EUROPEAN CENTRAL BANK

EUROSYSTEM

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ECB

Understanding macro trends with CompNet:

The case for the ECB to "go micro"

CompNet Data provider Forum

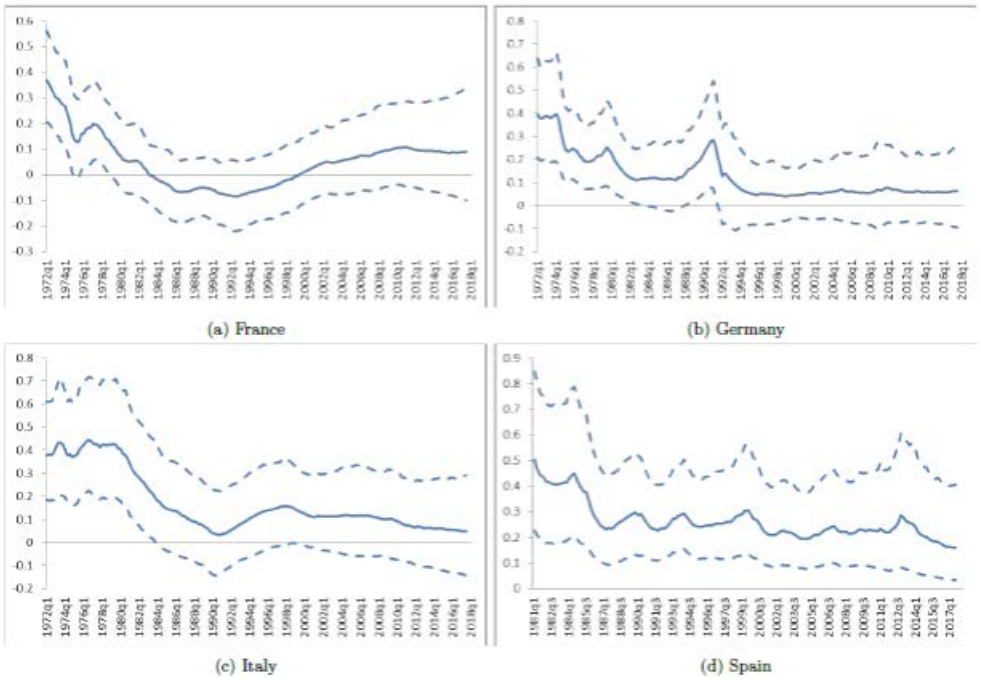
Halle, 7 May 2019

Overview

Secular decline in the productivity-wage growth link

Macro picture: Pass-through of productivity to wage growth over time, large EA countries

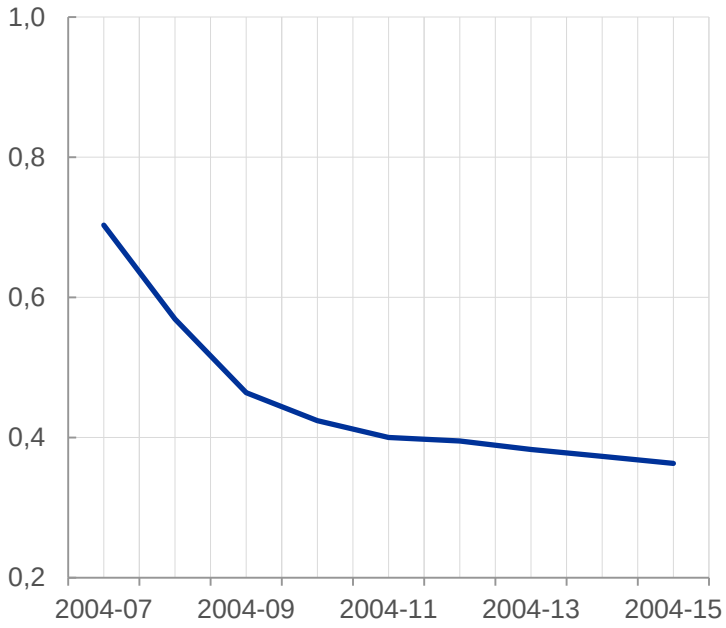
Estimated with macro quarterly data for 1972-2018: rolling windows



Sources: Bobeica et al. (2018).

Pass-through of productivity to wage growth, pooled sector data

Rolling window estimation



Sources: CompNet 6th vintage, full sample.
Notes: Countries included: BE, FI, FR, IT, NL, PT, ES. Period covered: 2004-2015. Coefficients from a fixed-effect regression at the country-sector level with clustered standard errors, controlling for labour market slack and year dummies.

What the literature says

- Possible reasons (behind substitution of labour for capital):
  - Globalization of trade and capital:
    - Increase of global value chain participation (OECD, 2018)
    - Fewer barriers to the mobility of capital across borders (Kramarz, 2016)
  - Rapid advance of technology:
    - Cheaper investment goods (Karabarbounis & Neiman, 2014)
    - Automation of tasks (Acemoglu & Restrepo, 2016)
    - Increasing market shares of frontier firms (Andrews, Criscuolo and Gal, 2016; Schwellnus et al., 2018)

What we (intend to) do

- Give up the very long view but gain insights into:

  1. Role of frontier firms (interacting with institutions and technology content of sector) in shaping aggregate PT

  2. Changes in PT over the most recent period, particularly post-crisis relative to pre-crisis: For now, uncover new facts, coming soon, understand links

- Data from 6th vintage of CompNet, all firms with employees.

  – 7 EA countries (BE, FI, FR, IT, NL, PT, ES) over the period 2004-2015;

  – 50-something sectors (2-digit) in each country-year; and different types of firms in each sector (productivity, size, mark-ups).

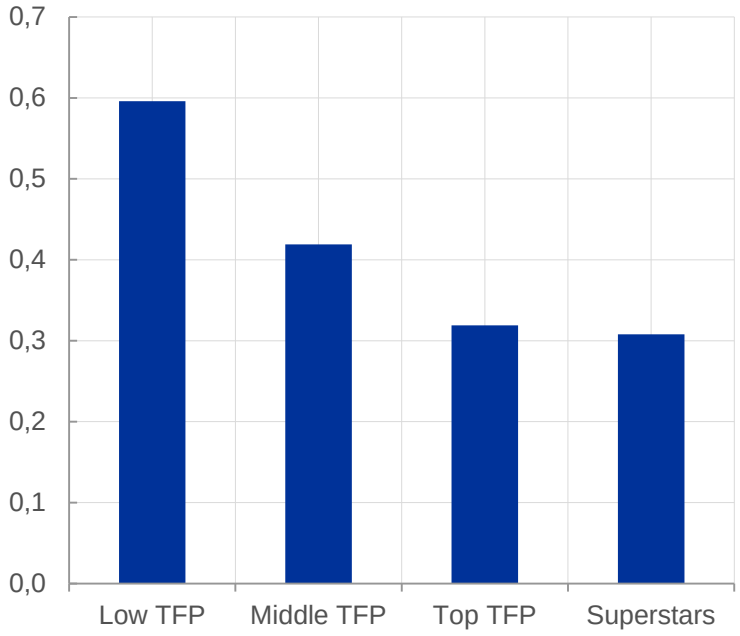
The impact of frontier firms on average PT

Specification: $\Delta realW_{cst} = \alpha + \beta \Delta realLprod_{cst} + \gamma Slack_{ct} + y_{t+\epsilon_{cst}}$

FE estimation: Within country-sector variation; errors clustered at the c-s level
Let Beta vary with the position of the firm on the TFP distribution of the sector

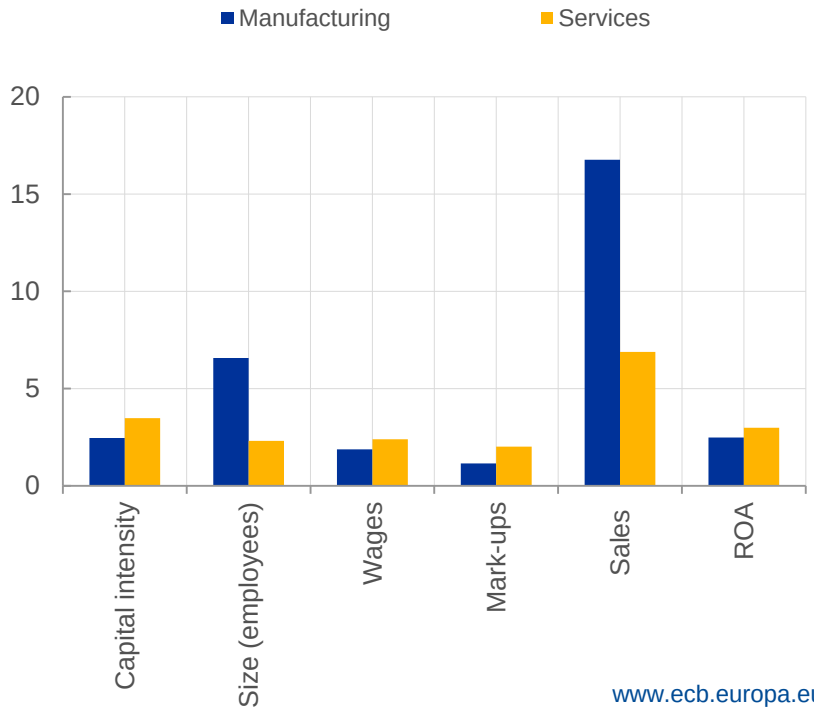
Estimated pass-through declines monotonically with firm's TFP…

Estimated coefficient for different firms in the same sector, average of the period



…maybe because superstars are significantly more capital intensive than other firms in the sector

Premia of superstars relative to median firm in sector

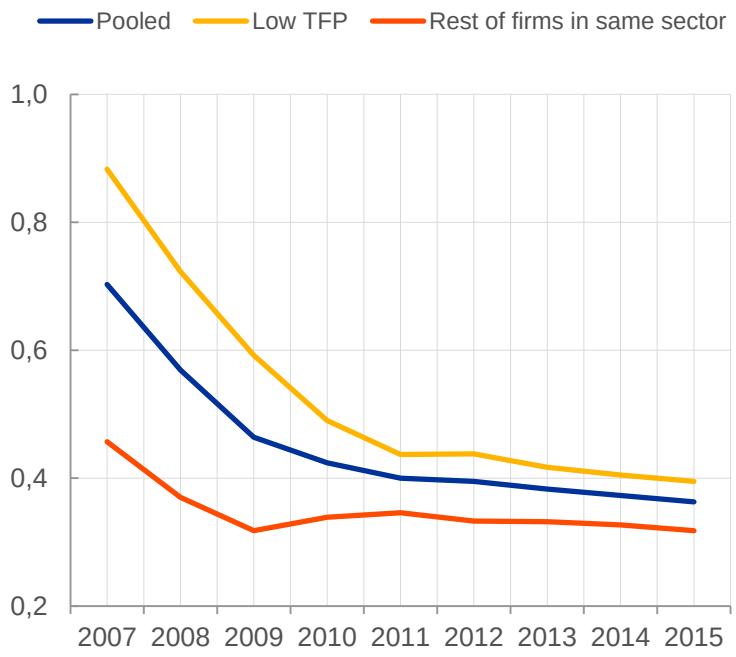


Notes: Countries included: BE, FI, FR, IT, NL, PT, ES. Period 2004-2015. Coefficients from a fixed-effect regression at the country-sector level with clustered errors. Controlling for labour market slack and year dummies.

