country surveillance**
  2. Use cross-country benchmarking and adopting a **multi-dimensional** approach (i.e. a set of complementary macro, firm-level and cross-border indicators)

# Why do we need CompNet? Firms are heterogeneous

## Firm-level data is confidential, and relies on existing administrative databases: cross-country comparability is hindered

- One possibility is to use firm-level data for a given country
  - But benchmarking with other countries not possible
- Another is to use ORBIS data, from BvD
  - Limited coverage and representativeness for a number of countries
  - Limited information on employment and exports
- CompNet uses a micro-distributed methodology to fill the gap
  - Departs from firm-level data available in data providers
  - Collect distributions of competitiveness-related indicators to preserve confidentiality
  - Use of same protocol in all countries to ensure harmonisation

# Latest achievements

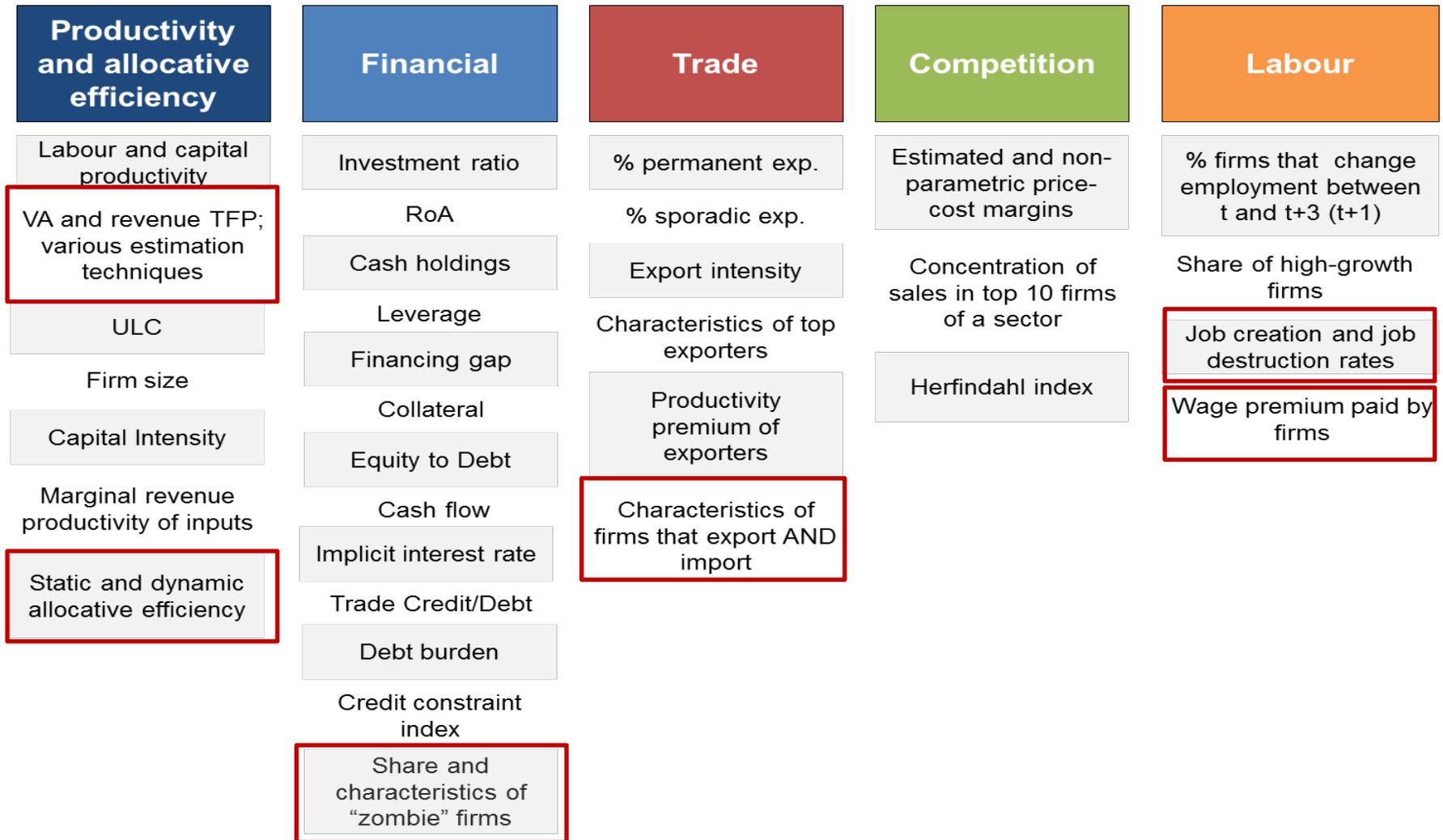
- **Enlargement** of the Network over the last year:
  - More statistical offices are now data providers (lately, INSEE (France), Swiss Statistical institute and possibly ONS (UK))
  - More country teams participating
    - e.g. Office for Strategy and Studies – Ministry of Economy, Portugal
- Improvement of the **codes**
- Active in **research** ...
  - over 40 ongoing research projects based on CompNet data
  - 7 Working Papers since 2016
  - 22 refereed journal articles from members of the CompNet network
- ... and in **policy**
  - European Commission: Country Report Spain 2018
  - EBRD: Transition Report 2017/18, chapter 2
  - Articles in the ECB Economic Bulletin and in VOXEU.org

