



EUROPEAN CENTRAL BANK

EUROSYSTEM

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Competitiveness Division**

What drives competitiveness?

Some evidence for the euro area

**AIECE working group on
Longer-term Prospects and Structural Change
Brussels**

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Comments and contributions from P. Lopez-Garcia, E. Dorrucchi, and P. Karadeloglou The CNC data centre is gratefully acknowledged for data assistance.

1 Macro trends in competitiveness

2 What drives productivity

2.1 The role of allocative efficiency

2.2 Determinants of allocative efficiency

3 Conclusions

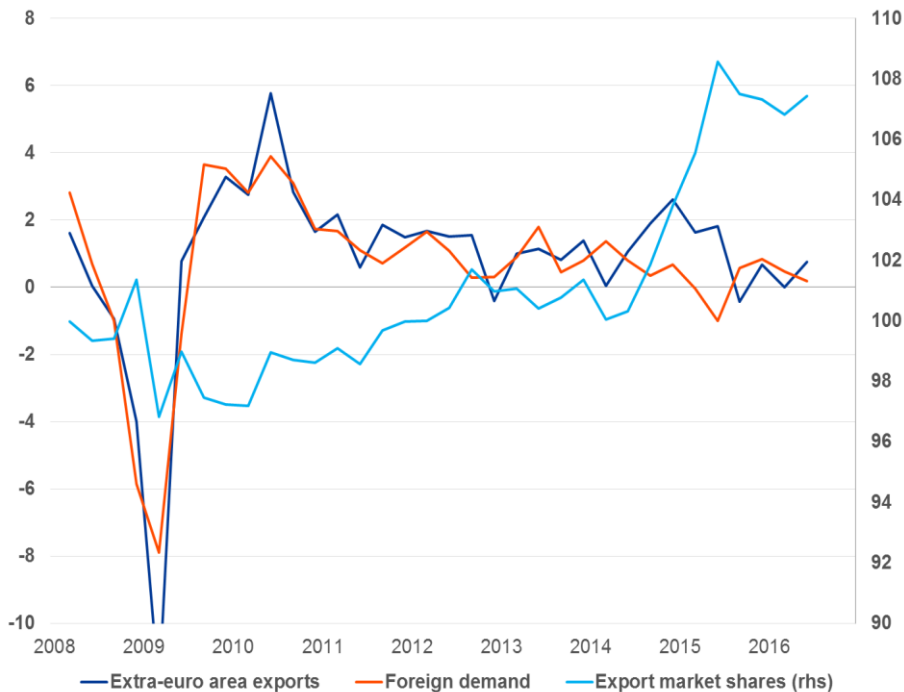
The euro area has increased export market share along with euro depreciation

The euro area has experienced a large increase in export market shares since the first half of 2015...

...which can be partly explained by the large euro depreciation since last year

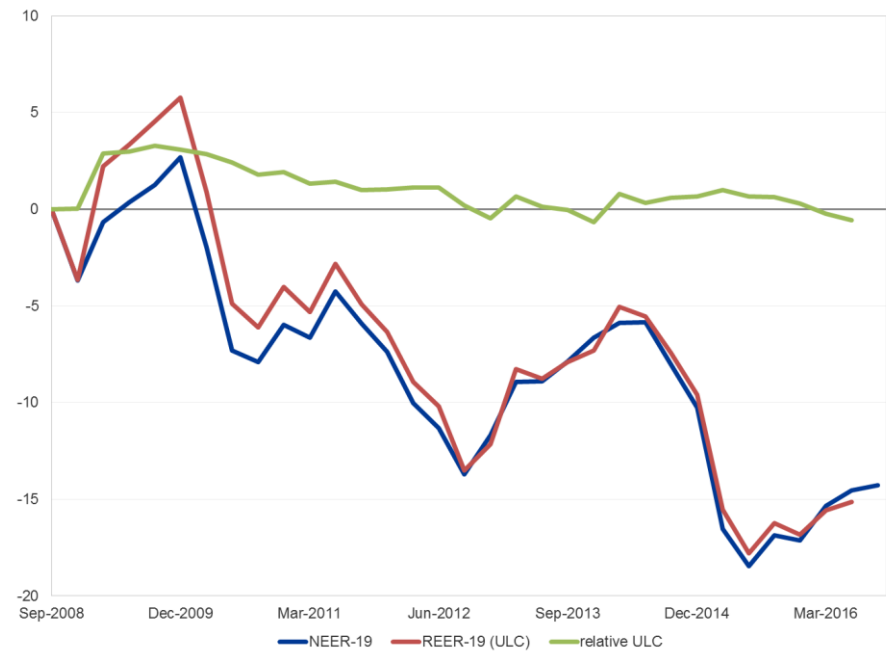
Euro area exports, foreign demand and euro area market shares

(lhs: quarterly growth rates; rhs: index. 2008Q1 = 100)



Source: ECB Staff calculations.

REER ULC based decomposition



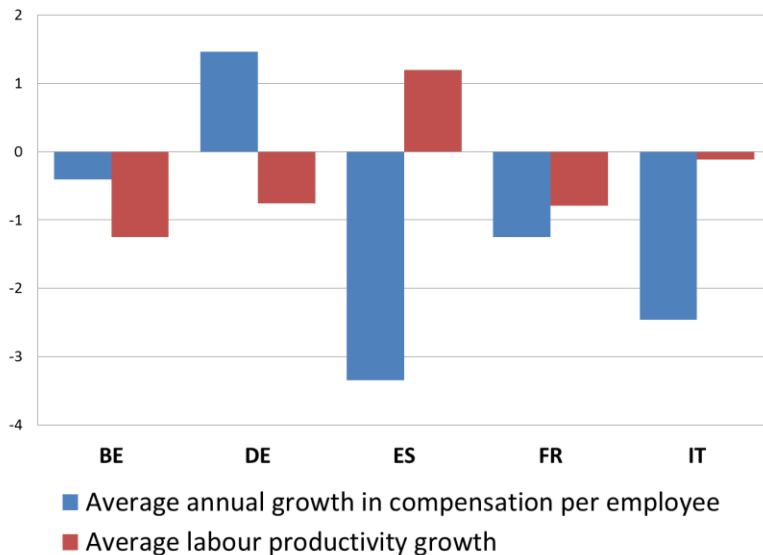
Source: ECB.