We find three new facts regarding the PT over the most recent period: 1) in the post-crisis years, the PT has declined only in low TFP firms

PT dynamics in low TFP firms and rest within a given sector

Estimated coefficient for different firms within each sector, rolling windows



Notes: Countries included: BE, FI, FR, IT, NL, PT, ES. Period 2004-2015. Coefficients from a fixed-effect regression at the country-sector level with clustered errors. Controlling for labour market slack and year dummies. Low TFP firms belong to the bottom 20% of the sector distribution

Dependent variable: annual growth in median nominal wage of the sector	By TFP and period
Growth in real productivity (reference= low TFP firms in pre-crisis)	0.855***
Growth in real productivity*Dummy=1 if TFP>20th pc	-0.405***
Growth in real productivity* Dummy=1 for post-crisis (low TFP firms)	-0.611***
Growth in real productivity* Dummy=1 for post-crisis (medium-high TFP firms)	0.386***
labour market slack	-0.0452**
Constant	0.0171***
Observations	6,181
R-squared	0.409
Number of css	1,178

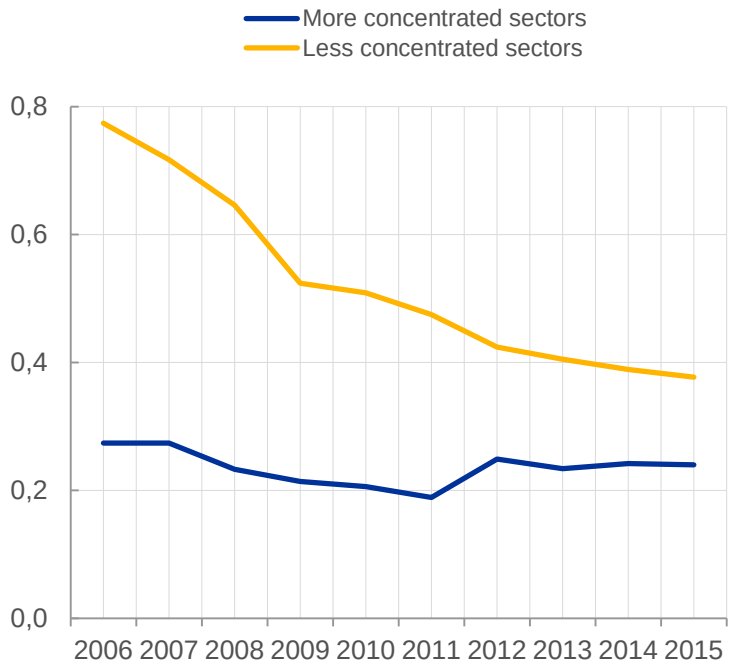
Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.10, + p<0.15

2) in the post-crisis years, the PT has declined only in more competitive markets

PT dynamics in sectors with high and low concentration of sales

Estimated coefficient for different sectors, rolling windows



Dependent variable: real wage growth in sector	(1) HHI	(2) C10
Real productivity growth (reference=low C10 in pre-crisis)	0.626***	0.638***
Real productivity growth*Dummy=1 if sector more concentrated	-0.353***	-0.346***
Real productivity growth*Dummy=1 in post-crisis	-0.461***	-0.465***
Real productivity growth*Dummy=1 in post-crisis *Dummy=1 if sector more concentrated	0.402***	0.411***
Dummy=1 if sector is more concentrated	0.00701	0.0129**
Labour market slack	-0.101***	-0.0994***
Constant	0.0146***	0.0139***
Observations	2,414	2,378
R-squared	0.472	0.500
Number of clusters	390	384

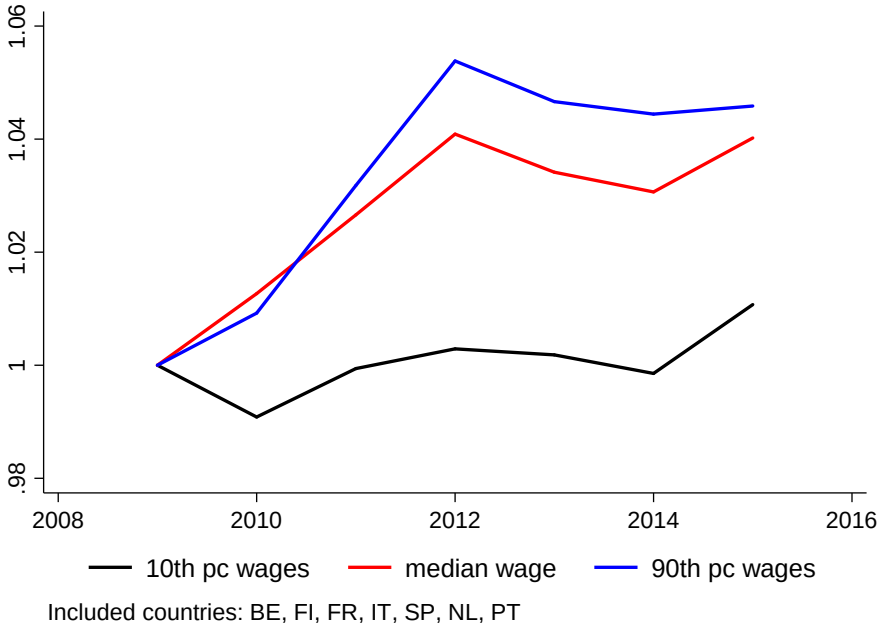
Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.10, + p<0.15

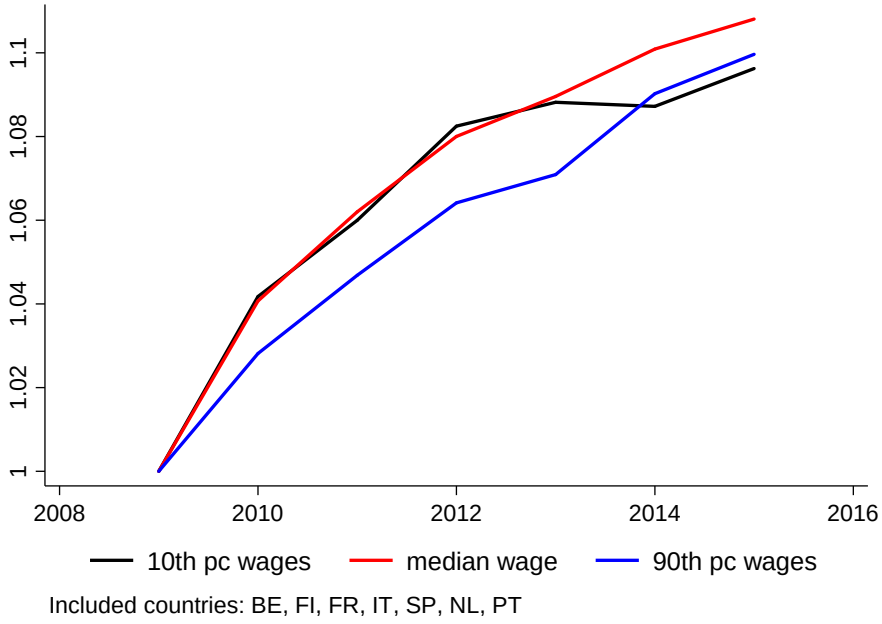
Notes: Countries included: BE, FI, FR, IT, NL, PT, ES. Period 2004-2015. Coefficients from a fixed-effect regression at the country-sector level with clustered errors. Controlling for labour market slack and year dummies. High concentrated are sectors with share of sales of top 10 firms in top quarter of country distribution.

3) Wage inequality has increased ONLY among low TFP firms, controlling for sector of activity

Cumulative growth of the bottom, median and top wages paid by low TFP firms
2009=1



Cumulative growth of the bottom, median and top wages paid by high TFP firms
2009=1



Notes: Low TFP firms refer to firms at the bottom tercile of the sector TFP distribution; high TFP firms are at the top tercile of the distribution.

By size of firm

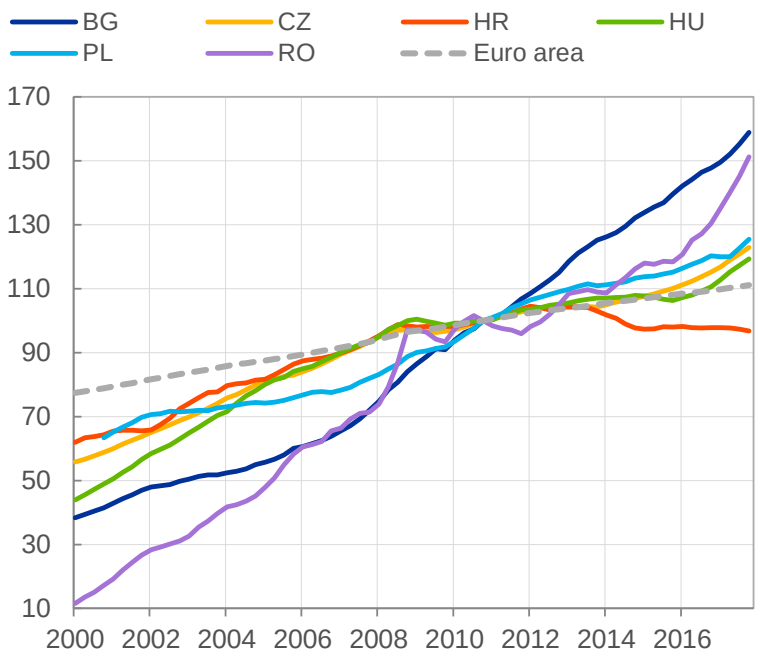
How do we square it all?

