EUROPEAN CENTRAL BANK

EUROSYSTEM

ECB-UNRESTRICTED

"GDP per Capita in Advanced Countries over the 20th Century": Relevance for current debate on convergence in/of the euro area

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European Central Bank

Conference "Balanced and Sustainable Growth – Operationalising the G20 Framework"

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OUTLINE

High relevance of Bergeaud-Cette-Lecat 2015 (BCL) for current debate on growth and convergence in/of the euro area:

1. *Sustainable real convergence (SRC) matters for EMU*
2. *SRC in the euro area matters for SRC of the euro area*
3. *Long-term perspective matters for euro area SRC*
4. *Institutional convergence matters for SRC*

1. Sustainable real convergence *does* matter for the euro area

Sustainable real convergence (SRC):

- Catching up of real GDP per capita of lower income countries towards higher income countries on a durable basis (= β convergence)

Why does EMU need SRC in the euro area?

1. SRC supports economic/social cohesion in the absence of a federal state

2. SRC implies sustainable inflation differentials across euro area countries, which:

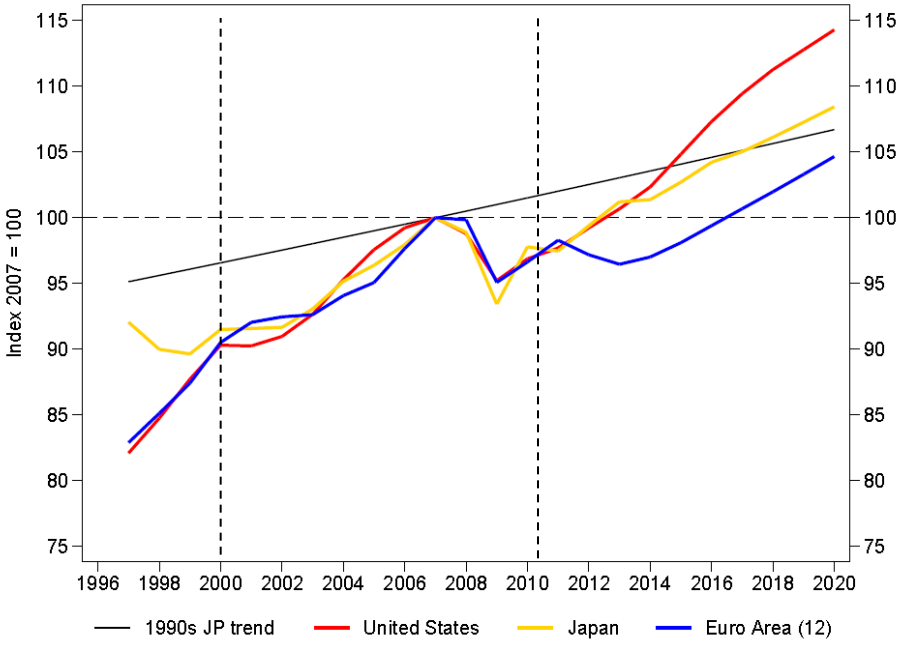
   → are part of the physiology of economic development
   → do not hamper competitiveness
   → do not fuel, via lower real interest rates, boom-bust cycles
   → do not complicate the conduct of monetary policy

2. SRC *in* the euro area matters for SRC *of* the euro area

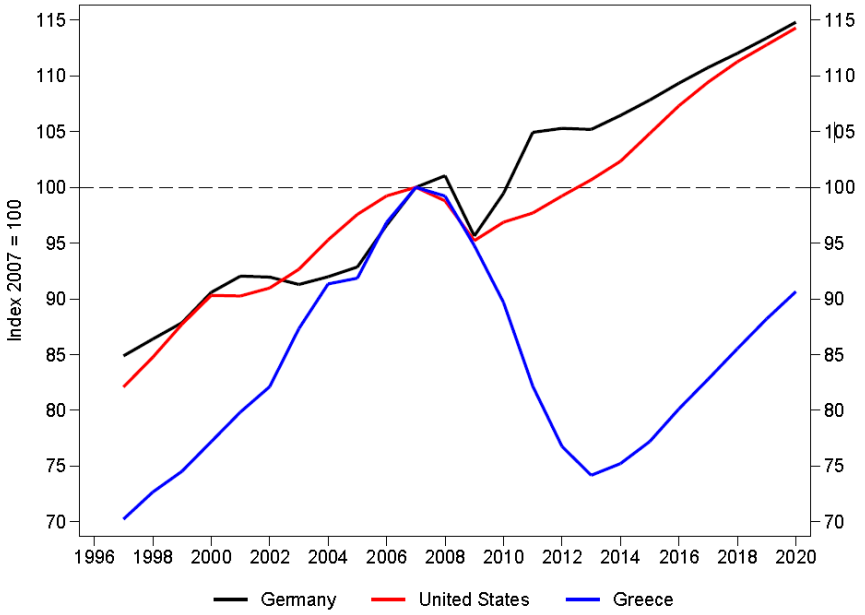
Real GDP per capita

(index: 2007=100)

US, euro area, Japan



US, Germany, Greece



Source: IMF WEO, April 2015.

3. *Long-term* perspective matters for euro area SRC

The conventional short-term view on real convergence in the euro area:

⟶ Euro adoption ⟶ Drop in real interest rates

⟶ Unsustainable real convergence ⟶ Crisis, divergence

... However:

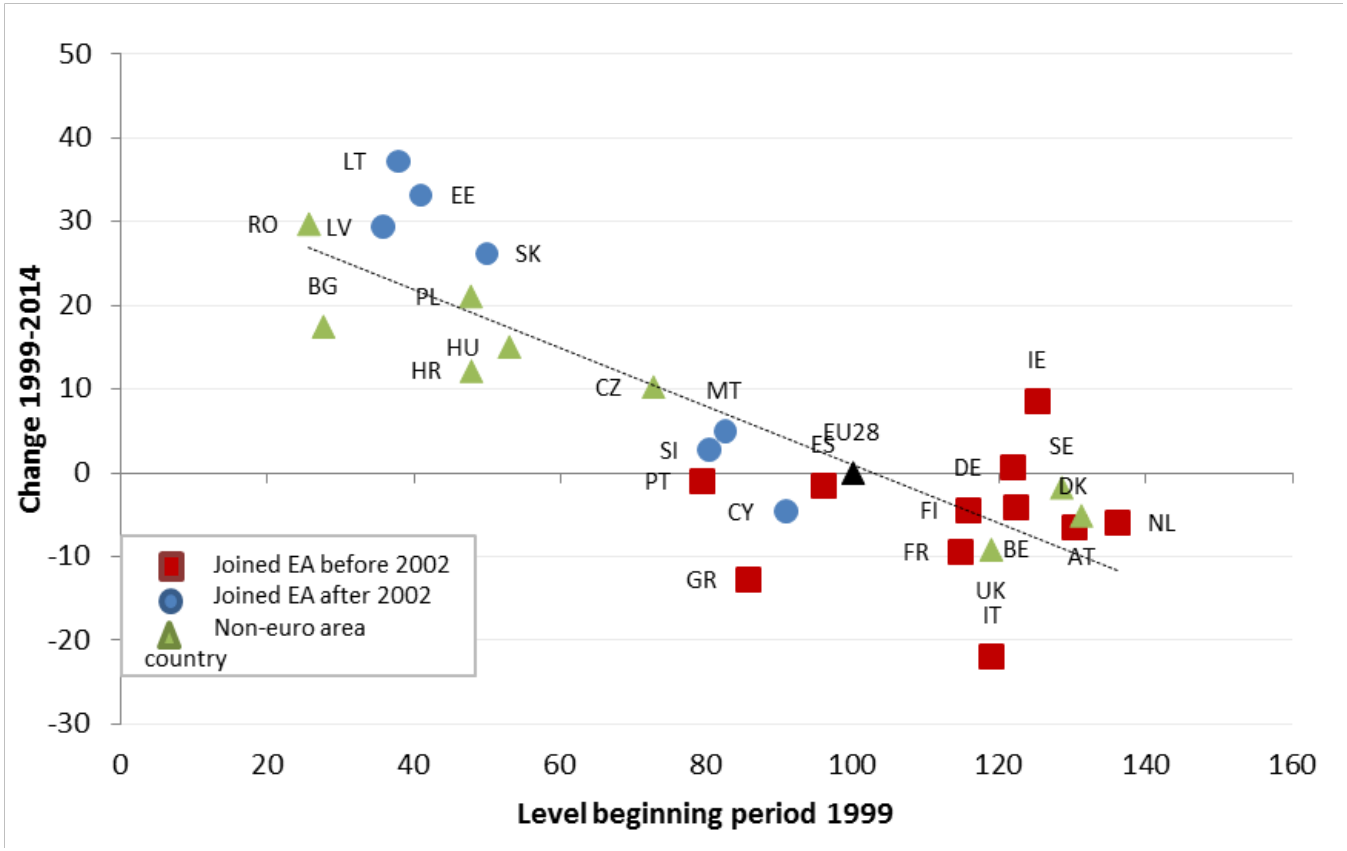
- Certain countries that experienced a strong financial cycle remain on a catching-up trend despite the boom-bust (Ireland, Baltics)
- Other countries diverged despite no strong financial cycle (Italy)

… Need for a longer-term perspective "à la BGL" on euro area convergence

Real convergence in most EU-CEE countries, but *not* in the countries that joined the euro area before 2002

Changes in GDP per capita relative to EU28 average, 1999-2014

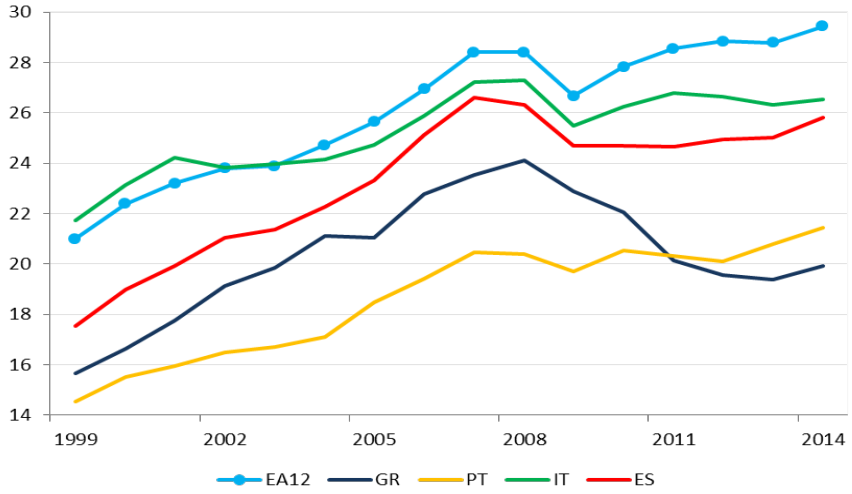
(Levels in purchasing parity standards (PPS); EU28=100)



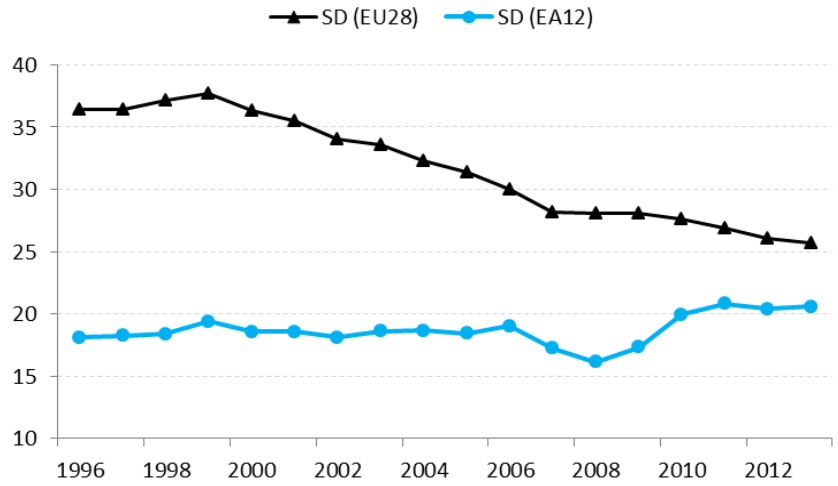
Notes: The horizontal axis shows the GDP per capita relative levels in 1999 and the vertical axis their cumulative change from 1999 to 2014 relative to the EU average. Luxembourg is excluded.