Note: Relative ULC refers to the euro area ULC relative to the EER-20 group of trading partners. An increase in EER indicates a worsening in price competitiveness.

Reducing ULC on a sustainable basis requires a boost in TFP

Substantial slow-down in wage growth and limited gains in labour productivity...

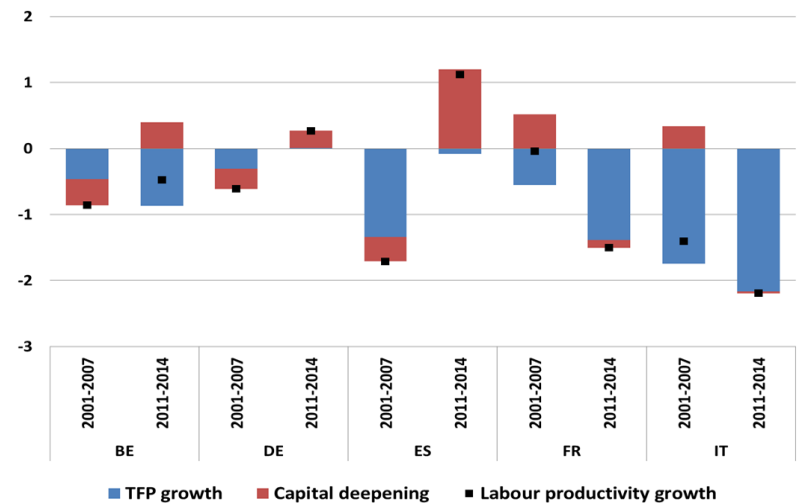
Change in average annual growth between 2001-2007 and 2011-2014 (percentage points)



Source: ECB and Labour productivity from Cette and Lecat (2016).

... mainly due to poor TFP growth performance

Contribution of TFP and capital deepening to changes in labour productivity relative to the U.S. (average annual changes)



Source: ECB Staff calculations based on data provided by Bergeaud, Cette and Lecat (2016).

Note: Capital deepening is defined as changes of capital stock per labour hour. Labour shedding can boost this component.

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Intra-sectorial TFP growth = Within-firm + across-firm TFP growth

TOTAL ECONOMY

SECTORS

WITHIN SECTORS

Aggregate TFP growth

Intra-sectorial TFP growth:

Each sector gains productivity

90%

Inter-sectorial TFP growth:

Productive sectors gain weight

10%

Within-firm TFP growth:

Firm increases its own efficiency

50%

Allocation of resources across firms:

Available resources in the sector are allocated across firms to maximize output

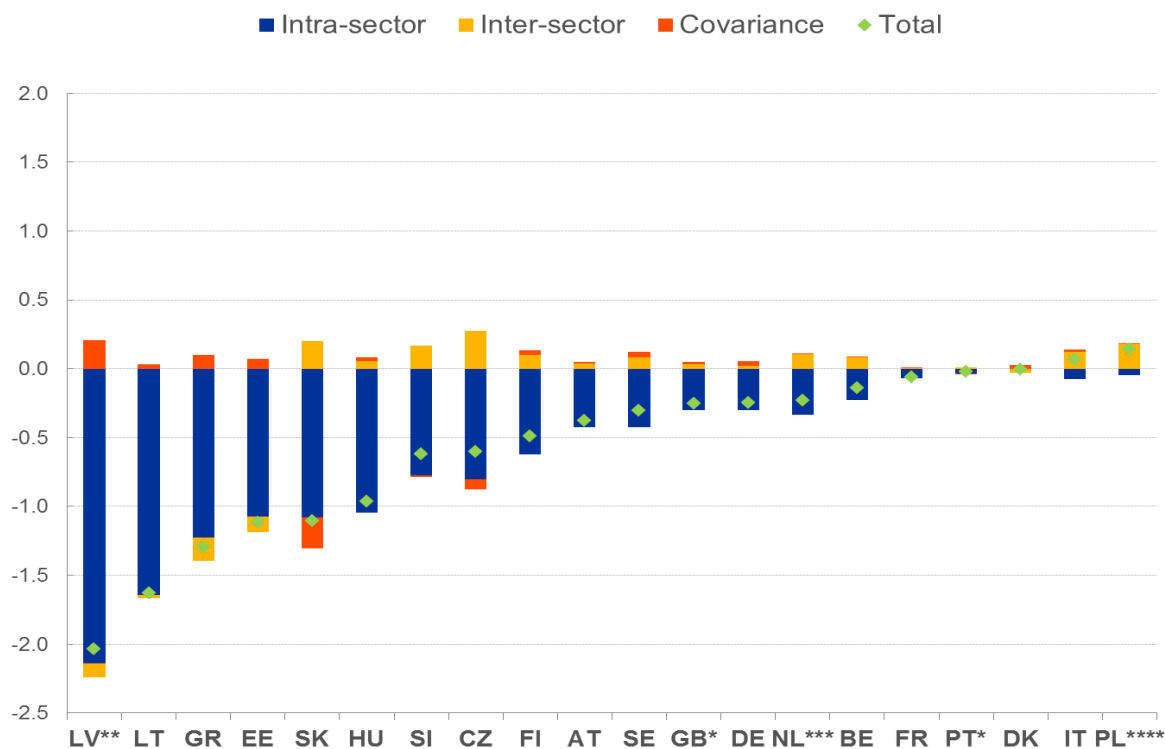
50%

Notes: The “within sectors” numbers refer to the percentage contributions to U.S. manufacturing TFP growth taken from [selected studies](#), averaged over various time spans.