- Working hypothesis:
  - In the post-crisis period, low productive firms in more competitive markets could survive only by reducing (some) wages.
  - Facilitated by:
    - The fact that they hire low-skilled labour
    - Large immigration flows
    - High unemployment since the crisis – lower bargaining power of workers
    - Labour market reforms
- Work going forward:
  - Use variation in prevalence and size of frontier firms across countries to study the correlation with the respective (long-term) drop in PT;
    - what is the interaction with technology content and regulatory framework of countries?
  - Explore wage setting and mark-ups of low productive firms in more and less competitive markets

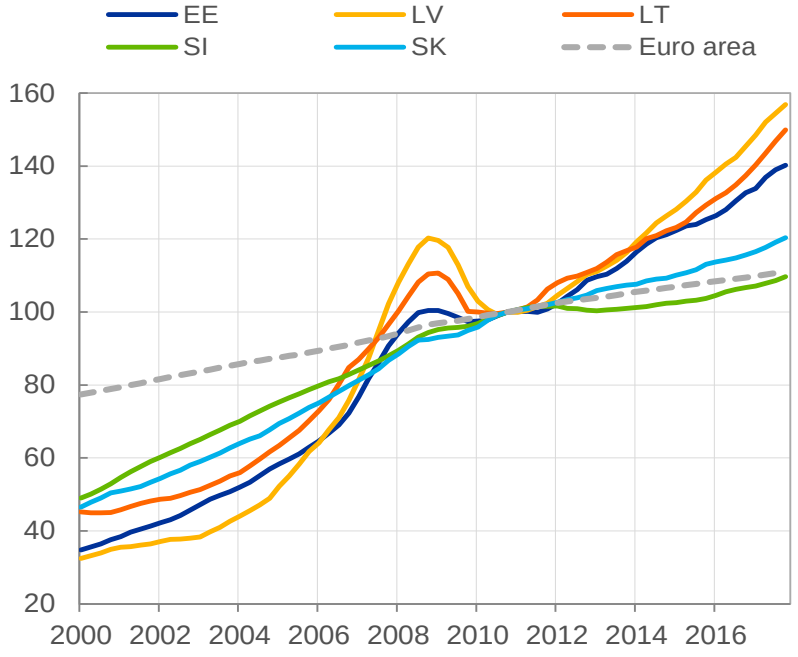
Overview

In contrast to the EA, wage growth has started to pick up in CEE countries, amid economic upswing and labour market shortages

Compensation per employee, non-EA CEE countries
(2010Q4=1)



Compensation per employee, EA CEE countries
(2010Q4=1)



Souce: Eurostat.

Note: Last observation: 2017Q4.

Overview of paper

1. Can wage developments in both regions be explained by the wage Phillips curve relationship? **YES**

$$\Delta w_{i,t} = \beta_1 ugap_{i,t-1} + \beta_2 \Pi_{i,t-1} + \beta_3 \Delta PROD_{i,t(4qma)} [+ \beta_4 \Delta w.a.pop_{i,t}] + \tau_t + \gamma_i + \varepsilon_{i,t}$$

2. Are there fundamental differences in wage growth responsiveness in the CEE and euro area countries? **YES**

3. Is the role of other factors in wage Phillips curve estimates relevant (e.g. institutions, emigration, min. wage)? **YES in CEE**

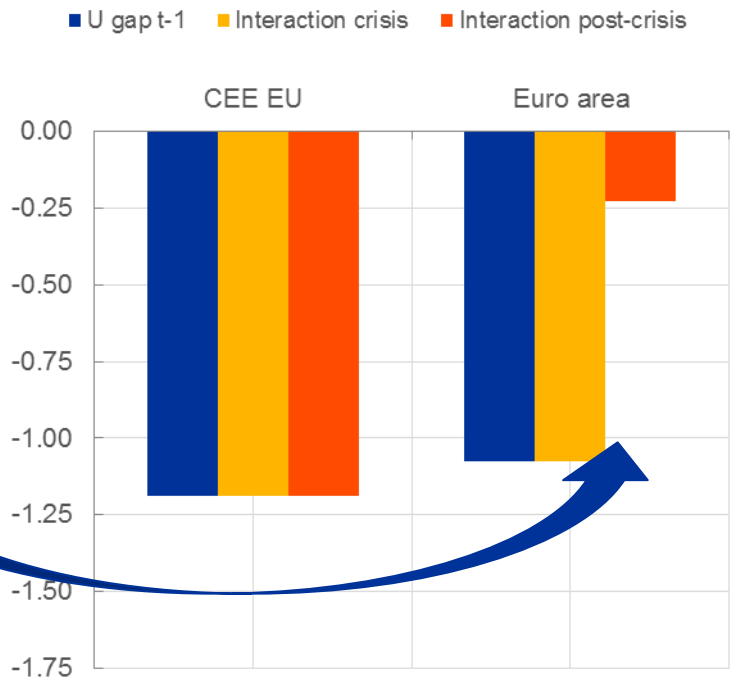
4. Has the relationship changed in the post-crisis period? **YES, flattening in the euro area**

   – **Can more granular data from CompNet help us understanding why?**

Wages became significantly less reactive to labour market slack in the post-2013 period in the euro area than in the CEE economies.

Dependent variable: compensation per employee	CEE EU	Euro area
Inflation $_{t-1}$	0.759***	0.362*
	(0.106)	(0.204)
Productivity $_{t}$	0.401***	0.445***
	(0.0828)	(0.076)
U gap $_{t-1}$	-1.188***	-1.077**
	(0.310)	(0.450)
U gap $_{t-1}$ * crisis	-0.310	-0.061
	(0.418)	(0.226)
U gap $_{t-1}$ * post-crisis	0.705	0.851*
	(0.456)	(0.503)
Constant	3.527**	1.396***
	(1.354)	(0.465)
Observations	743	1,292
R-squared	0.556	0.490
Number of id	11	19

LM Slack coefficient in the pre-crisis, crisis and post-crisis period, 2 regions



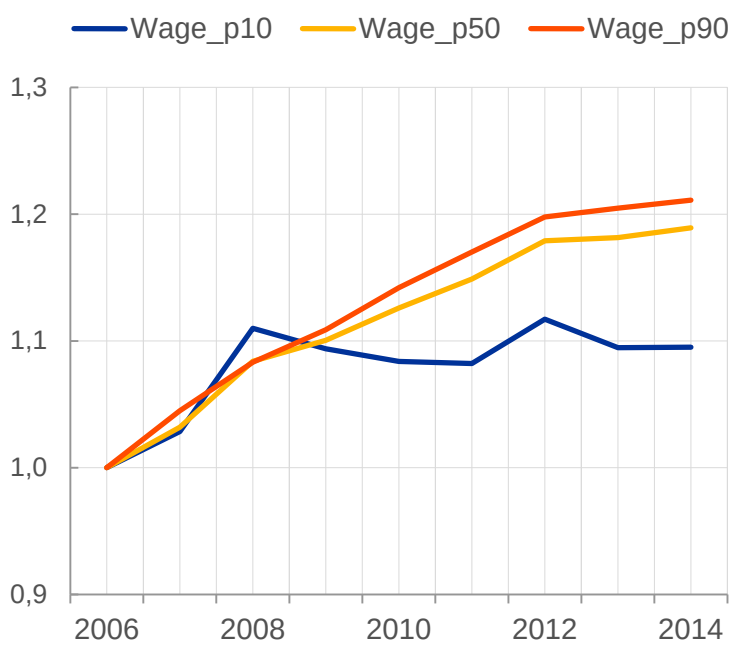
Dependent variable: compensation per employee, annualized quarterly growth rate, 4-quarter moving averages. Productivity is also defined as annualized quarterly growth rate, 4-quarter moving averages. U gap = Unemployment rate - NAIRU. Inflation is included as 4-quarter moving averages. Sample is of quarterly frequency 2000Q1-2017Q4. Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1. "Crisis" refers to the period between 2009 and 2013.

Here about data

The distribution of wages has changed, which could depress mean wage growth

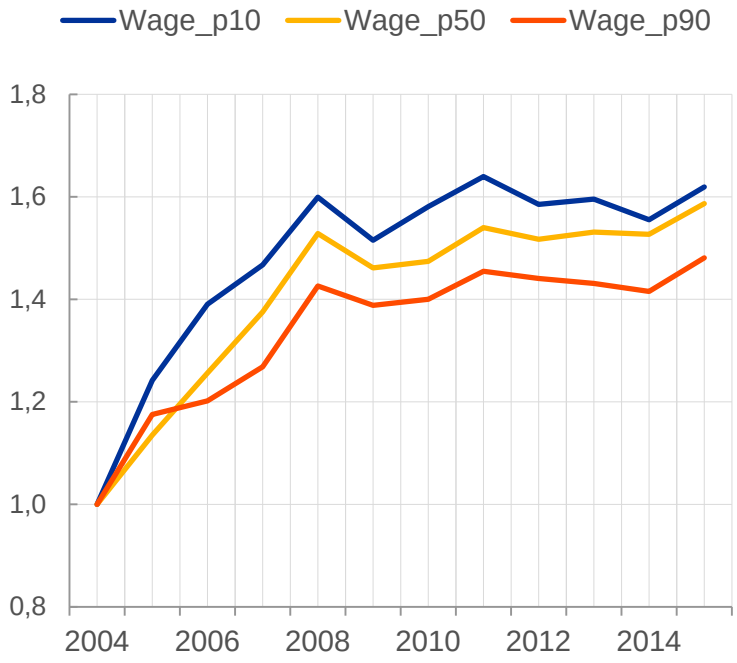
Cumulative growth of the bottom, median and top wages in non-CEE EA countries