Euro adoption did *not* act as catalyst for real convergence in the countries that joined the euro area before 2002

***β-convergence perspective*:**
Real GDP per capita in the EA12
(GDP per capita in PPS)



***σ-convergence perspective*:**
Standard deviation (SD) of GDP per capita in the EA12 and the EU
(GDP per capita in PPS)

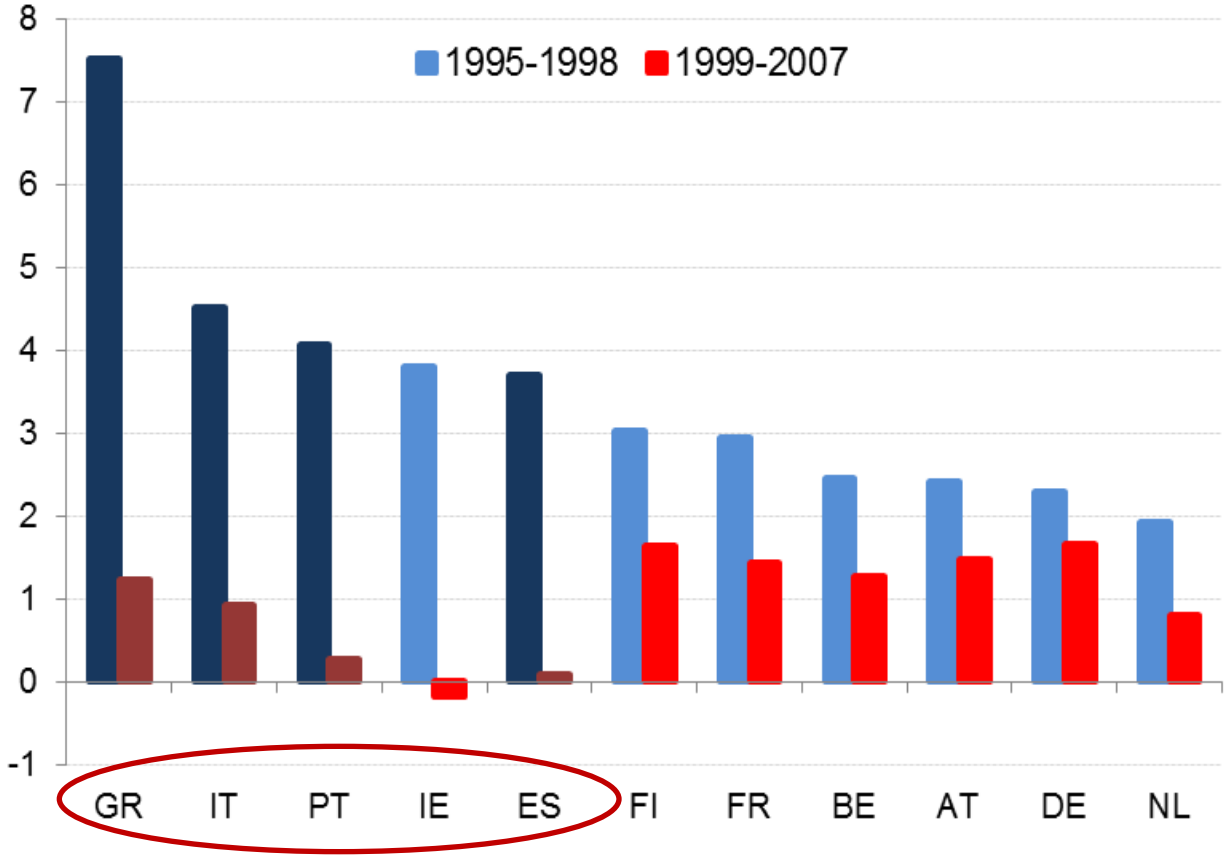


Notes:
(1) EA12: Euro area countries that adopted the euro before 2002.

The short-run argument: The drop in real interest rates in certain EA countries in pre-crisis years was unprecedented…

Real three-month money market rates in EA12

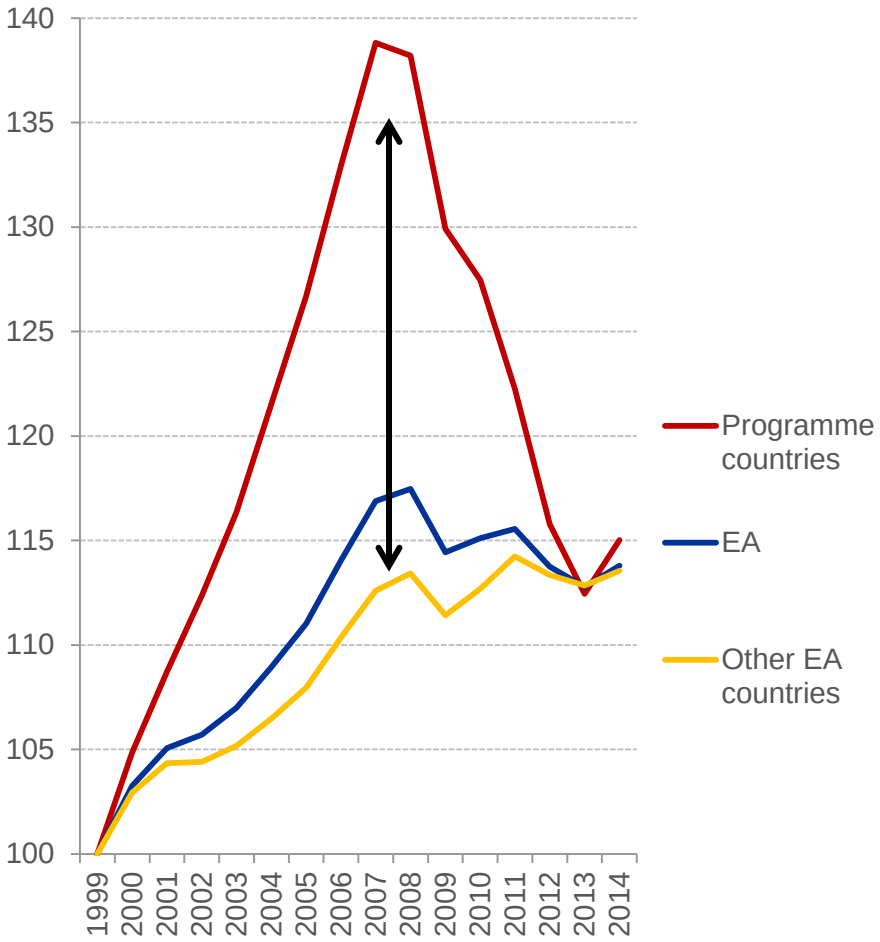
(in percentage points)