# Data and Coverage

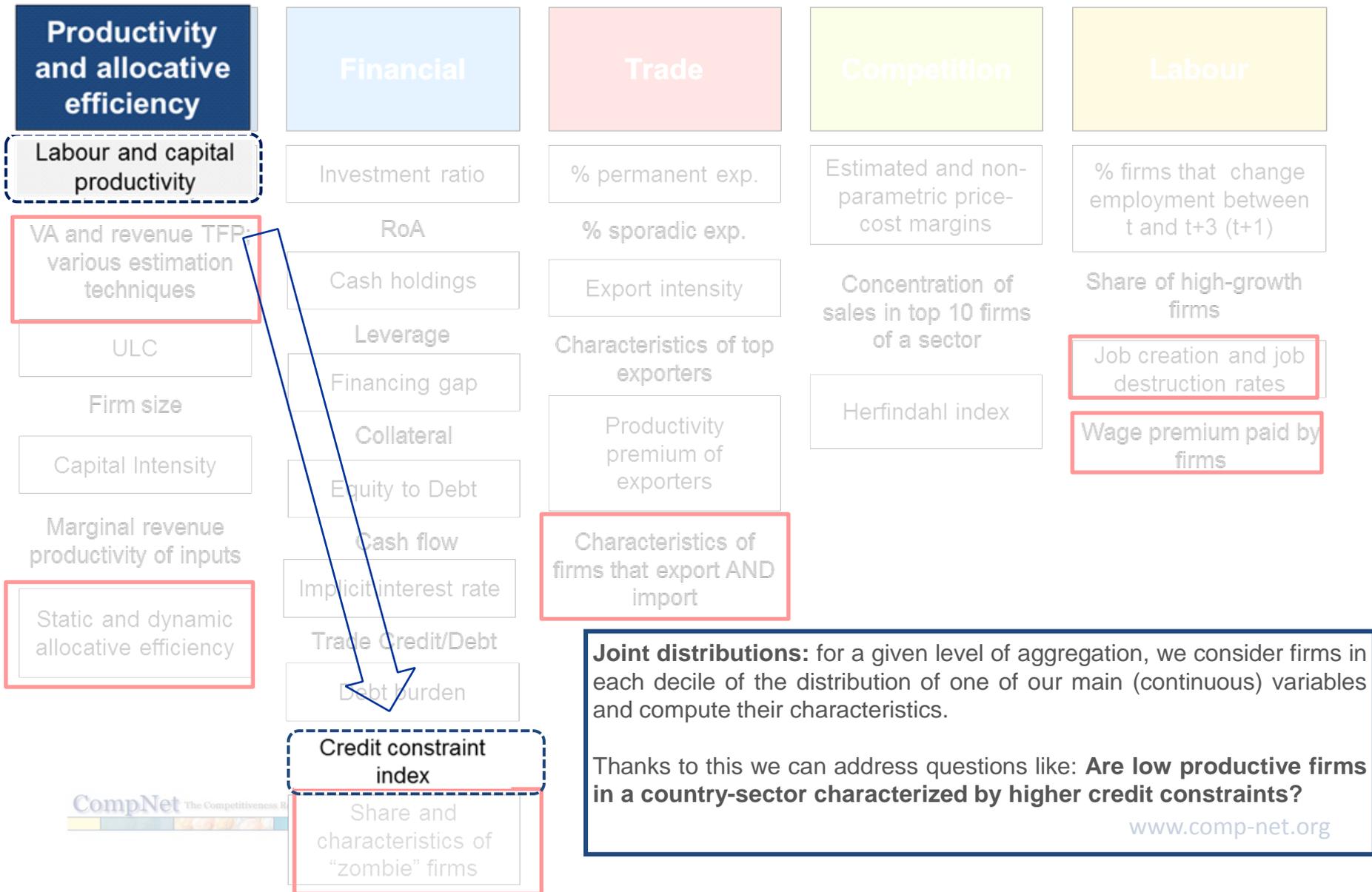
# Our Data

1. We construct a firm-level based dataset from business registers
  - To deliver the full underlying distributions of variables
2. Country teams run common codes to create indicators at industry, macro-sector and country level
  - Confidentiality is preserved
  - Data comparability is ensured
3. In addition to sector averages, we collect the full distribution for more than **70** critical business related variables
  - joint distributions are also available, which are actually conditional distributions of CompNet's indicators
  - information is much richer in comparison to the usual available sector aggregation (e.g. Eurostat)
4. The CompNet dataset includes two different samples:
  - **Full sample**: all non-financial firms with at least 1 employee (excluding self-employed)
  - **20E sample**: all non-financial firms with at least 20 employees; highly representative sample, particularly suitable for cross-country comparison