2006=1



Cumulative growth of the bottom, median and top wages in CEE countries

2004=1



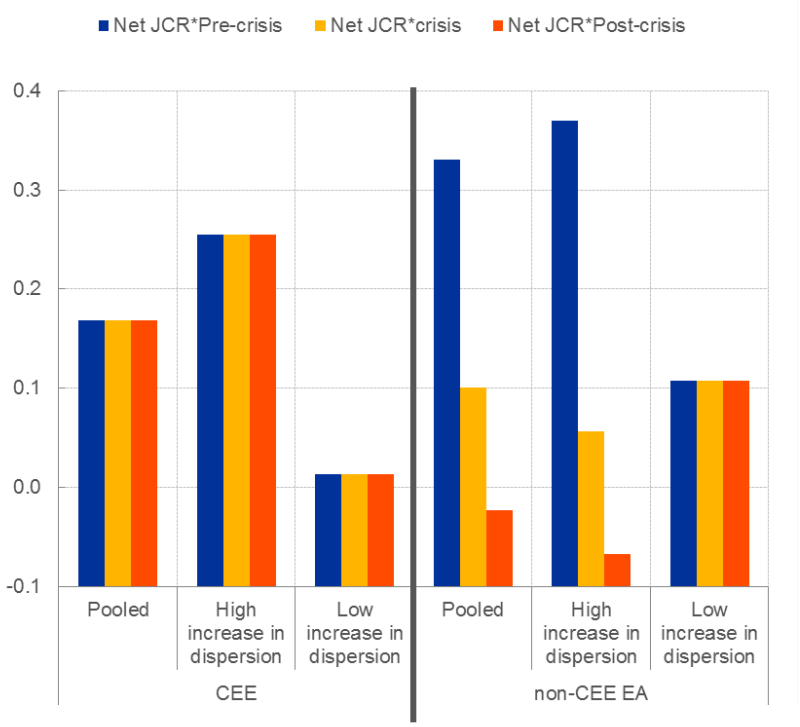
Sources: CompNet 6th vintage, full sample.
Notes: Computed at the 2-digit industry level and aggregated to the country level by using sector weights. Unweighted average across countries in each of the two regions. Non-CEE EA countries are: BE, FI, FR, IT and PT. CEE countries are: HR, CZ, HU, LT, RO, and SI.

Is the change in wage distribution related to the flattening of the curve?

Sort of diff-in-diff exercise: explore if flattening significantly larger in sectors where inequality increased the most since the crisis

Elasticity of nominal wage growth to labour market slack, different sectors

Estimated coefficient



- Innovation of paper: estimate sector level Phillips curves using sector job flows to approximate sector slack
- We split sectors in each country according to the relative increase in (bottom) wage inequality since 2009
- Estimate Phillips curves for the CEE and non-EA CEE regions letting the coefficient vary for each sector split
- We find that the flattening observed in the post-crisis period in EA countries is driven by sectors with large increase in inequality

Sources: CompNet 6th vintage, full sample.
Notes: Fixed effect regression of growth in nominal median sector wage against sector labour market slack, controlling for productivity growth and aggregate HICP. Standard errors clustered at the country-sector level.

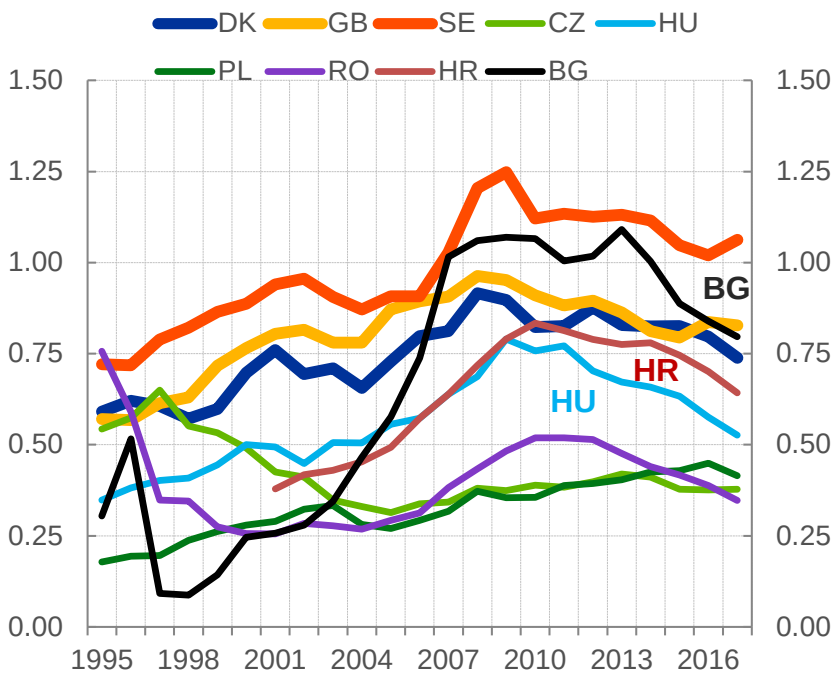
Overview

Debt sustainability of the NFC sector depends ultimately on the repayment capacity of the indebted firms

- The question therefore is: **Which firms are indebted?**
- This study:
  - Goes micro and looks at the (static) distribution of debt and leverage, across different types of firms in available EU-9 countries - not here
  - Explores the time dynamics of leverage of different types of firms
  - Analyses factors correlated with leverage growth of distressed firms
    - Bank capitalisation (health of financial sector)
    - Quality of credit-related (and other) institutions
- We find that in countries with less capitalised banks and weaker credit-related institutions leverage growth of distressed firms has been relatively larger since the crisis

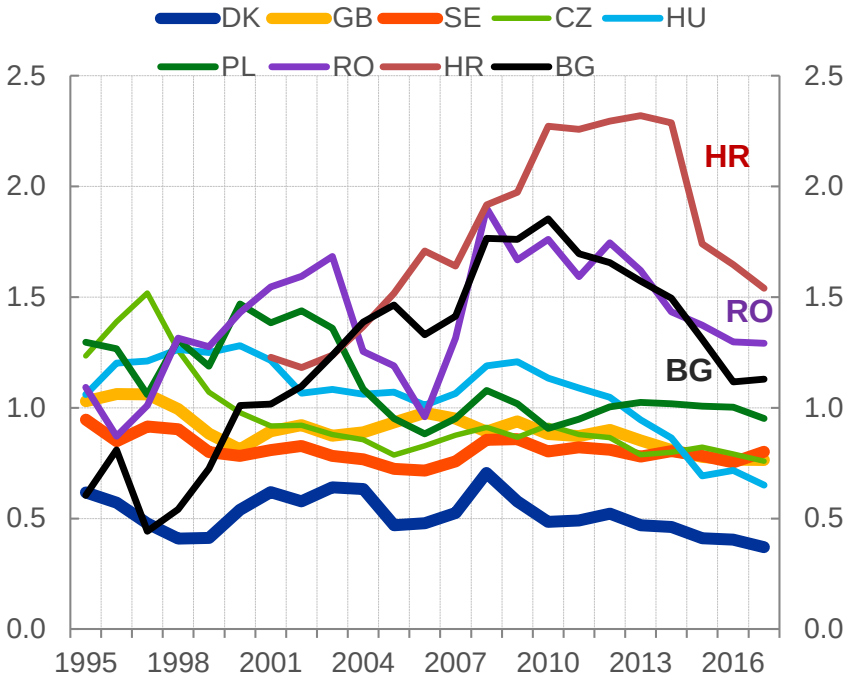
NFC sector indebtedness increased strongly during the pre-crisis and crisis periods; deleveraging thereafter

Debt-to-GDP, NFC sector *(%)*



Source: Eurostat, quarterly sector NA.
Note: Last observation: 2017Q4. Numbers refer only to the Non-Financial Corporation sector.

Debt-to-financial assets, NFC sector *(%)*



Source: Eurostat, quarterly sector NA.
Note: Last observation: 2017Q4. Numbers refer only to the Non-Financial Corporation sector.

The good news is that the NFC sector is deleveraging…the bad news is that not all firms are doing so

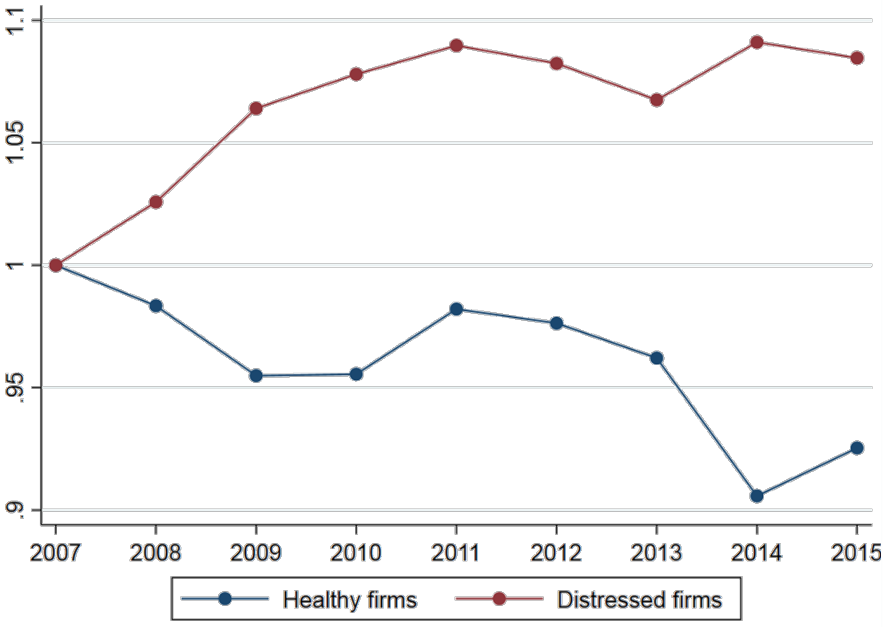
- We consider two types of firms, within each 2-digit industry:
  - "Distressed firms": Firms with 3 consecutive years of profits below interest payments, excluding high-growth firms;
  - "Healthy firms": Rest of firms in the sector.
- Data sourced from CompNet (6th vintage)
  - 6 NEA countries: CZ, HR, PL, RO, DK and SE (data cover between 30 and 75% of population of firms with employees);
  - About 50 2-digit industries of the business sector;
  - Period 2004-2015.