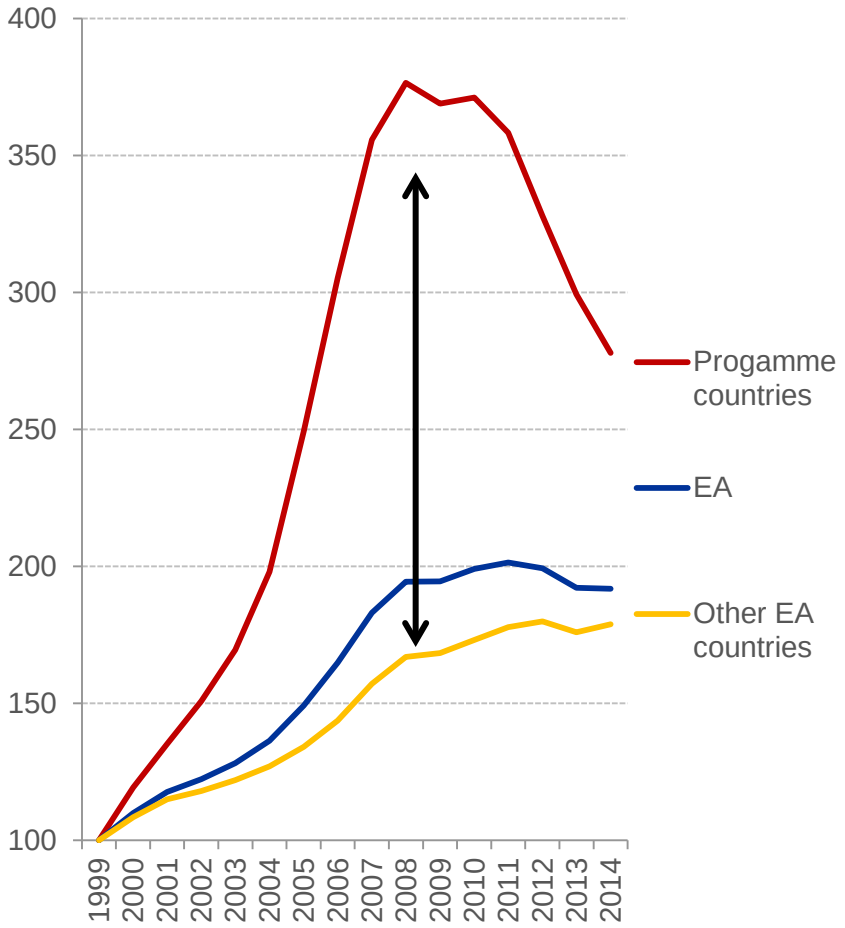
Source: EC, ECB

… Overly optimistic expectations contributed to a very pronounced financial cycle in EA programme countries…

Domestic demand (1999=100)



Credit to the private sector (1999=100)

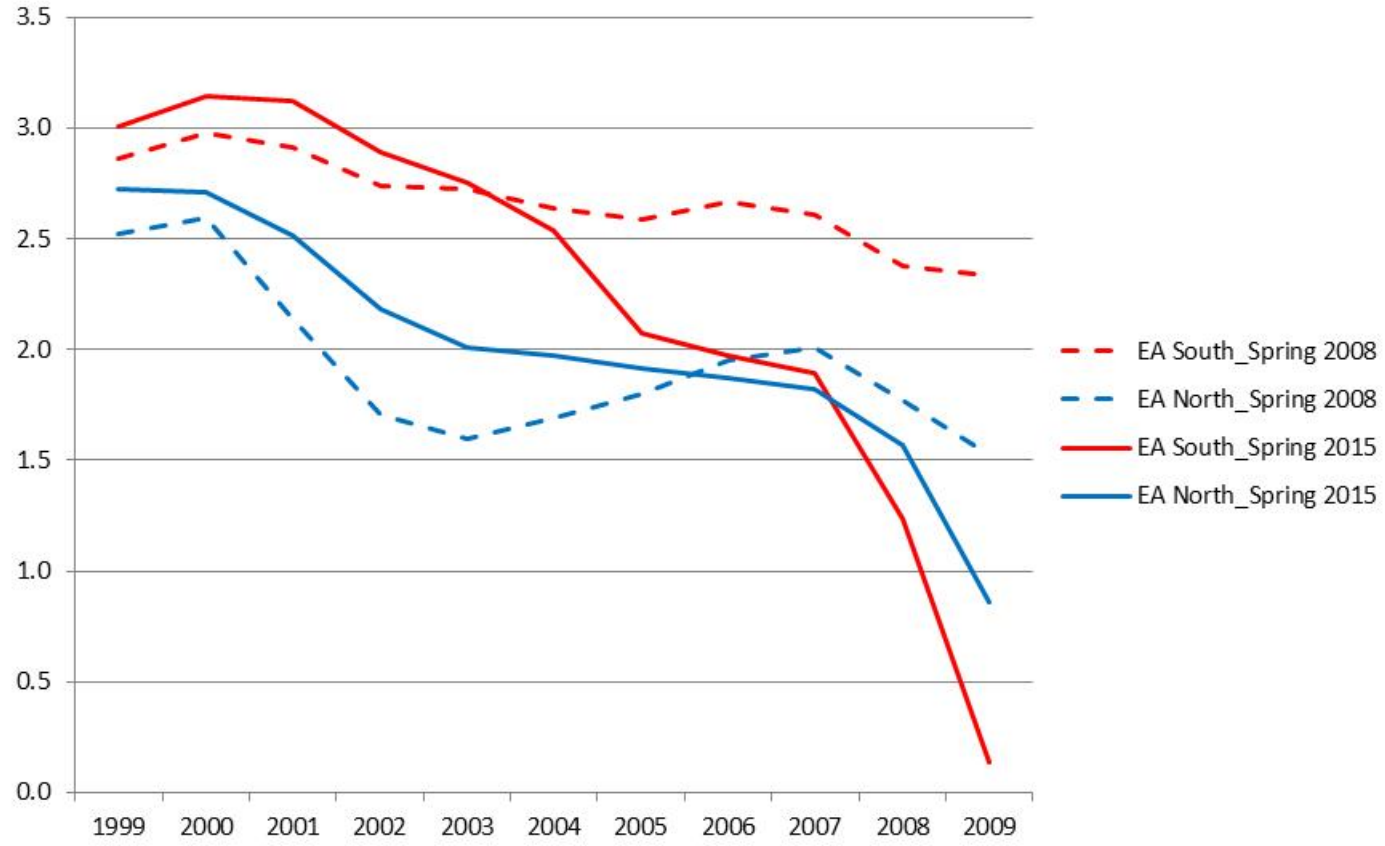


Source: EC and ECB.