# Five broad categories of variables are available...



# Example of joint distributions



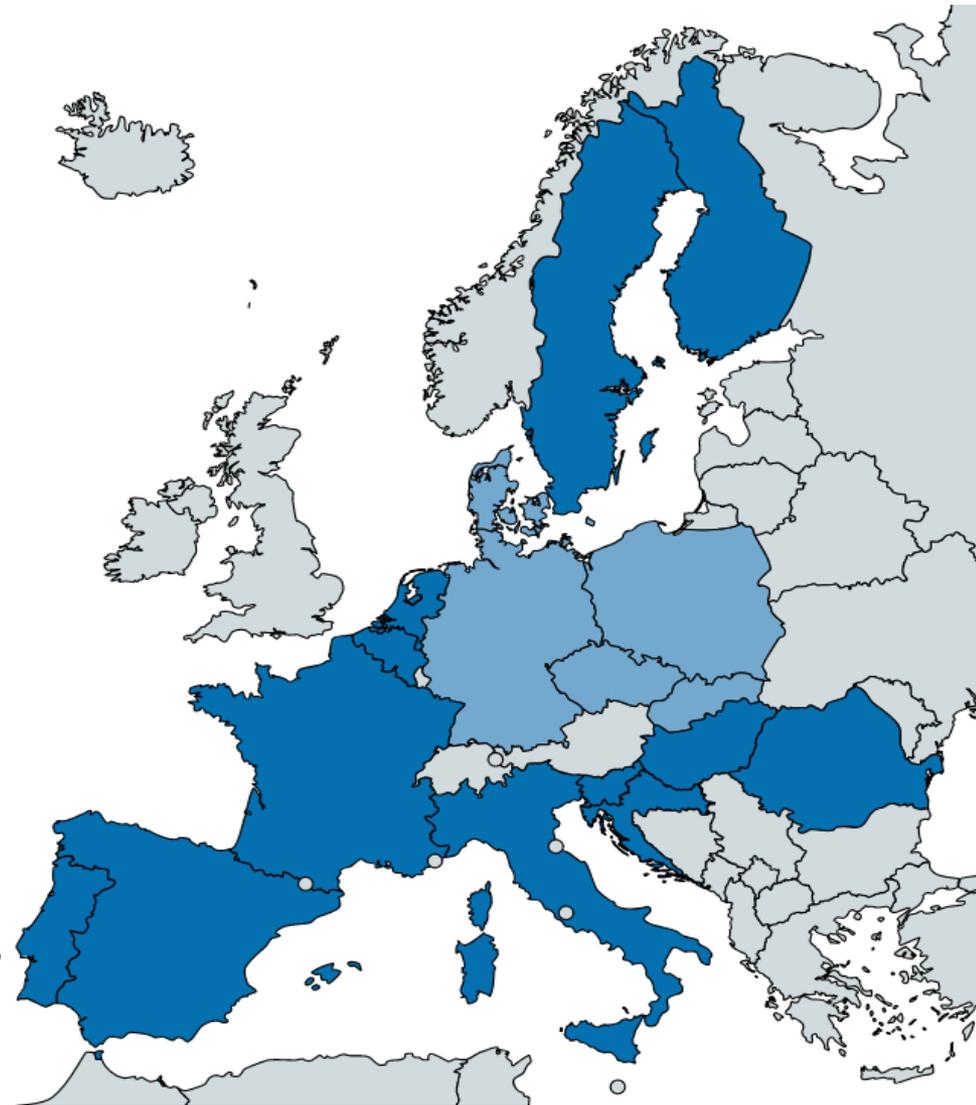
**Joint distributions:** for a given level of aggregation, we consider firms in each decile of the distribution of one of our main (continuous) variables and compute their characteristics.

Thanks to this we can address questions like: **Are low productive firms in a country-sector characterized by higher credit constraints?**

[www.comp-net.org](http://www.comp-net.org)

# The 6th vintage of the CompNet dataset

- Time period:
  - **1999 – 2015**
- Data coverage:
  - (up to) **90% in firms**
  - (up to) **86% in employees**
- Geographical coverage:
  - **18 EU countries**
- Data collection:
  - Richer set of **variables**
  - More efficient **codes**
- Data are available:
  - **online** for CompNet members
  - **upon request** for all researchers



# Country information: 18 countries as of October 2018

## Country information as of today;

Country	Time Span	Sample Available	Export Information	Regional Information	Coverage vs. population	
					Employment	Number of firms
BE	2004-2015	Full and 20e	No	Yes	44%	19%
CZ	2003-2015	20e	Yes	Yes	72%*	72%*
DE**	1999-2014	20e	Yes	No	17%*	9%*
DK	2000-2015	Full and 20e	Yes	Yes	53%	87%
ES	2009-2015	Full and 20e	No	Yes	25%	15%
FI	1999-2015	Full and 20e	Yes	Yes	50%	45%
FR	2004-2014	Full and 20e	Yes	No	57%	41%
HR	2008-2015	Full and 20e	Yes	No	52%	38%
HU	1999-2015	Full and 20e	Yes	No	57%	44%
IT	2001-2014	Full and 20e	Yes	Yes	39%	11%
LT	2000-2015	Full and 20e	No	Yes	69%	37%
NL	2000-2014	Full and 20e	No	No	35%	18%
PL	2005-2015	20e	Yes	Yes	75%*	74%*
PT	2006-2015	Full and 20e	No	No	56%	31%
RO	2005-2015	Full and 20e	Yes	Yes	68%	76%
SI	2005-2016	Full and 20e	Yes	Yes	50%	28%
SE	2003-2015	Full and 20e	Yes	No	40%	32%
SK	2000-2015	20e	Yes	Yes	86%*	90%*