Descriptives
ORBIS coverage
Debt shares and types of firm

Dynamics of median leverage of distressed firms (2007-15)

In EU-6 the leverage of distressed firms has remained at high levels

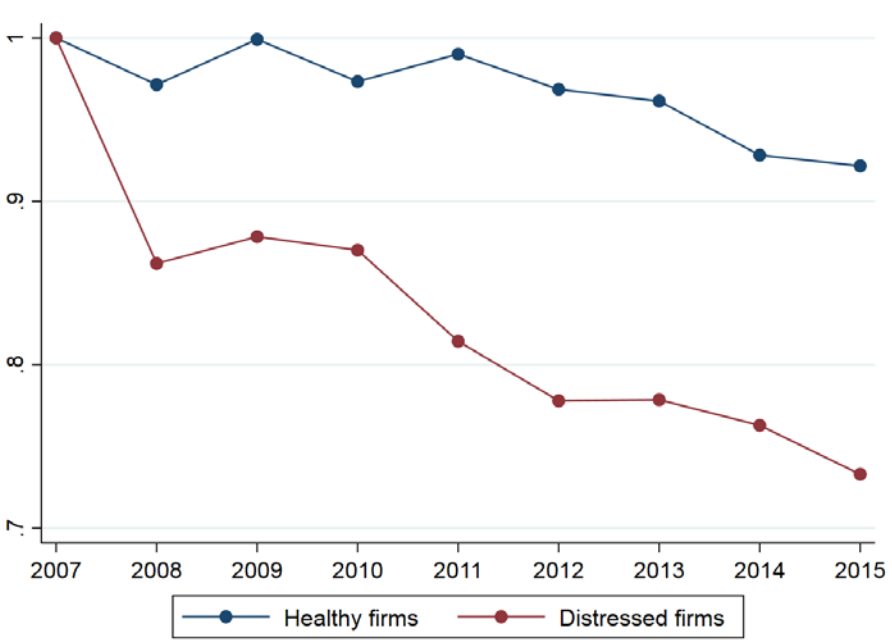
Median leverage by type of firm (2007=1)



Source: CompNet 6th vintage, full sample (20E sample for CZ and PL).
Note: Firms operating in all business sectors. Countries included are HR, CZ, and PL. 5 observations have been interpolated for HR and PL.

In EU-3 distressed firms have deleveraged faster than the healthy ones

Median leverage by type of firm (2007=1)



Source: CompNet 6th vintage, full sample .
Note: Balanced sample of countries; firms operating in all business sectors. The chart refers to Sweden and Denmark.

By sector

Analysis: What is behind the (increasing) leverage of distressed firms?

- Follow Schivardi, Sette, and Tabellini (2017): "Credit misallocation during the European financial crisis" (in Italy)
  - They argue that low capitalised banks may have been particularly adverse to absorb losses during the recession
  - The result is that **weaker banks were willing to keep lending to weak firms** that otherwise would not have serviced their debt

- Hypotheses of this chapter:
  - Countries where **banks were less capitalised** lent relatively more to distressed firms during the crisis;
  - **Weakness in other banks' institutional features**, like depth and coverage of credit information, also played a role.

Analysis: Specification and variables

Dependent variable: Annual leverage growth of different types of firms in a c,s,t

Control for: Credit demand; country, sector and year fixed effects

$$\Delta lev_{icst} = \beta_0 + \beta_1(Z_{it} * BankCapital_{ct} * crisis) + \beta_2 X_{icts} + \beta_3 \Delta VA_{cst} + \beta_5 Size_{icst} + \gamma_{c+}\gamma_s + \gamma_t + \varepsilon_{icts} + \beta_6(Z_{it} * Institution * crisis)$$

- *crisis = 1 if year > 2008;*
- *Z = 1 if firms are distressed, and 0 if healthy;*
- *Bank capital adequacy ratio: TIER1 + TIER2 capital/risk-weighted assets (St. Louis Fed);*
- *Other institutions: DB indicator of "getting credit" (legal rights of creditors and borrowers and scope and coverage of credit information), World Bank.*

– **Coefficient of main interest**: if $\beta_1 < 0$, *banks with lower capital adequacy lent more to distressed firms during the crisis relative to banks with higher capital adequacy ratios*

Has leverage of distressed firms increased more in countries with relatively less capitalised banks in the period 2009-15?

Dependent variable: Annual growth in leverage of firms	Baseline
Distressed * Bank capital * crisis	-0.012*
Distressed * Bank capital	0.013**
Bank capital * crisis	-0.012***
Bank Capital	0.010***
Distressed dummy	-0.133*
Distressed * crisis	0.120
Firm's size	-0.005
Growth in sector real VA	-0.001
Crisis dummy	0.129***
Constant	-0.081*
Observations	2,360
R-squared	0.057

Source: Own calculations based on CompNet 6th vintage, full sample (20e for CZ and PL) and St. Louis FED.
*** p<0.01, ** p<0.05, * p<0.10

- **YES!!**
- This is different from pre-crisis period, when more (less) capitalised banks lent more (less) to distressed firms:
  - There was credit expansion and no worries for solvency ratios
- Leverage growth on average across all countries is lower in distressed firms relative to healthy firms

These results are totally consistent with Schivardi et al (2017)

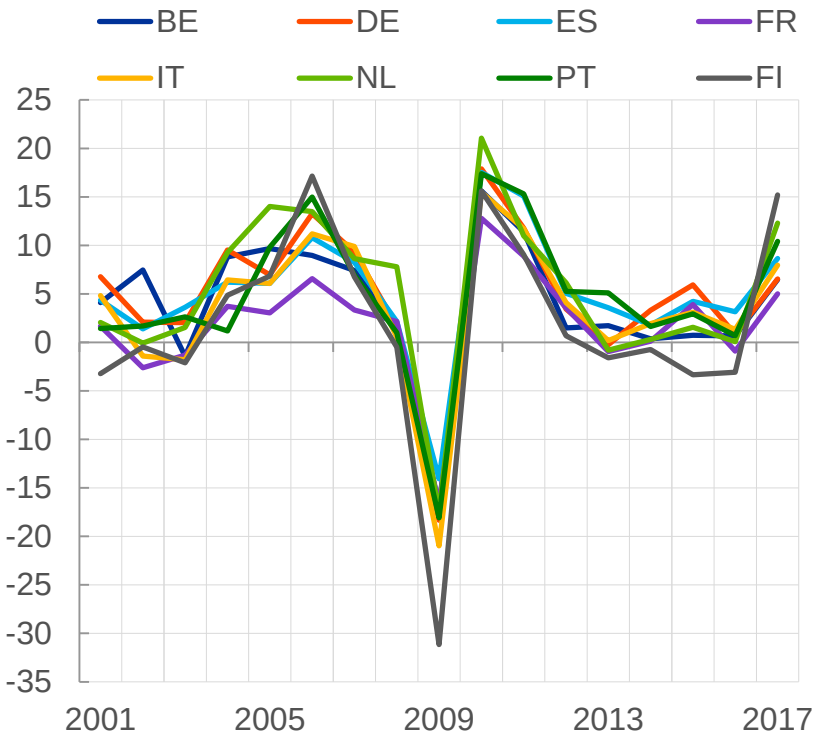
- Extension of the baseline: countries with worse **credit-related institutions** lent more to distressed firms since 2009 - here

Overview

The unprecedented drop in exports in 2009 was driven by the intensive margin of few firms

Macro picture: Aggregate export growth in selected euro area countries, 2001-2017

Annual growth rate

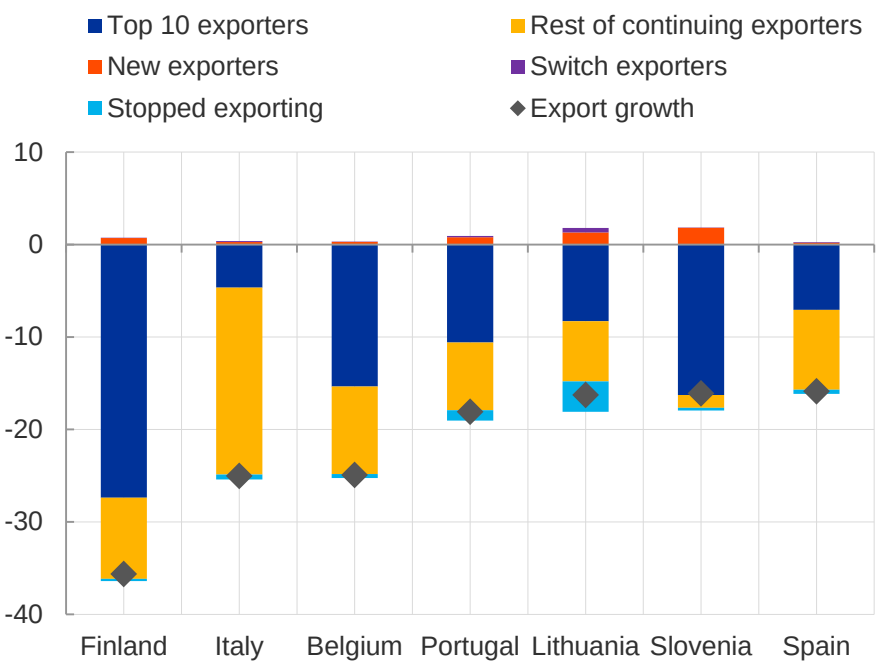


Sources: Eurostat.
Notes: Annual nominal growth of exports of goods, %.

Coverage of exports in CompNet

Decomposition of export growth by firm type, 2009

Contributions to annual growth rate

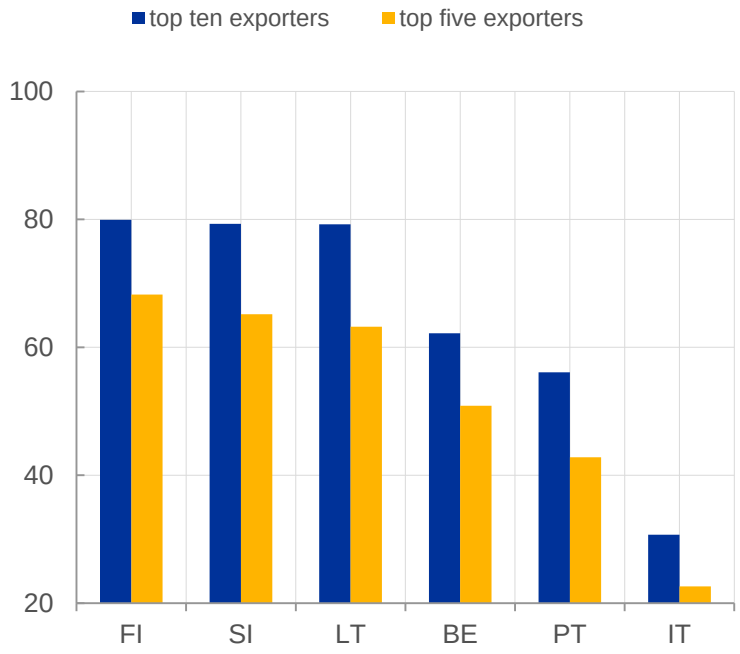


Sources: : CompNet, 4th and 5th vintage.
Notes: Continuing exporters have exported for 3 consecutive years; new exporters did not export in the previous year; switch exporters are in-out of international markets.