… thus leading to a temporary illusion of convergence in potential GDP

Average potential growth in EA-South and EA-North

(in percentage)

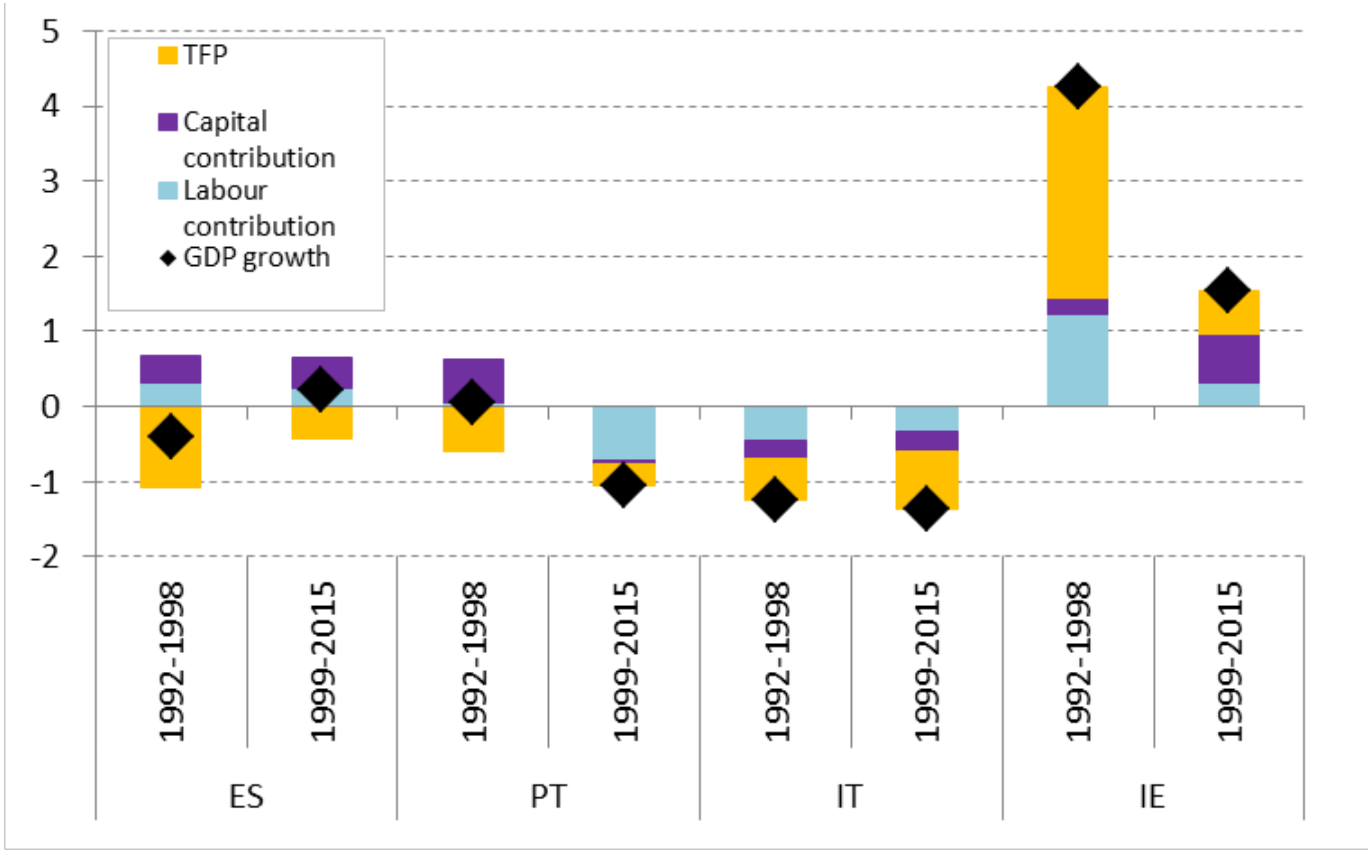


Source: EC Spring 2008 and Spring 2015 Forecast.
Note: Un-weighted averages within regions.

However: TFP was decelerating in Spain, Portugal, Italy (and Greece) *well ahead* of euro adoption