Sources: CompNet 6th vintage and Eurostat, 2011.

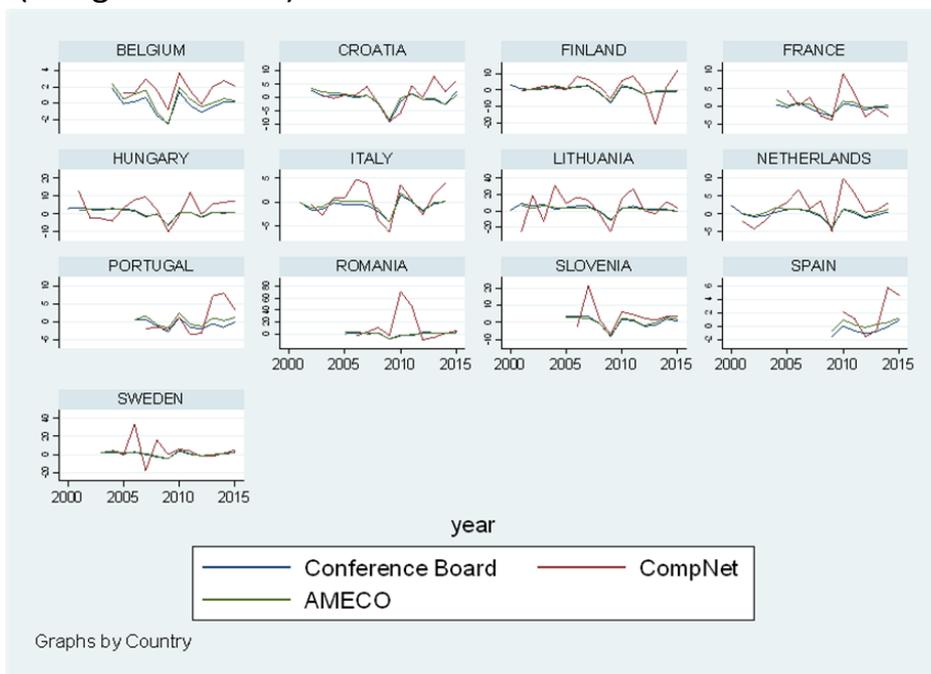
Notes: \*20e sample. \*\*For Germany data only available for the Manufacturing sector.

# Examples and applications

# Productivity: Checking the data

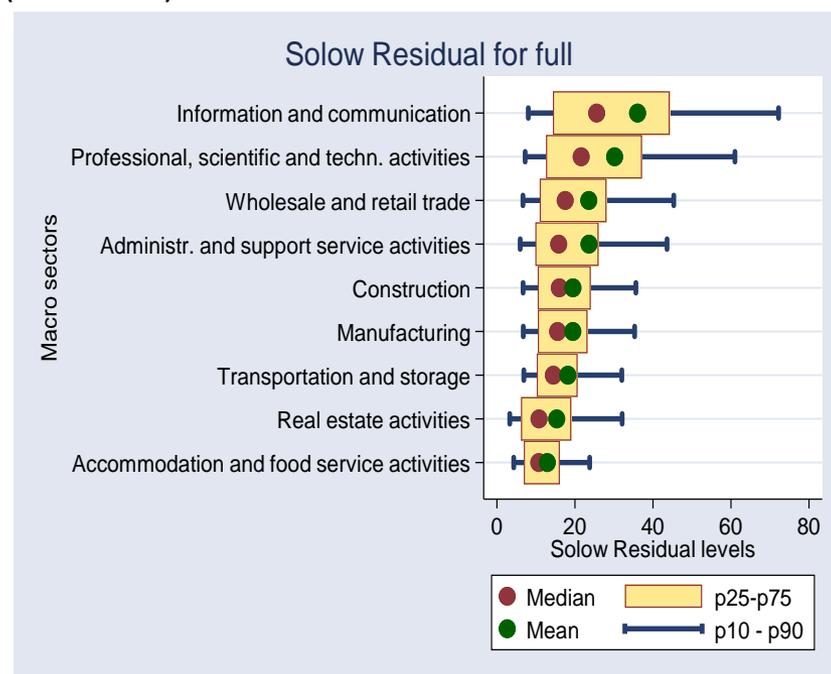
CompNet provides a wide range of parametric and non-parametric productivity indicators to let the researcher choose the most convenient

*Validation: TFP in CompNet, AMECO and Conference Board*  
(TFP growth rates)



Source: 6th vintage of CompNet full sample, AMECO and Conference Board.  
 Notes: The TFP indicator used for CompNet is the SR.