More generally, few firms - the top exporters - explain the bulk of aggregate export growth in most EU countries

Concentration of exports in top 5 or 10 exporters, EU countries

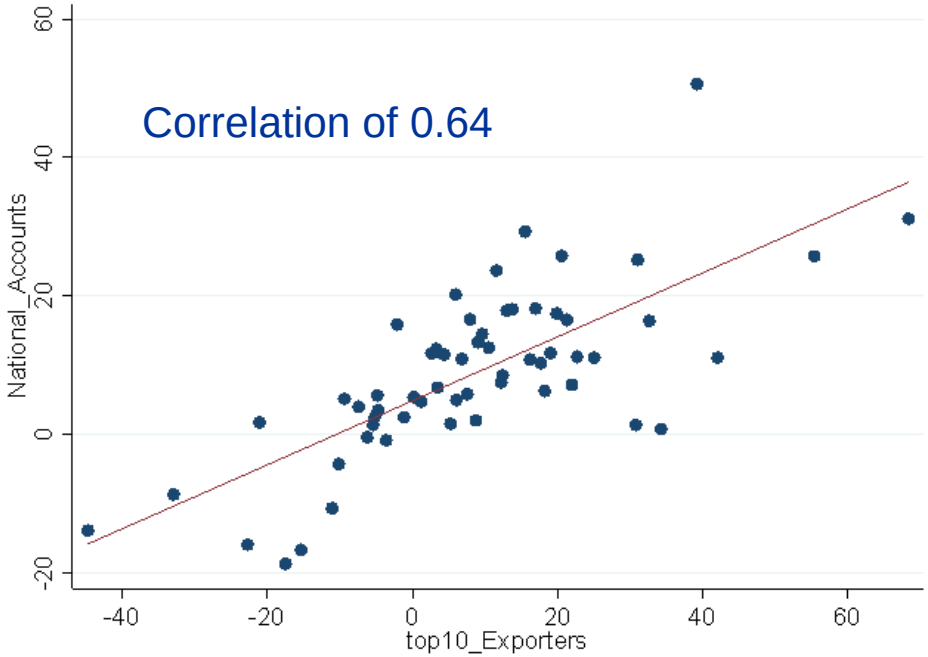
Share of total exports



Sources: CompNet, 4th and 5th vintage.
Notes: Share of total exports of top exporters, defined on the basis of their value of exports.

Correlation of export growth of top 10 exporters and aggregate export growth

Annual growth rate



Sources: CompNet, 4th and 5th vintage, and Eurostat.
Notes: Annual nominal growth of exports of goods, %.

Overview

Policy implications

- We show 3 examples being analysed in DG-E where micro data can unravel key issues that macro analysis does not capture…

…and help better understand macro developments.

- However, micro-founded analysis is still not widely used by policy institutions (although it is in the academia).

- CompNet was created to fill this gap and, most importantly, to raise awareness among policy makers of the relevance of looking not only at the average but at the tails and other moments of the distribution.

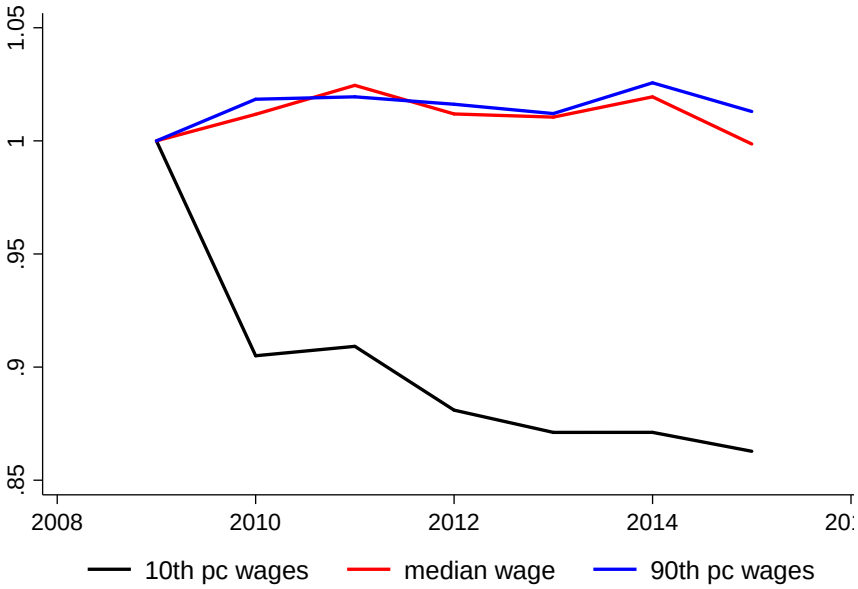
THANKS FOR THE TIME AND ATTENTION!!!!

Reserve slides

The wage distribution has changed particularly in small firms

Cumulative growth of the bottom, median and top wages paid by small firms

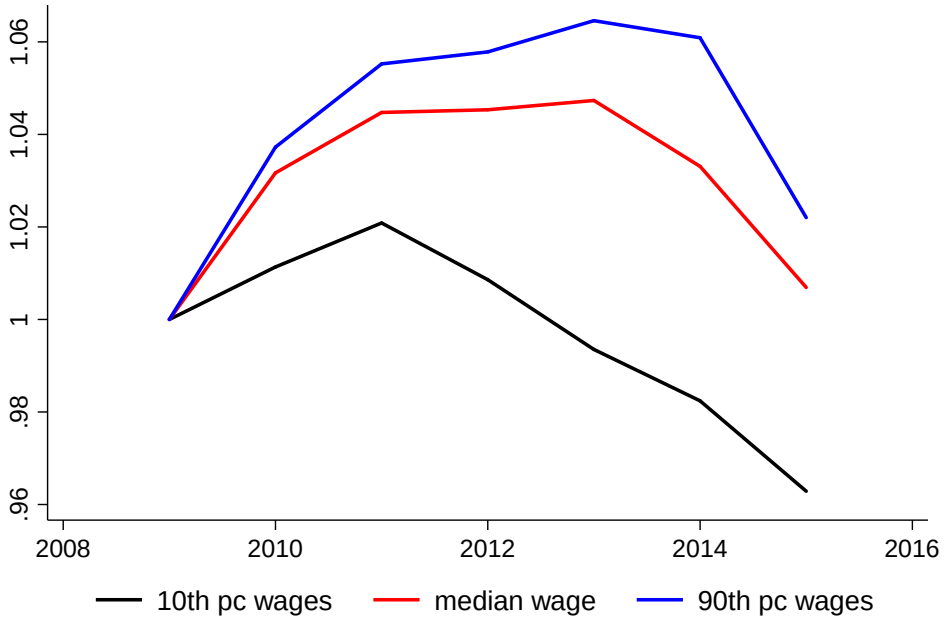
2009=1



Included countries: BE, FI, FR, IT, SP, NL, PT

Cumulative growth of the bottom, median and top wages paid by large firms

2009=1



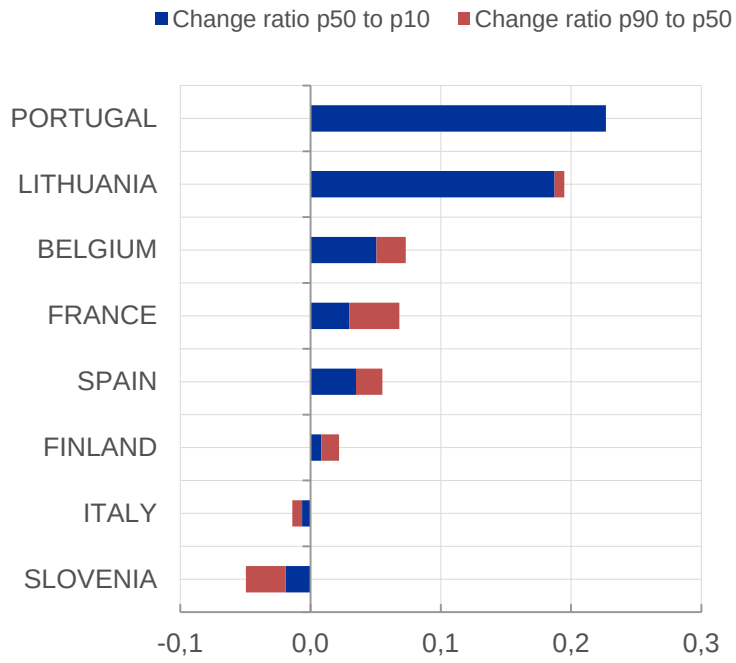
Included countries: BE, FI, FR, IT, SP, NL, PT

Sources: CompNet 6th vintage, full sample.
Notes: Small firms are firms in the lower third of the size distribution in the sector. Large firms are firm sin the top tercile of the size distribution.

Increase in inequality at the bottom of the wage distribution concentrated in low TFP firms in most countries

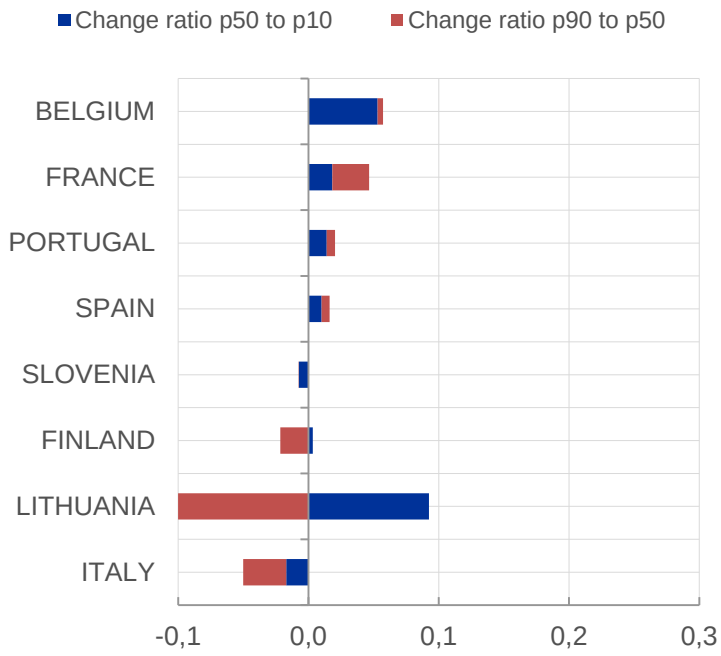
Difference between 2006 and 2014 in wage dispersion, top and bottom of wage distribution: Low TFP firms