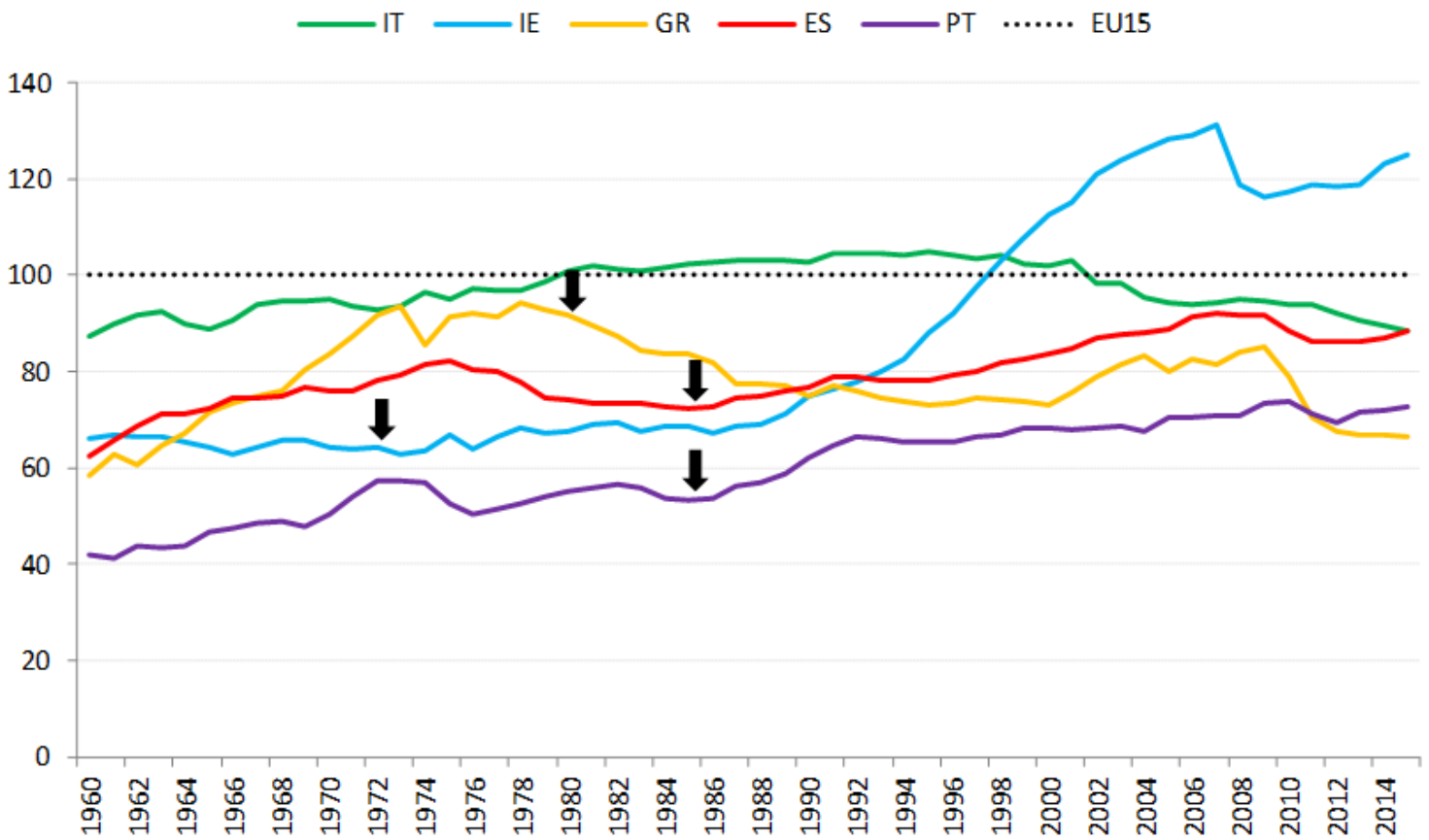
Contribution of TFP, K and L to real GDP growth relative to EU-15 in Spain, Portugal, Italy and Ireland

(growth differentials from EU-15 unweighted average; 1992-98 and 1999-2015)



Need for long-term perspective: Different patterns of real convergence in GR, ES, PT, IT and IE, in line with BCL (2015)

Historical developments in GDP per capita relative to EU15
(GDP per capita in PPS; EU15=100)



Source: EC Ameco.
Notes: An arrow denotes EU entry. For Italy no entry is depicted, as it is a founding member.

Decompositions of GDP per capita level

	BCL (2015)	This presentation
Euro area countries	DE, FR, IT, ES, NL, BE, FI, PT	5 "stressed" euro area countries: GR, PT, ES, IT, IE (possibility to extend to the whole EA-19)
Period	1890-2013	1961-2013
Decomposition of GDP per capita level	GDP capita = TFP * K intensity * working time * employment rate(1)	GDP capita = Labour productivity * employment rate(2) * participation rate * demographics
GDP accounting	2010 constant national currencies converted to 2010 US dollars at PPP with conversion rate from the Penn World Tables	PPS (Purchasing Power Standards) Source: European Commission, AMECO
Benchmark	United States	EU-15 (EU members by 1995)

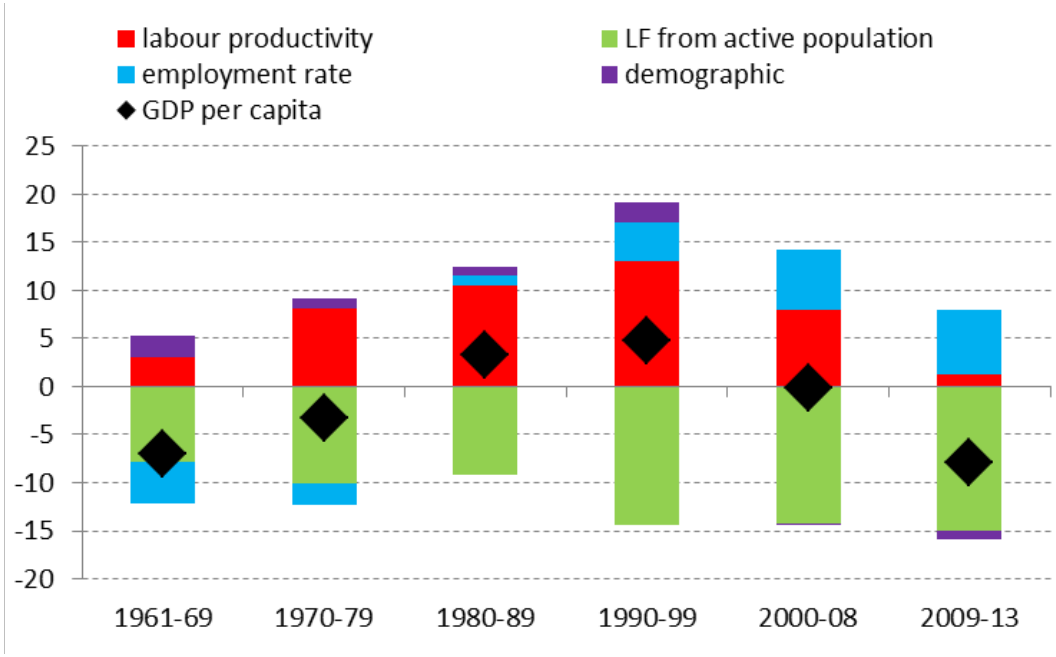
(1) Employment rate: Employment / total population

(2) Employment rate: Employment / labour force

Drivers of real convergence/divergence in the long run: A complementary breakdown to the one used in BCL (2015)

(1) ITALY: Rise and fall of productivity and demographics; drag from labour market participation; rising employment rate

GDP per capita level relative to EU-15 and its components
(in PPS; differences from EU-15 unweighted average)