*Granularity: TFP distribution by sector, western countries*  
(TFP levels)

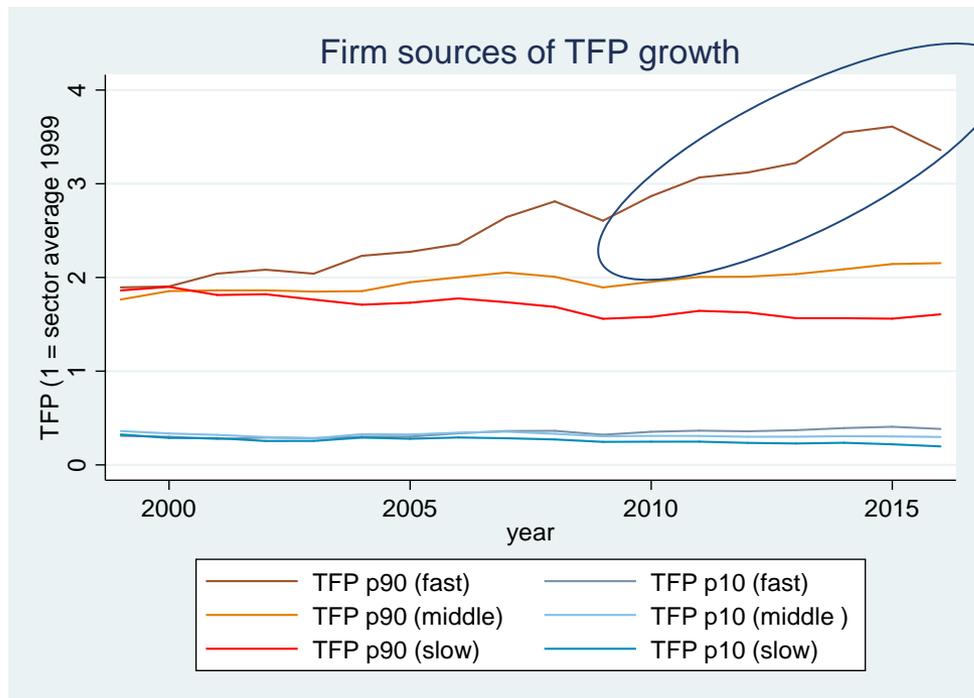


Sources: 6th vintage of CompNet, full sample, year 2010.  
 Note: Countries included are BE, DK, FI, FR, IT, NL, PT, ES and SE.

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# Productivity: Growth in the age of the superstars

*Dynamics of high and low productive firms in fast-growing sectors*



Sources: 6th vintage of CompNet data, full sample.

Notes: TFP is indexed to average productivity in 1999, which is the start year.

## What makes the difference between fast and slow growing sectors (in terms of TFP)?

- The chart shows the dynamics of top and bottom productive firms in 3 types of sectors:
  - Fast growing: top-third of distribution of TFP growth
  - So-so: middle third of the TFP growth distribution
  - Slow growing: bottom third
- What distinguishes fast growing sectors is the super-performance of top firms

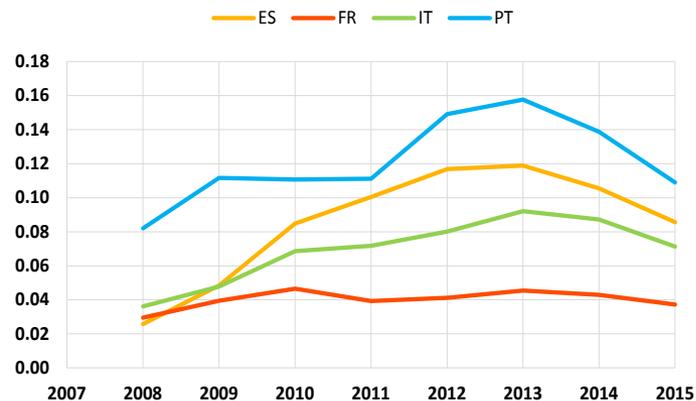
# Distressed firms: Checking the data

## Non-viable firms still in the market; we use different definitions (interest coverage ratio, negative profits excluding HGF)

Validation: CompNet, ORBIS and SAFE

(share of distressed firms)

ORBIS: Storz et al. (2017)

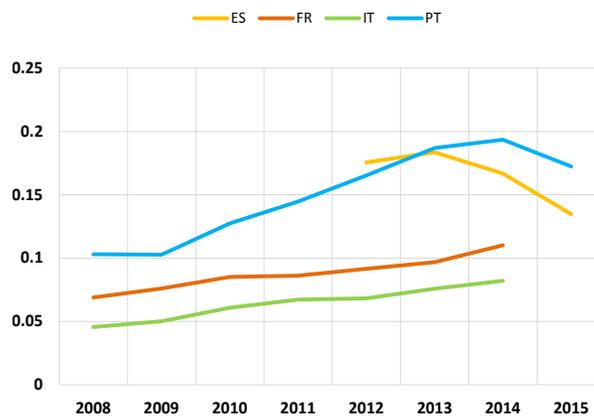


Source: ORBIS.