Percentage points



Difference between 2006 and 2014 in wage dispersion, top and bottom of wage distribution: High TFP firms

Percentage points

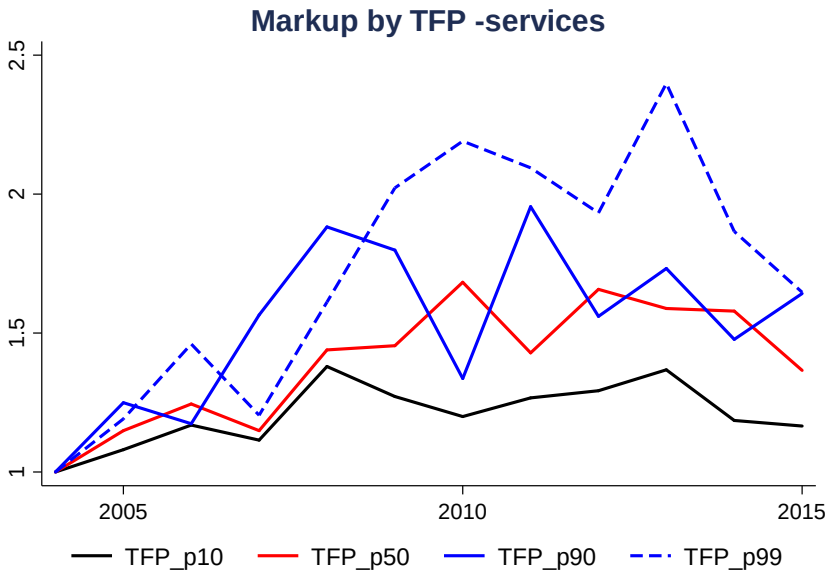


Sources: CompNet 6th vintage, full sample.
Notes: Dispersion between the median and bottom wages in a given sector and TFP tercile computed as the ratio of the wage in p50 relative to p10 (same for dispersion between top and median wages). The chart shows the change between the log of the ratio in 2006 and the log in 2014, in each country after aggregating sectors using sector turnover shares. Low (high) TFP firms are in the bottom (top) third of the sector TFP distribution.

- Two types of data:
  - Macro data: Eurostat, quarterly data; All EU countries; 1Q 2001- 4Q 2017
  - Micro-aggregated data: CompNet; 13 EU countries; 56 2-digit industries; Info on NFC with employees; 2004-2015
- Definitions of labour market slack:
  - In the macro part it is measured by Headline UR-NAIRO (from AMECO)
  - In the micro part it is measured by sector JCR minus sector-specific JCR trend; same with JDR and with the net JCR (JCR-JDR). More here
- Country groupings:
  - EU CEE countries: all 11 CEE countries (both EA and non-EA) in the macro part; 6 in the micro one (HR, CZ, HU, LT, RO, SI)
  - EA countries: all non-CEE EA countries in the macro part and 7 in the micro one (BE, FI, FR, IT, NE, PT, SP – SE added in pooled EU regressions)
- Methodology: two-way fixed effects and more dynamic common correlated effects (DCCE) estimator

Mean markup dynamics by type of firm, services

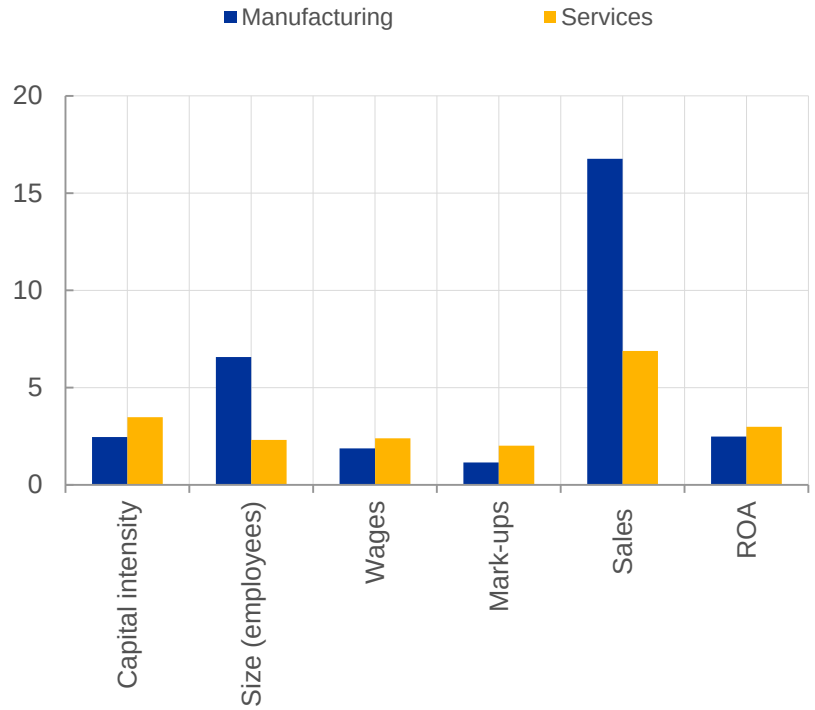
2004=1



Sources: CompNet 6th vintage, full sample.
Notes: Countries included are BE, FI, FR, IT, and NL. Mark-ups estimated at the firm level using the De Loecker-Warzynski methodology.

Premia of superstars relative to the median firm in the sector

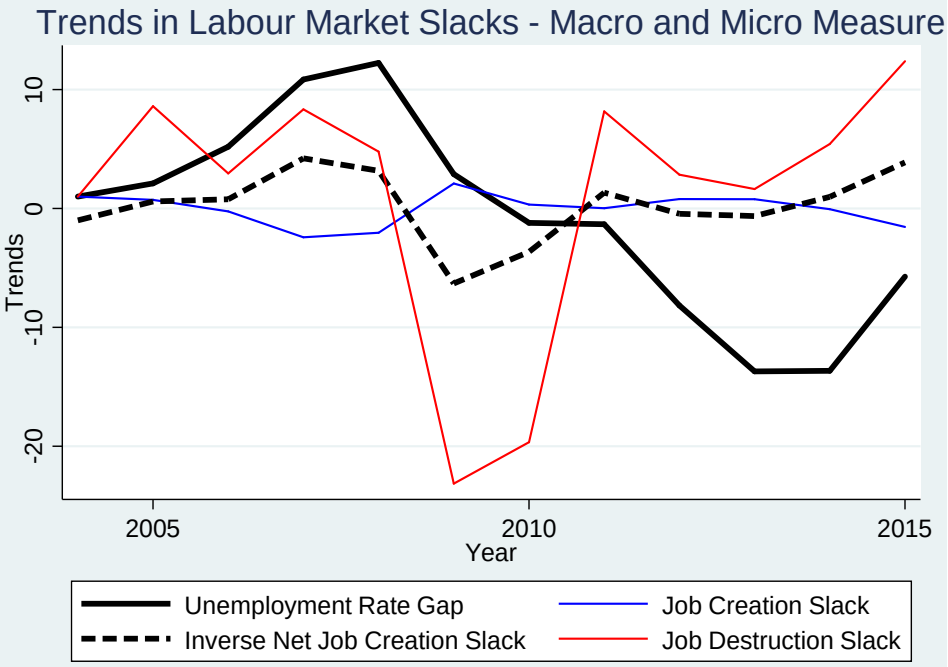
Ratio, average 2006-2015



Sources: CompNet 6th vintage, full sample.
Notes: Ratio of each characteristic of the superstars (top 1% TFP in the sector) to the median firm in the same sector.

Estimation of Phillips' curves at the sector level using CompNet

Comparison of aggregate labour market slack with CompNet-based sector measures of slack
(annual growth rates)



Source: 6th vintage of CompNet, full sample.
Notes: UR gap is measured by headline UR minus NAIRU, provided by Eurostat and AMECO. JCR and JDR slack are measured as sector jcr (jdr) minus the sector-specific trend jcr (jdr). We show the inverse of net jcr. Countries included: BE, CZ, FI,HU, IT, LT, PT,RO, SP, SE.

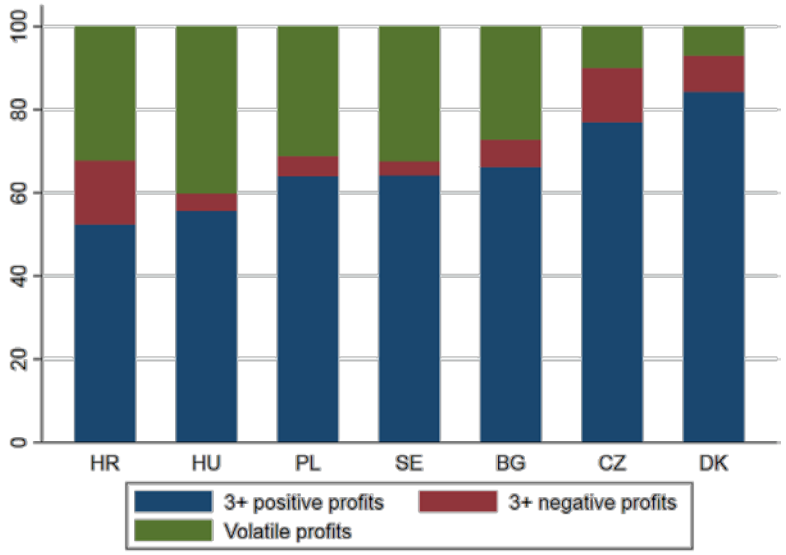
We construct from sector job flows a sector-specific indicator of LM slack

- Compute the deviation of job creation (JC), job destruction (JD) and net JC rates to the country-sector specific trend
  - We capture whether JC in a country-sector-year is above its trend, i.e. the sector LM is tight
  - Or the JD is below its trend, i.e. there is LM slack
- The inverse of the (aggregated) Net JC measure of slack correlates well with the usual ones but we gain the adjustment margin and the granularity

Which firms are indebted?