Source: OECD (2003), “The Sources of Economic Growth in the OECD Countries”, OECD: Paris;
European Commission (2003): “Employment in Europe: Recent trends and prospects”

Intra-sectorial TFP growth explains a large part of the TFP growth slowdown

Change in the contribution of intra-sector TFP growth and inter-sector reallocation of resources to the change in average TFP growth
(difference in average annual growth of TFP in 2008-2014 vs. 2000-2007)

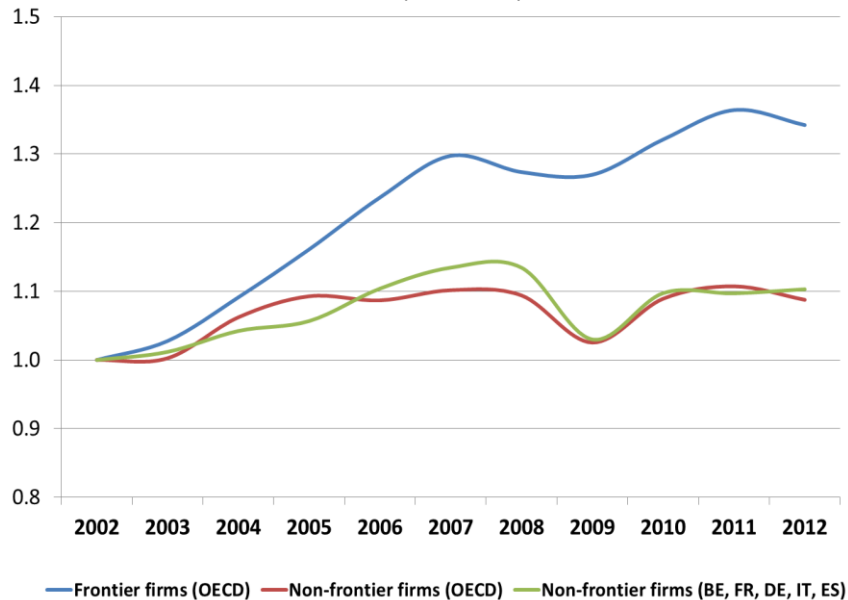


Source: Eurostat ESA2010 TP, table 3 and ECB calculations. Notes: Difference in average annual TFP growth and its contributors in the post-crisis period (2008-2014) relative to the pre-crisis one (2000-2007). TFP data for Spain, Croatia, Romania, Cyprus, Luxembourg and Ireland are missing because there are no data for consumption of fixed capital. *2014 is missing, ***2000 and 2014 are missing, ****Average 2000-2007

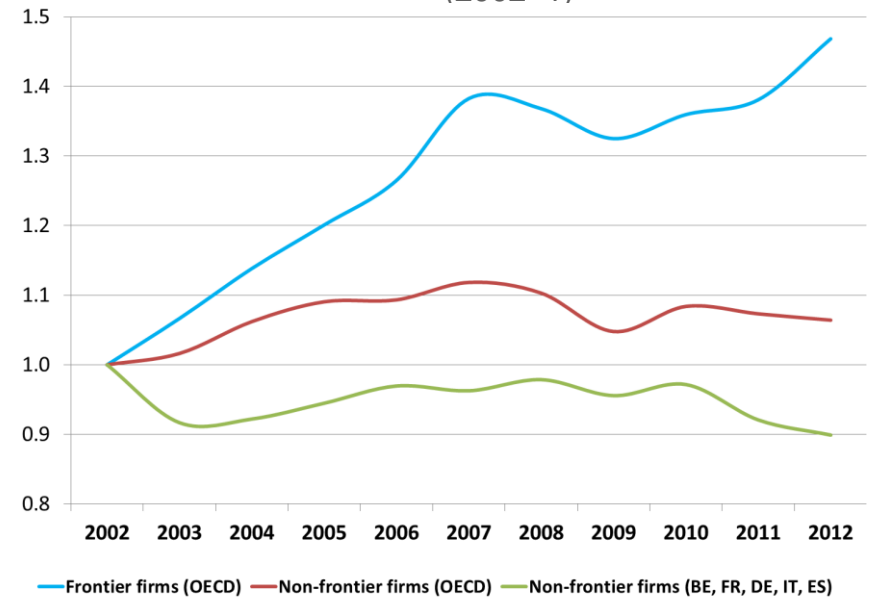
Within firm TFP growth depends on the creation and diffusion of technology

Solid growth at the global productivity frontier but for selected EA spillovers have slowed down, particularly in services

Manufacturing-Within firm labour productivity dynamics (2002=1)



Service-Within firm labour productivity dynamics (2002=1)



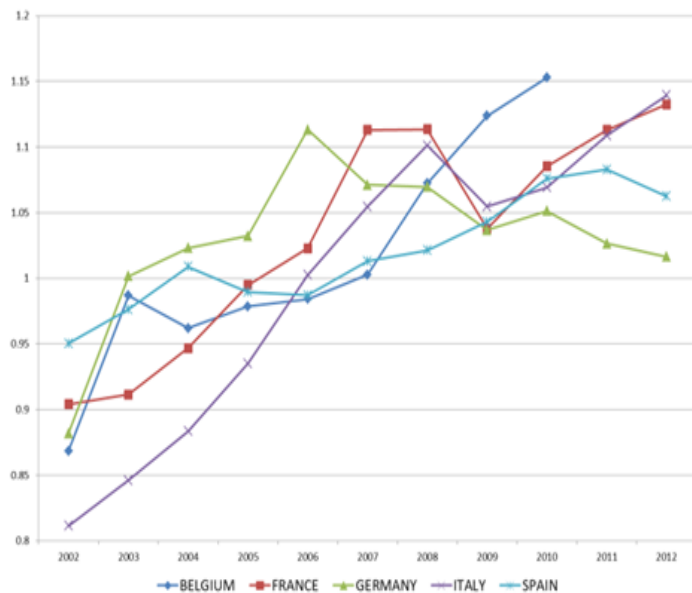
Source: Source: Andrews, Criscuolo and Gal (2015). OECD 2015: "The future of productivity" and ECB Staff calculations based on CompNet

Notes: The chart refers to the service sector. "Frontier firms" corresponds to the average labour productivity of the 100 globally most productive firms in each 2-digit sector in ORBIS. "Non-frontier firms" is the average of all other firms.