Note: Distressed firms are defined according to Storz et al. (ECB WP, No. 2104/2017):

Non-financial firms with negative investment, negative return on assets and EBITDA to financial debt of less than 5% for two consecutive years.

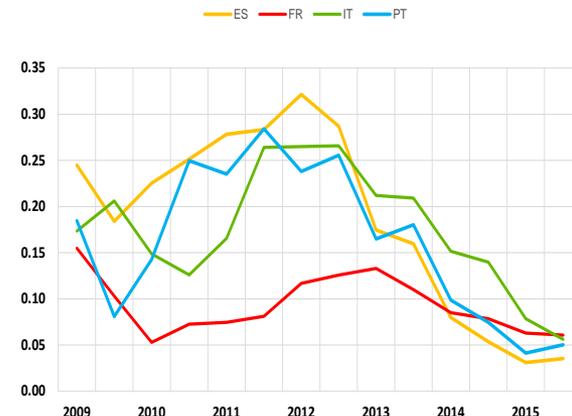
CompNet: Persistent negative profits



Sources: 6th vintage of CompNet, drawing from the full sample.

Notes: Not high growth captures firms with negative operating profits for three consecutive years, excluding the firms that experienced high growth in employment during that period.

SAFE: Deterioration relative to previous 6 months



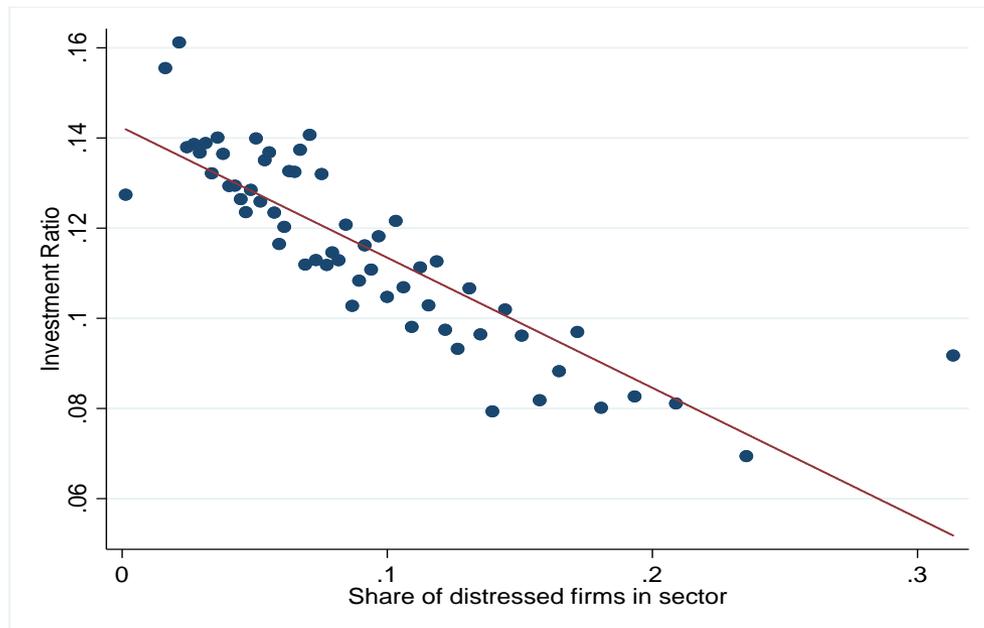
Sources: SAFE survey.

Notes: Distressed firms are defined as firms experiencing lower turnover, lower profits and higher interest expenses compared to the previous six months.

# Distressed firms: Zombie congestion?

## *Sector investment and share of distressed firms*

(median investment of the 2-digit industry and share of distressed firms)



Source: 6th vintage of CompNet, full sample.

Notes: Firms with interest payments higher than operating profits for 3 consecutive years, conditional on positive profits. Countries included: BE, HR, DK, FI, FR, HU, IT, LT, NL, PT, RO, ES, SI, and SE. Bin-scatter controlling for country FE.