Firms with volatile or persistently negative profits hold between 15% and half of NFC debt

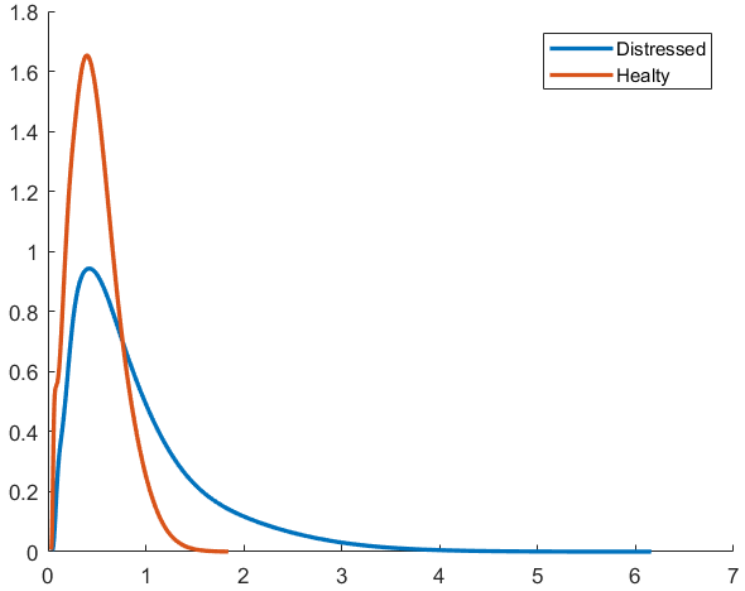
Financial debt share by type of firms (% of total)



Source: Own calculations based on BvD ORBIS data.
Note: Average over 2004-2015, but coverage varies substantially and it is poor in several countries. We only included country/years with at least 70% of all firms, dropping 8, 1, 9, 5, 5, 1 years for BG, CZ, DK, HU, PL, and SE respectively.

The leverage distribution of "distressed" firms is shifted to the right relative to that of healthy firms operating in the same sector

Leverage distribution by type of firms (ratios)



Source: Own calculations on the 6th vintage of CompNet, full sample (20 employee sample for CZ and PL).
Note: Average over 2006-2015. Leverage as financial debt / total assets. Countries included: HR, CZ, DK, LT, PL (2007-2015), RO (2007-2015), SI (2007-2015) and SE.

Descriptive statistics

				Yearly change in median leverage	
Region	**Period**	**Banks capital adequacy ratio (%)**	**Share of distressed firms (%)**	**Healthy firms**	**Distressed firms**
NEA CEE average	2004-2008	14.4	4.6	2.1	9.4
NEA CEE average	2009-2015	16.6	8.5	-0.3	1.8
EA CEE average	2004-2008	12.2	6.8	3.3	2.4
EA CEE average	2009-2015	15.4	9.3	-1.1	-0.3
Other NEA	2004-2008	11.0	3.3	-1.7	-2.7
Other NEA	2009-2015	16.6	4.7	-0.6	-0.7

Source: Own calculations based on CompNet 6th vintage, full sample (20e for CZ and PL) and St. Louis FED.
Note: Banks' capital adequacy ratio is the sum of TIER 1 and TIER 2 capital as a share of risk-weighted assets. Distressed firms refers to the average of (i) firms with 3+ years of negative profits and not fast growing; and (ii) firms with positive profits, with an interest coverage ratio > 1 for 3+ years.

NEA: ORBIS coverage vs. population and share of employment by size class

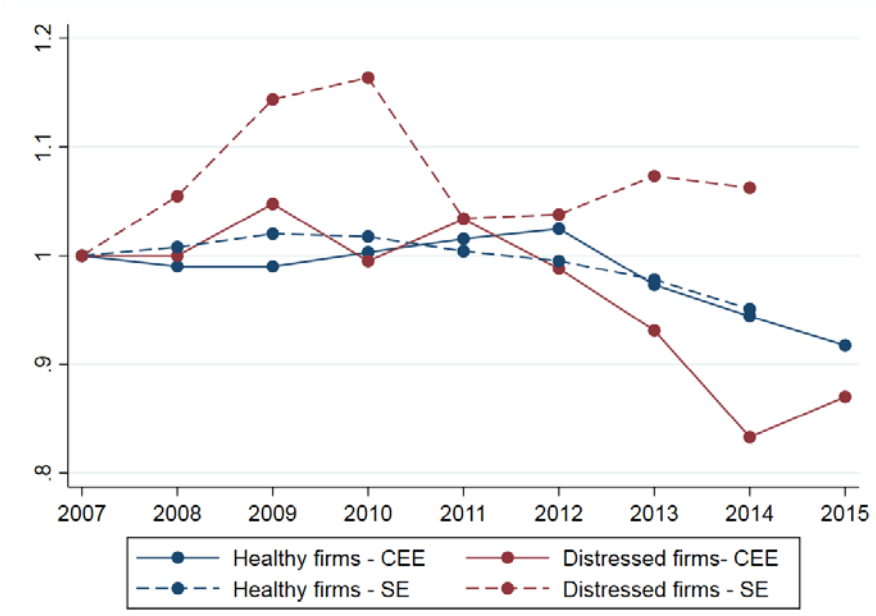
Country \ Size Classes	All firms	1 - 9 Employees	10 - 19 Employees	20 - 49 Employees	50 - 249 Employees
Bulgaria	25.8%	22.2% (31.6%)	11.0% (10.4%)	15.1% (13.7%)	24.0% (22.1%)
Croatia	23.6%	21.8% (31.4%)	10.2% (9.2%)	12.7% (10.3%)	23.0% (18.4%)
Czech Republic	5.9%	15.7% (32.9%)	6.6% (7.5%)	11.0% (10.7%)	25.4% (19.3%)
Denmark	7.6%	6.1% (21.2%)	5.6% (9.6%)	13.2% (13.5%)	35.1% (20.6%)
Hungary	5.4%	14.0% (36.4%)	8.8% (8.9%)	13.0% (9.7%)	26.0% (16.4%)
Poland	0.9%	2.7% (38.0%)	1.5% (5.7%)	17.0% (8.5%)	40.9% (18.6%)
Romania	1.0%	0.1% (23.5%)	0.1% (9.8%)	1.1% (13.4%)	21.7% (21.8%)
Sweden	3.9%	12.6% (25.9%)	7.6% (9.5%)	11.0% (12.2%)	18.8% (17.9%)
United Kingdom	0.4%	0.7% (17.4%)	0.8% (8.4%)	3.3% (11.1%)	20.0% (16.3%)

Source: BvD ORBIS and Eurostat (SBS).

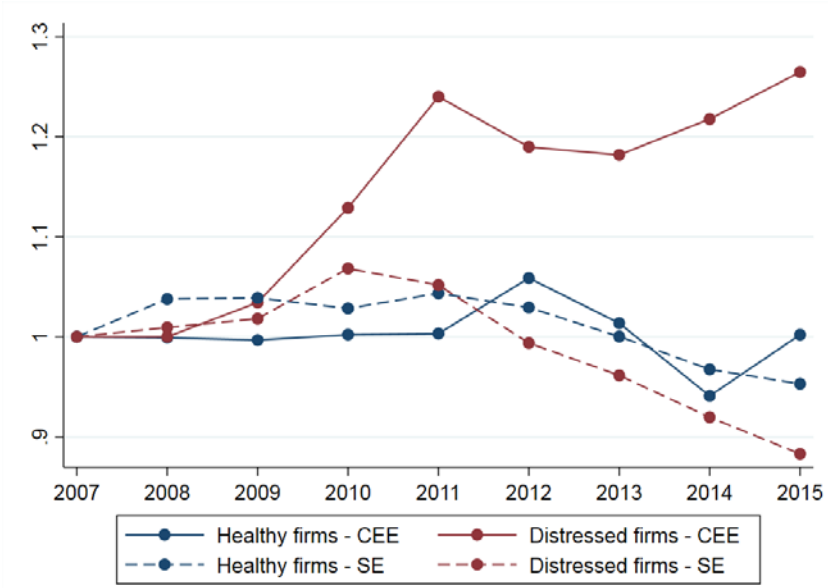
Note: The second column contains the coverage compared to Eurostat (SBS). Figures conditional on having information on profits and debt. For each cell from the third column onwards, numbers refer to the representativeness of the single size class in the ORBIS sample, while numbers in parenthesis report the Eurostat counterpart. Coverage is measured in 2012. Size class 1 refers to firms with less than 10 employees, size class 2 from 10 to 19, size class 3 from 20 to 49, size class 4 from 50 to 250, and size class 5 more than 250.

Dynamics of median leverage of non-viable firms driven by services

Median leverage by type of firm - Manufacturing *(2007=1)*



Median leverage by type of firm – Business Services *(2007=1)*



Source: CompNet 6th vintage, full sample (20E sample for CZ and PL).
Note: Firms operating in all business sectors. Includes: HR, LT, PL, SI, SE. 2 years are interpolated for PL and SI, and 1 for HR and LT (only for healthy firms in the latter case.

Extended regression: the impact of credit-related institutions

	(1)	(2)	(3)	(4)
	Baseline	DB getting credit	DB strength of leg. rights	DB depth credit information
Distressed * Bank capital * crisis	-0.012*	-0.033**	-0.012*	-0.042**
Distressed * Bank capital	0.013**	0.036**	0.022**	0.045**
Bank capital * crisis	-0.012***	-0.030***	-0.012***	-0.039***
Bank Capital	0.010***	0.026***	0.015***	0.034***
Distressed dummy	-0.133*	-0.718**	-0.722**	-0.668**
Distressed * crisis	0.120+	0.699**	0.700**	0.648**
Firm's size	-0.005	-0.006	-0.007	-0.007
Growth in sector real VA	-0.001	-0.001	-0.001	-0.001
Crisis dummy	0.129***	0.463***	0.345***	0.545***
DB getting credit * Bank capital * crisis		-0.006**		
DB getting credit * Bank capital		0.005**		
DB getting credit * crisis		-0.002***		
DB getting credit		0.003***		
DB strength of leg. rights * Bank capital * crisis			-0.075**	
DB strength of leg. rights * Bank capital			0.073**	
DB strength of leg. rights * crisis			-0.019***	
DB strength of leg. rights			0.038***	
DB depth credit information * Bank capital * crisis				-0.063**
DB depth credit information * Bank capital				0.058**
DB depth credit information * crisis				-0.028***
DB depth credit information				0.040***
Constant	-0.081*	-0.463***	-0.370***	-0.487***
Observations	2,360	2,153	2,153	2,153
R-squared	0.057	0.113	0.096	0.122

Source: Own calculations based on CompNet 6th vintage, full sample (20e for CZ and PL), St. Louis FED, and World Bank.
Note: Bank capital measures bank capital adequacy ratio, the sum of TIER 1 and TIER 2 capital as a share of risk-weighted assets. DB stands for Doing Business.
*** p<0.01, ** p<0.05, * p<0.10, + p<0.15.