But overall in EA countries resources have not been efficiently allocated within sectors

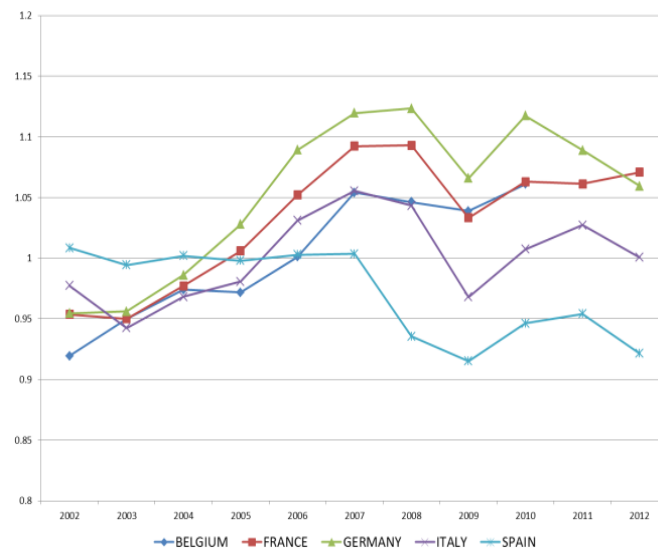
Within-sector capital misallocation has been trending upwards...

Capital misallocation
(Weighted average dispersion in MRPK)



...while trends in labour misallocation have been flatter

Labour misallocation
(Weighted average dispersion in MRPL)



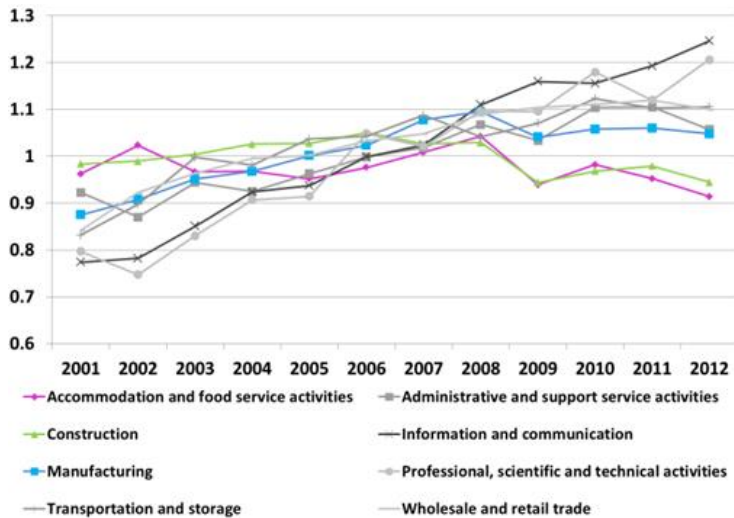
Trends in selected CEE

Source: Gamberoni, Giordano and Lopez-Garcia (2016) based on CompNet data

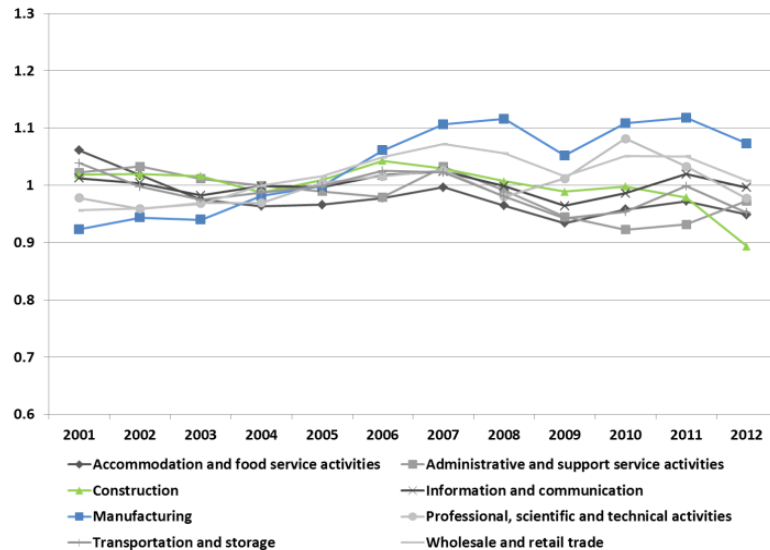
Note: Weighted averages of the sector level Hsieh and Klenow (2009) indicator, where the weights are the country-specific time-varying sectorial value added shares. The value added series for Belgium ends in 2010. The Hsieh and Klenow (2009) indicator is calculated based on samples of firms with more than 20 employees.

And K misallocation has been driven by the service sectors

Dispersion in MRPK by sector
(unweighted averages across countries)



Dispersion in MRPL by sector
(unweighted averages across countries)



Source: Authors' calculations based on CompNet data

Note: "All other services" include transportation and storage, administrative and support service activities, information and communication, professional scientific and technical activities, wholesale and retail trade.

Averages across five countries (BE, ES, FR, DE, IT).

