CompNet and the 6th 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...

<table>
<thead>
<tr>
<th>Productivity and allocative efficiency</th>
<th>Financial</th>
<th>Trade</th>
<th>Competition</th>
<th>Labour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour and capital productivity</td>
<td>Investment ratio</td>
<td>% permanent exp.</td>
<td>Estimated and non-parametric price-cost margins</td>
<td>% firms that change employment between t and t+3 (t+1)</td>
</tr>
<tr>
<td>VA and revenue TFP; various estimation techniques</td>
<td>RoA</td>
<td>% sporadic exp.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ULC</td>
<td>Cash holdings</td>
<td>Export intensity</td>
<td>Concentration of sales in top 10 firms of a sector</td>
<td>Share of high-growth firms</td>
</tr>
<tr>
<td>Firm size</td>
<td>Leverage</td>
<td>Characteristics of top exporters</td>
<td></td>
<td>Job creation and job destruction rates</td>
</tr>
<tr>
<td>Capital Intensity</td>
<td>Financing gap</td>
<td></td>
<td>Herfindahl index</td>
<td></td>
</tr>
<tr>
<td>Marginal revenue productivity of inputs</td>
<td>Collateral</td>
<td>Productivity premium of exporters</td>
<td></td>
<td>Wage premium paid by firms</td>
</tr>
<tr>
<td>Static and dynamic allocative efficiency</td>
<td>Equity to Debt</td>
<td>Characteristics of firms that export AND import</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cash flow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implicit interest rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trade Credit/Debt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Debt burden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Credit constraint index</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: the red boxes represent the new indicators introduced by the 6th Vintage
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?
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

= full sample
= 20E sample
## Country information: 18 countries as of October 2018

### Country information as of today:

<table>
<thead>
<tr>
<th>Country</th>
<th>Time Span</th>
<th>Sample Available</th>
<th>Export Information</th>
<th>Regional Information</th>
<th>Coverage vs. population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Employment</td>
</tr>
<tr>
<td>BE</td>
<td>2004-2015</td>
<td>Full and 20e</td>
<td>No</td>
<td>Yes</td>
<td>44%</td>
</tr>
<tr>
<td>CZ</td>
<td>2003-2015</td>
<td>20e</td>
<td>Yes</td>
<td>Yes</td>
<td>72%*</td>
</tr>
<tr>
<td>DE**</td>
<td>1999-2014</td>
<td>20e</td>
<td>Yes</td>
<td>No</td>
<td>17%*</td>
</tr>
<tr>
<td>DK</td>
<td>2000-2015</td>
<td>Full and 20e</td>
<td>Yes</td>
<td>Yes</td>
<td>53%</td>
</tr>
<tr>
<td>ES</td>
<td>2009-2015</td>
<td>Full and 20e</td>
<td>No</td>
<td>Yes</td>
<td>25%</td>
</tr>
<tr>
<td>FI</td>
<td>1999-2015</td>
<td>Full and 20e</td>
<td>Yes</td>
<td>Yes</td>
<td>50%</td>
</tr>
<tr>
<td>FR</td>
<td>2004-2014</td>
<td>Full and 20e</td>
<td>Yes</td>
<td>No</td>
<td>57%</td>
</tr>
<tr>
<td>HR</td>
<td>2008-2015</td>
<td>Full and 20e</td>
<td>Yes</td>
<td>No</td>
<td>52%</td>
</tr>
<tr>
<td>HU</td>
<td>1999-2015</td>
<td>Full and 20e</td>
<td>Yes</td>
<td>No</td>
<td>57%</td>
</tr>
<tr>
<td>IT</td>
<td>2001-2014</td>
<td>Full and 20e</td>
<td>Yes</td>
<td>Yes</td>
<td>39%</td>
</tr>
<tr>
<td>LT</td>
<td>2000-2015</td>
<td>Full and 20e</td>
<td>No</td>
<td>Yes</td>
<td>69%</td>
</tr>
<tr>
<td>NL</td>
<td>2000-2014</td>
<td>Full and 20e</td>
<td>No</td>
<td>No</td>
<td>35%</td>
</tr>
<tr>
<td>PL</td>
<td>2005-2015</td>
<td>20e</td>
<td>Yes</td>
<td>Yes</td>
<td>75%*</td>
</tr>
<tr>
<td>PT</td>
<td>2006-2015</td>
<td>Full and 20e</td>
<td>No</td>
<td>No</td>
<td>56%</td>
</tr>
<tr>
<td>RO</td>
<td>2005-2015</td>
<td>Full and 20e</td>
<td>Yes</td>
<td>Yes</td>
<td>68%</td>
</tr>
<tr>
<td>SI</td>
<td>2005-2016</td>
<td>Full and 20e</td>
<td>Yes</td>
<td>Yes</td>
<td>50%</td>
</tr>
<tr>
<td>SE</td>
<td>2003-2015</td>
<td>Full and 20e</td>
<td>Yes</td>
<td>No</td>
<td>40%</td>
</tr>
<tr>
<td>SK</td>
<td>2000-2015</td>
<td>20e</td>
<td>Yes</td>
<td>Yes</td>
<td>86%*</td>
</tr>
</tbody>
</table>

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 method.

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.

Tables stem from the CompNet Cross-Country Report, 2018
Productivity: Growth in the age of the superstars

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

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 superperformance of top firms

Sources: 6th vintage of CompNet data, full sample.
Notes: TFP is indexed to average productivity in 1999, which is the start year.

Tables stem from the CompNet Cross-Country Report, 2018
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)

CompNet: Persistent negative profits

SAFE: Deterioration relative to previous 6 months

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.

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.

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.

Tables stem from the CompNet Cross-Country Report, 2018
Distressed firms: Zombie congestion?

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

Do distressed firms have a sizeable economic impact?

- The chart shows median investment in each country-sector-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

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.

Tables stem from the CompNet Cross-Country Report, 2018
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)

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

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.
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 period.

- We find lower wage growth for each level of productivity growth in the post-crisis period only for LOW productive firms.

**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)

Sources: 6th vintage of CompNet, 20E sample.
Notes: countries included are BE, DK, DE, FI, FR, IT, NL, PT and SE.
Release of the 6th vintage
Data requests

- The 6th 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

www.comp-net.org
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/)
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/
Concluding remarks
Concluding remarks

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 6th 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/