## Do distressed firms have a sizeable economic impact?

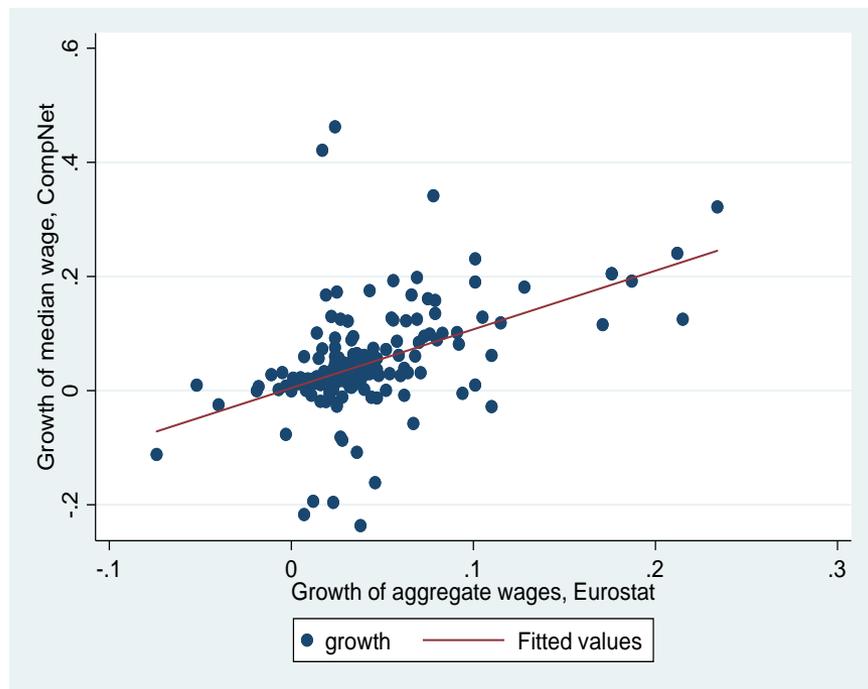
- The chart shows median investment in each country-sector-year and share of distressed firms
  - Share of distressed firms measured as share of firms with positive profits but below interest payments for 3 consecutive years
- Sector with a higher share of distressed firms show significantly lower investment ratios and job creation rates

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# Wages and job flows: Checking the data

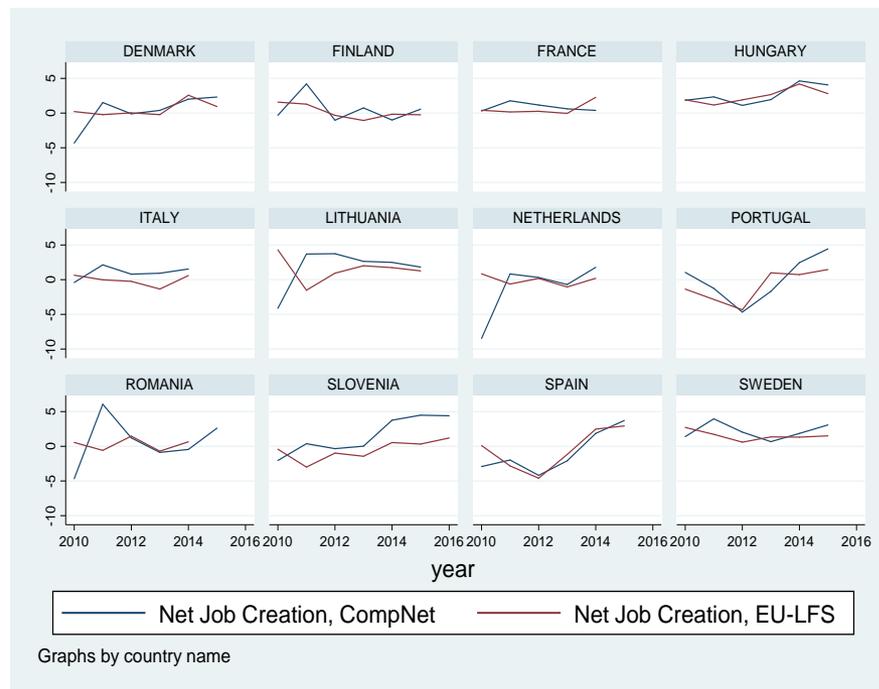
## Gross wages + employers' social security contributions per employee; for the first time we also collect job flows

*Validation: wage growth of median firm vs. growth of aggregate wages in Eurostat (growth rates)*



Sources: 6th vintage of CompNet 20E sample and Eurostat.  
Notes: countries included are BE, HR, CZ, DK, FI, FR, DE, HU, IT, LT, NL, PL, PT, RO, SK, SI, ES and SE over the period 2000-2015.

*Validation: net job creation in CompNet and in Eurostat's longitudinal LFS (ULC levels, computed at the 2-digit industry)*



Source: 6th vintage of CompNet data full sample and Labour market transitions from the EU-LFS. Notes: JCR in Eurostat computed as flows from U and I to E; JDR as flows from E to U or I.