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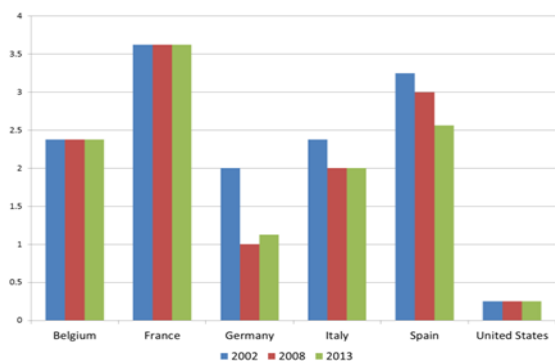
Structural rigidities are generally perceived to affect the allocation of resources

Product market regulation (PMR): Sheltering firms from competition might imply that low productivity firms will keep operating instead of downsizing or exiting (Restuccia and Rogerson 2013; Andrews and Cingano 2014)

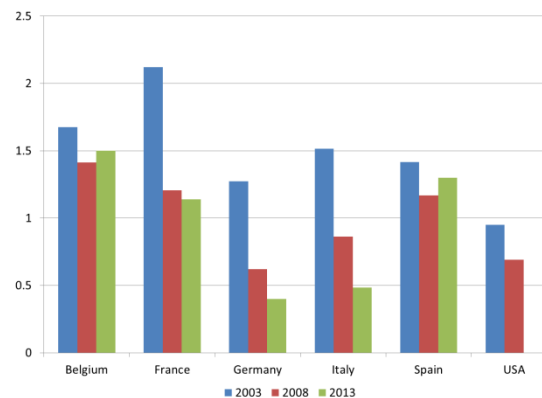
Labour market regulation (EPL): Stringent labour market regulation affect productive firms if they need to scale up or down quickly after a demand or technological shock (Haltiwanger, Scarpetta and Schweizer 2014; Bartelsman, Gautier and de Wind 2011)

*But the restrictiveness of PRM and EPL have generally declined over time
Therefore, structural rigidities cannot explain the entire trends in misallocation*

Employment Protection Legislation



Product Market Regulations- legal barrier to entry sub-component



Source: Authors' calculations based on OECD

Additional supply side factors

- *Crisis:* Preliminary evidence shows that misallocation has decreased - albeit temporarily - towards the end of the Great Recession
- *Financial constraints:* Frictions might prevent productive firms from obtaining the resources needed to expand (Gilchrist, Sim and Zakrajsek 2013).

Demand side factors

- *Realized demand:* Control for boom and boost in the business cycle
- *Demand uncertainty:* Uncertain prospects on a firm's activity can lead to delaying investment projects, possibly to a different extent across firms due to risk aversion (Bloom et al, 2014)

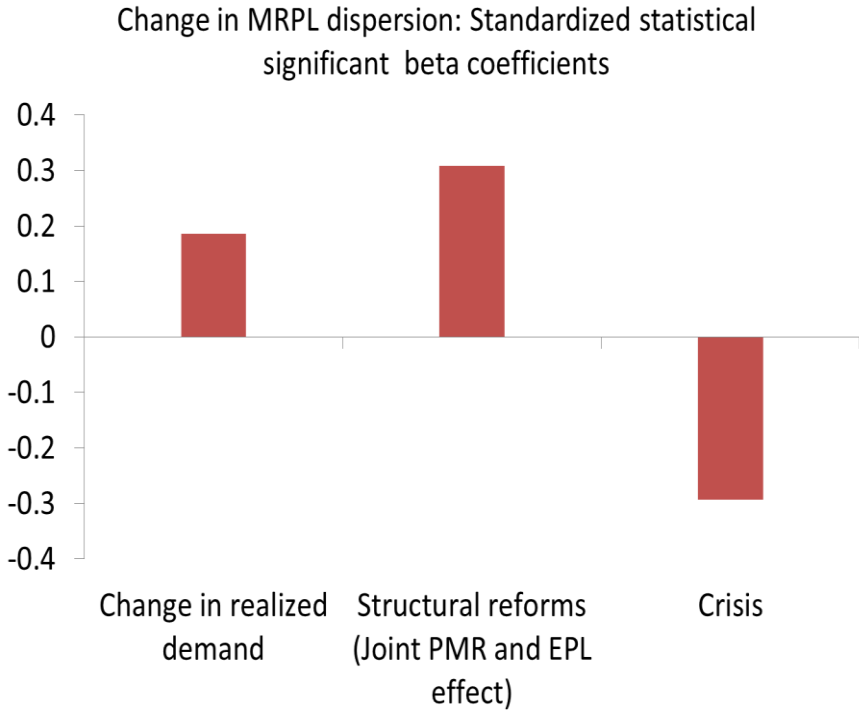
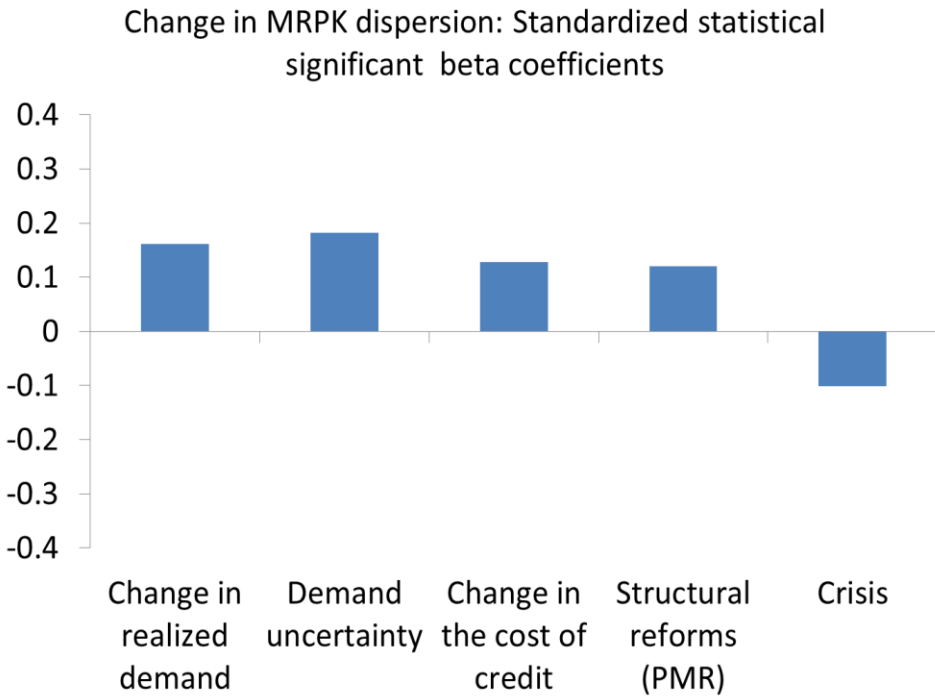
[Cost of credit](#)