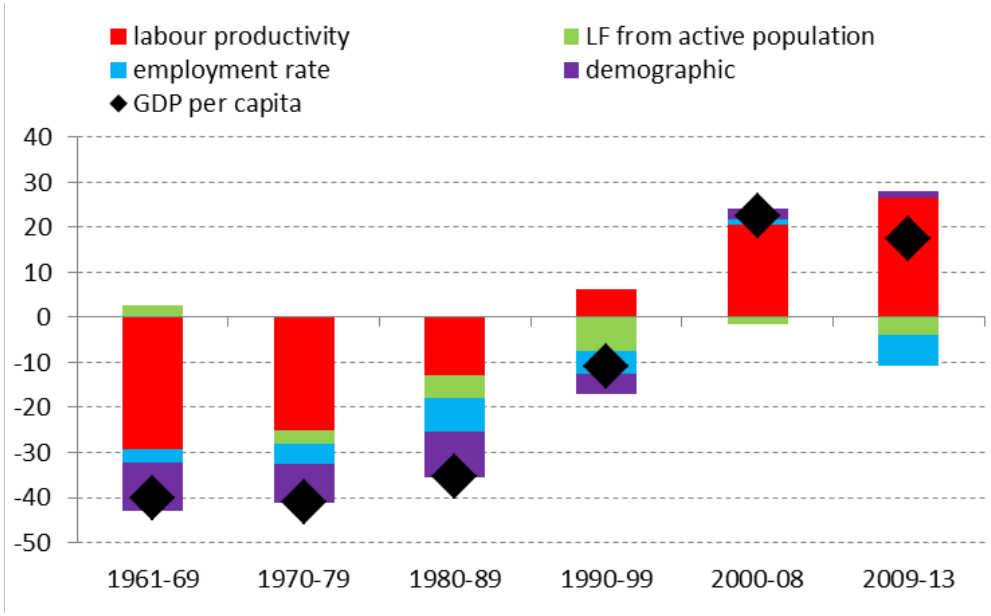


$$\underbrace{\frac{\text{Real GDP}}{\text{Population}}}_{\text{GDP/capita}} = \underbrace{\frac{\text{Real GDP}}{\text{Employment}}}_{\text{Lab. productiv.}} \underbrace{\frac{\text{Employment}}{\text{Labour force}}}_{\text{Employment rate}} \underbrace{\frac{\text{Labour force}}{\text{Working age pop.}}}_{\text{Participation rate}} \underbrace{\frac{\text{Working age pop.}}{\text{Population}}}_{\text{Demographics}}$$

Drivers of real convergence/divergence in the long run

(2) IRELAND: Surge in productivity since the 1980s; favourable demographics since the 1990s; impact of the crisis on employment

GDP per capita level relative to EU-15 and its components
(in PPS; differences from EU-15 unweighted average)



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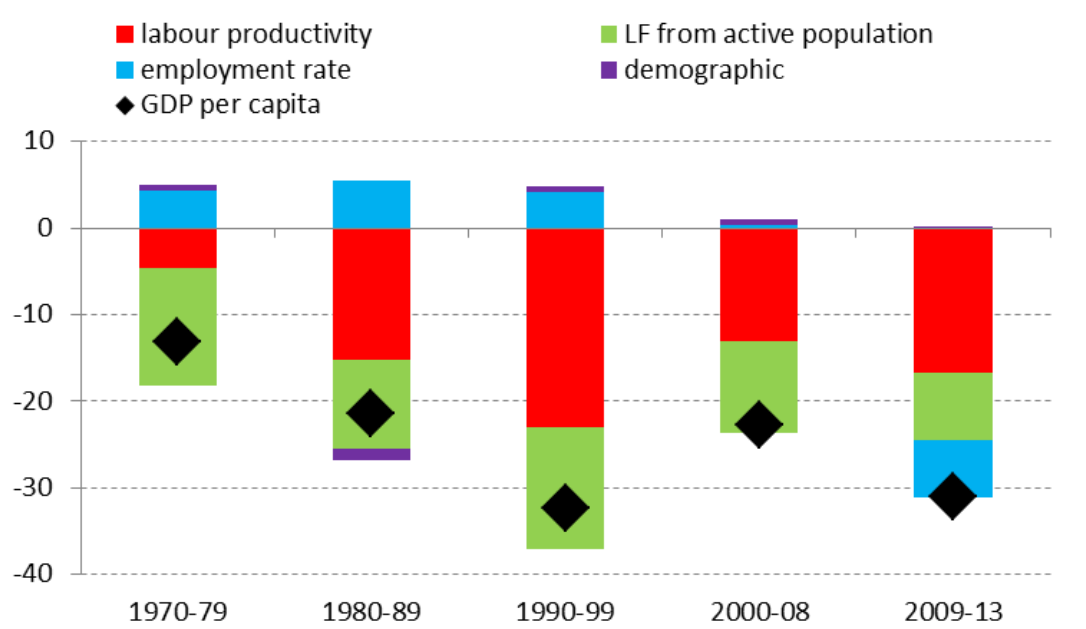
Drivers of real convergence/divergence in the long run

(3) GREECE: Productivity-driven catching down in the 1980s and 1990s; episode of temporary catching up in the pre-crisis 2000s

GDP per capita level relative to EU-15 and its components
(in PPS; differences from EU-15 unweighted average)



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4. Institutional convergence matters for SRC