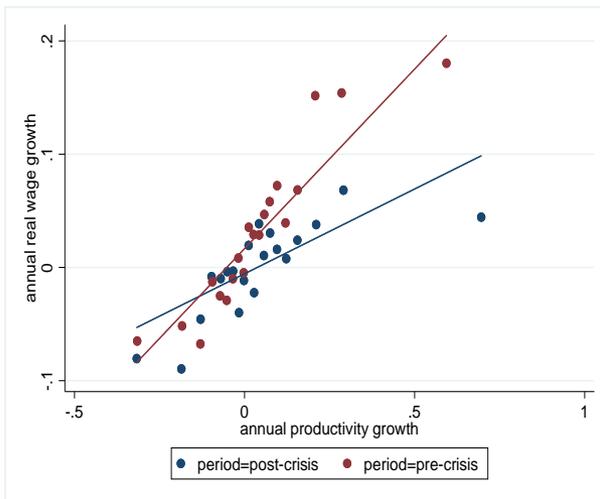
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# Wages: Subdued wage growth in the post-crisis period

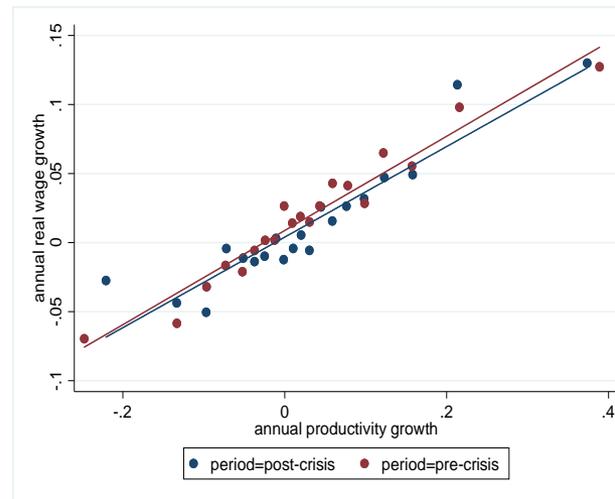
Median real wage and productivity growth of firms at tails of the TFP distribution in each country-sector-year, **pre** and **post-crisis**

(growth rates in binscatter)

Bottom 10% productive firms in sector



Top 10% productive firms in sector



Sources: 6th vintage of CompNet, 20E sample.

Notes: countries included are BE, DK, DE, FI, FR, IT, NL, PT and SE.

Pre-crisis period is 2004-2007 and post-crisis 2013-2015.

**Is real wage growth subdued in the post-crisis period?**

- The (left) right chart shows the link real wage-productivity growth in (low) high productive firms in pre- and post-crisis
- We find lower wage growth for each level of productivity growth in the post-crisis period only for LOW productive firms

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# Release of the 6<sup>th</sup> vintage

# Data requests

- The 6<sup>th</sup> vintage dataset is open to application, access will be granted from January 2019 onwards
- All researchers can apply to have access to the firm-level-based CompNet data
  - By submitting a data request form found on the CompNet website
- All requests are reviewed by the **Executive Committee** of CompNet, after which the applicant will be informed about the acceptance of the application
- Once the application has been accepted, the applicant will be granted access to the CompNet datasets for **6 months**
- Visit <https://www.comp-net.org/data> for more information

# More about the Network

# Our partner institutions

CompNet is an independent Network of researchers and policy makers.

Its member institutions are:



- **European Central Bank (ECB)**



- **European Commission (EC)**



- **Halle Institute of Economic Research (IWH)**



- **European Bank of Reconstruction and Development (EBRD)**



- **European Investment Bank (EIB)**



- **Tinbergen Institute**

- **And a number of National Central Banks and National Statistical Institutes**

# Governance Structure

**CompNet governance is composed by three main bodies:**

## **I. Steering Committee**

- sets the overall strategy of the network
- composed of representatives of the partner institutions and data providers

## **II. Advisory Board**

- provides guidance on the long term research objectives
- led by former ECB Vice-President Vítor Constâncio

## **III. Executive Committee**

- responsible for day-to-day management of the network

For a more detailed overview visit our website  
at [www.comp-net.org/about-us/](http://www.comp-net.org/about-us/)

# Research output

## CompNet features a dedicated working paper series within the ECB and the Halle Institute

Since its establishment, CompNet produced more than 50 working papers.

More than 20 of them appeared on peer reviewed journals like:

- Journal of International Economics
- Journal of International Money and Finance
- The World Economy

For a detailed overview of our publications please visit:

**[www.comp-net.org/research/](http://www.comp-net.org/research/)**

# Concluding remarks

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## Policy-making in Europe needs to be informed with micro-founded analysis: we hope CompNet can help to that end

- The use of firm-level data from administrative sources in different countries makes perfect comparability impossible
- But we can do several things to attenuate problems:
  - Use of indicator-specific inverse weights to ensure a similar distribution of firms in sample and in population, by macro-sector and size
  - Construct two datasets: one with countries sampling small firms; one including also countries sampling firms above a certain threshold (20E)
  - Apply same treatment to raw data (to check and clean outliers, deflate nominal variables etc.)
  - Provide guidelines in terms of variable and firm definition, as well as sector classification
- Most important: **document remaining biases**

# Concluding remarks (II)

## The new 6<sup>th</sup> vintage of CompNet data comes with:

- A cross-country report providing an overview of the main novelties of the dataset
- A cross-country comparability report providing metadata and documenting existing differences across countries
- A comparability tool for the user to track cross-country differences in each indicator
- A user's guide with detailed information on definitions of and methodology used to compute some of the core indicators
- A “road-map” mapping indicators to data files and vice versa

All to be found on <https://www.comp-net.org/>