[Credit standards](#)

[Demand uncertainty](#)

Supply side factors and the cost of credit are strongly associated with K misallocation

Structural rigidities matter more for L misallocation



Source: [Gamberoni, Giordano and Lopez-Garcia \(2016\)](#) based on CompNet data.

Notes: The charts report only the statistical significant coefficients.

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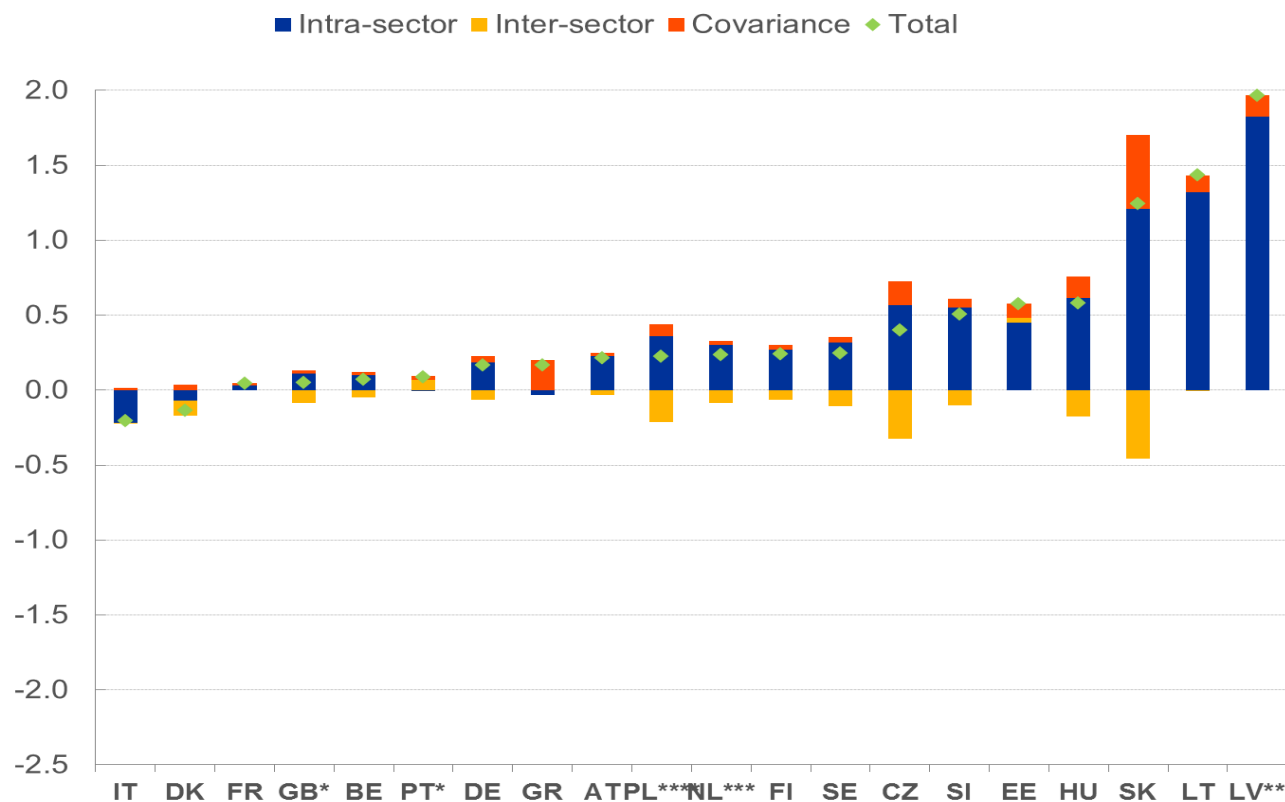
3 **Conclusions**

- The TFP performance of euro-area countries has been poor in recent years
- With-sector TFP growth is the driving force behind this performance. It depends in turn on the ability of firms to innovate and absorb new technology and on the extent to which resources within a sector are allocated towards most efficient producers.
- Concerning the latter, within-sector capital misallocation has risen in most EA countries since 2002 (against flatter dynamics for labour)
 - Large rises were recorded in services
 - There is some evidence of “cleansing” in 2009, yet temporary
 - Using standard panel regression analysis, we find that demand uncertainty is positively correlated with capital misallocation dynamics, but also rises in the cost of credit are associated with higher growth in misallocation; conversely, the reduction in PMR contributed to dampen these dynamics (and EPL for labour)

Reserve slides

Intra-sectorial TFP growth explains a large part of the TFP growth

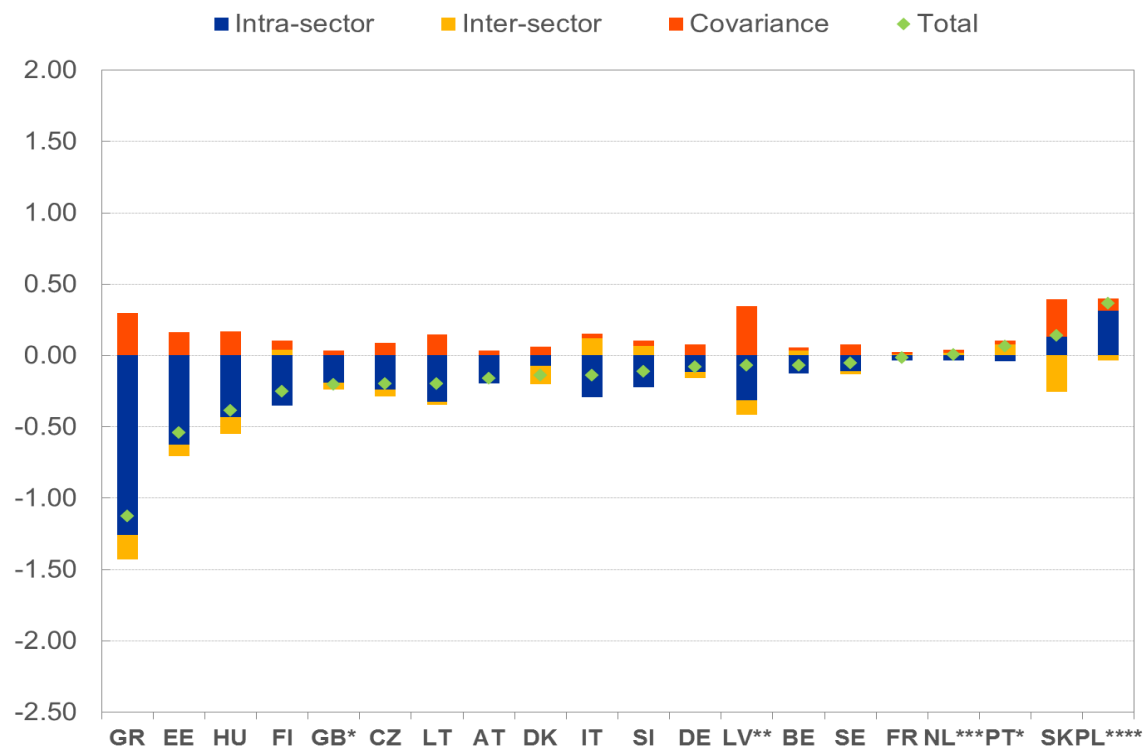
Change in the contribution of intra-sector TFP growth and inter-sector reallocation of resources to the change in average TFP growth
(Average annual growth of TFP in 2000-2007)



Source: Eurostat ESA2010 TP, table 3 and ECB calculations. Notes: Difference in average annual TFP growth and its contributors in the post-crisis period (2008-2014) relative to the pre-crisis one (2000-2007). TFP data for Spain, Croatia, Romania, Cyprus, Luxembourg and Ireland are missing because there are no data for consumption of fixed capital. *2014 is missing, ***2000 and 2014 are missing,

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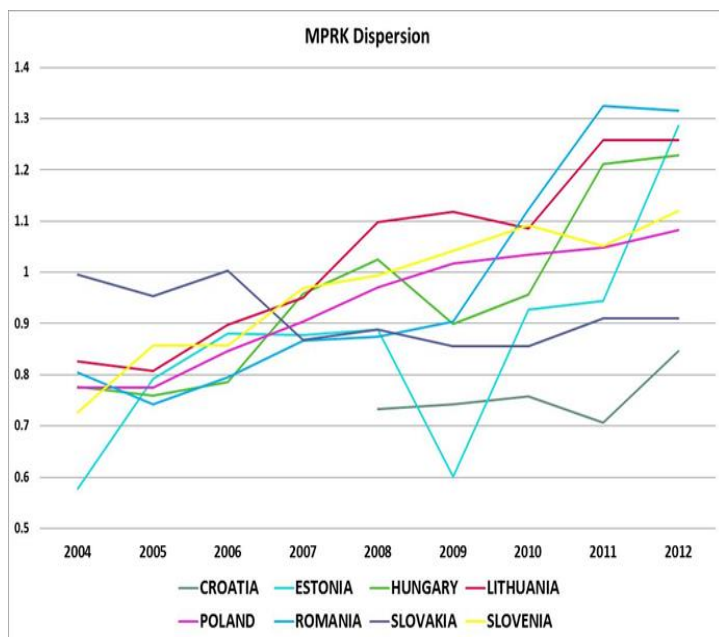


Source: Eurostat ESA2010 TP, table 3 and ECB calculations. Notes: Difference in average annual TFP growth and its contributors in the post-crisis period (2008-2014) relative to the pre-crisis one (2000-2007). TFP data for Spain, Croatia, Romania, Cyprus, Luxembourg and Ireland are missing because there are no data for consumption of fixed capital. *2014 is missing, ***2000 and 2014 are missing,

Similar trends are also observed in CEE economies

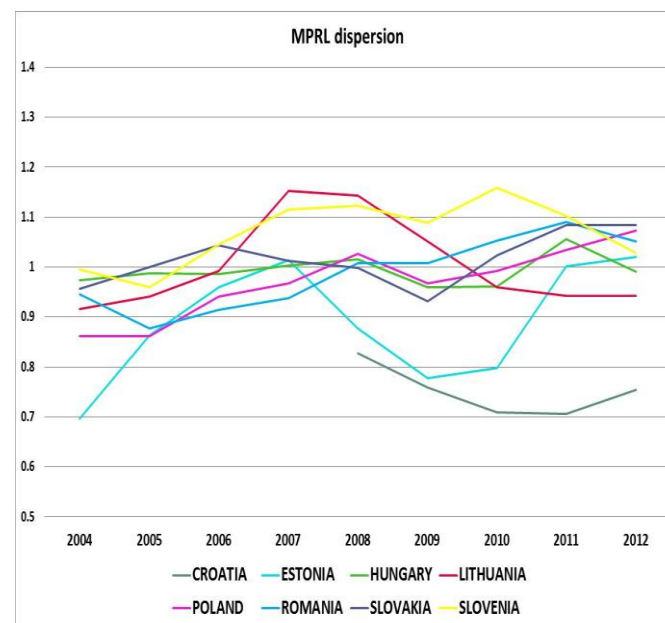
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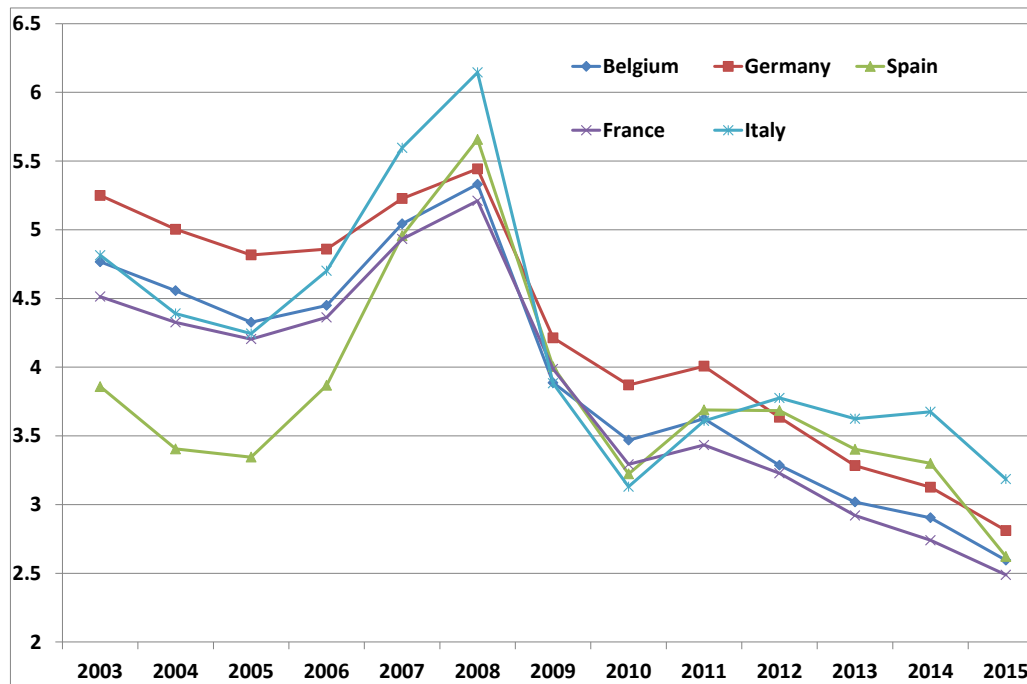
Source: Gamberoni, Gartner, Giordano and Lopez-Garcia (2016)

Note: Indicator of input misallocation proposed by Hsieh and Klenow (2009). Weighted averages, where the weights are the country-specific time-varying sectorial value added shares. Data for the Czech Republic are available starting in 2008, for Poland in 2005, while data for Lithuania and Slovakia end in 2011. Data for Poland and Slovakia are based on samples of firms with more than 20 employees.

The cost of credits spiked at the onset of the crisis

In the run-up to the global financial crisis the cost of credit increased in all countries and hiked again in Italy and in Spain in particular at the onset of the sovereign debt crisis

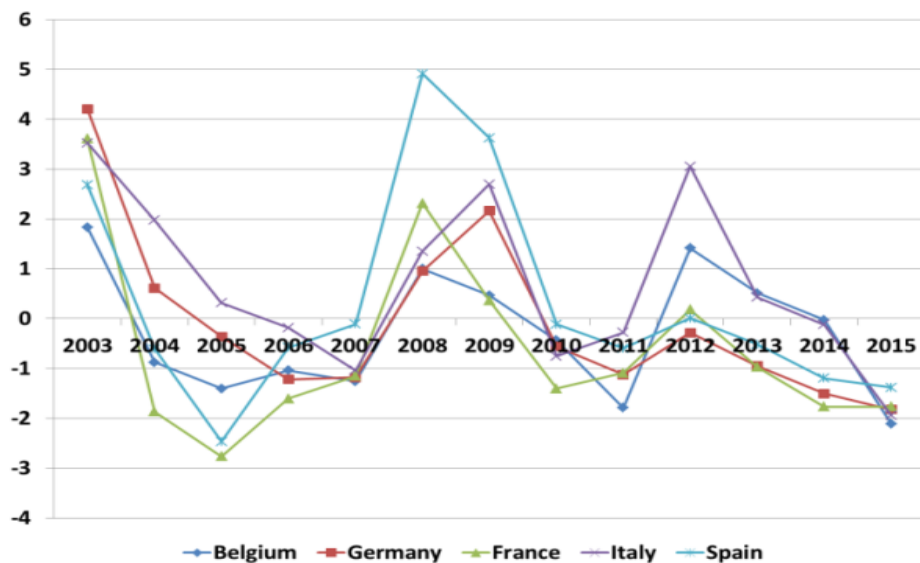
Average cost of bank credit to firms
(percentage values)



Source: ECB.

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Evolution of credit standards (principal component of standards related to loan size, non-interest costs, collateral and maturity requirements)



Source: Gamberoni, Giordano, and Lopez-Garcia (2016) based on ECB Bank Lending Survey data.

Notes: The survey question considered is the following: “Over the past three months, how have your bank’s terms and conditions for new loans or credit lines to enterprises changed (in terms of loan size, etc.)?”

The replies are aggregated in a **net percentage**, which is defined as the difference between the sum of banks responding “tightened considerably” and “tightened somewhat”, and the sum of banks responding “eased somewhat” and “eased considerably”. The **diffusion index** is defined as the net percentage weighted according to the intensity of the response, giving lenders who have answered “considerably” a weight twice as high (score of 1) as lenders having answered “somewhat” (score of 0.5). The mean is calculated by attributing the values 1 to 5 to the first possible answer and consequently for the others.

A rise in the diffusion index plotted indicates a tightening of the standards related to loan size.

Demand uncertainty in most sectors and countries peaked in 2008-2009

Demand uncertainty by sector