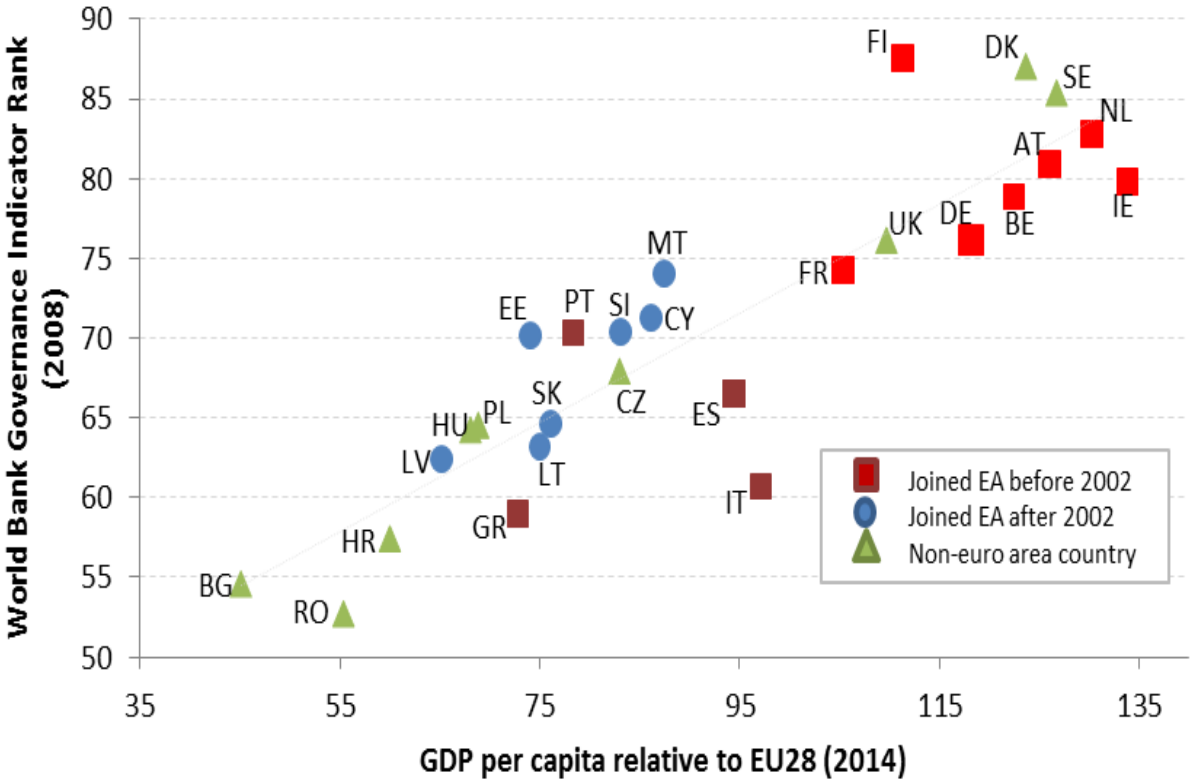
- **Key dimensions of convergence: not only nominal and legal (Maastricht Treaty), also *real* and *institutional* (2015 Five Presidents Report)**

- **Achieving sustainable real convergence requires a significant degree of institutional convergence. This is in line with the principle of "convergence towards equally resilient structures" embedded in the *Five Presidents Report***

Correlation between institutional and real convergence

Worldwide Governance Indicator rank and GDP per capita levels

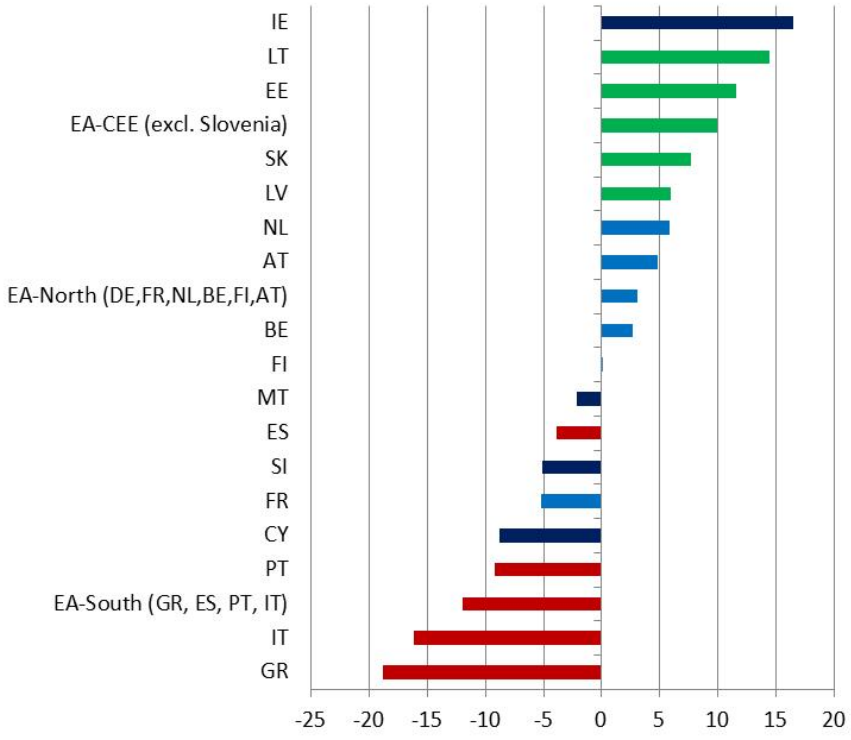
(GDP per capita in PPS; EU28=100)



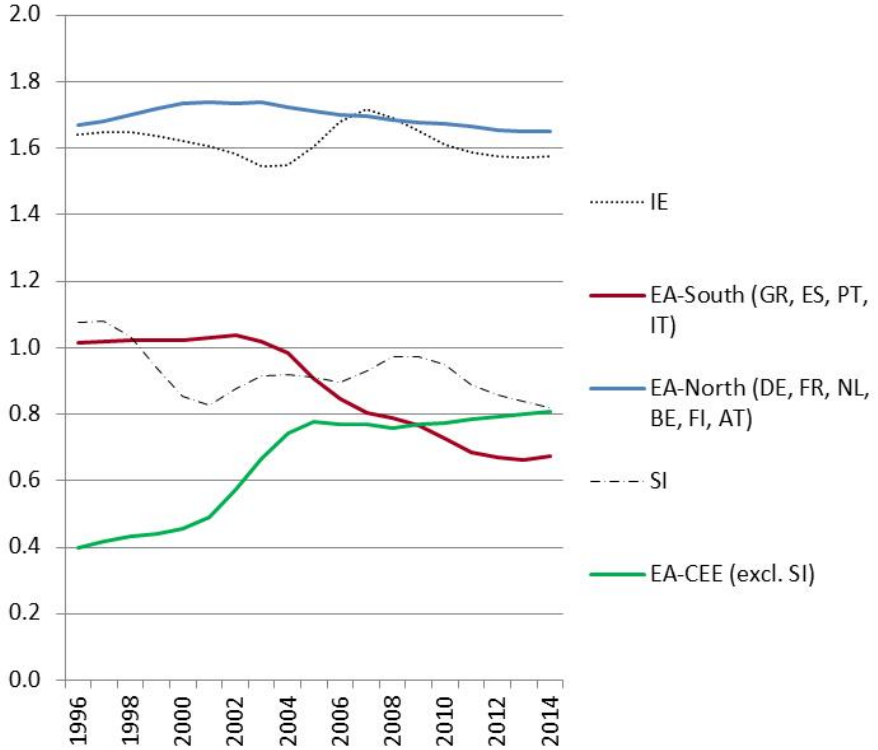
Notes: Worldwide Governance Indicator represents an average position in six broad dimensions of governance: (1) Voice and Accountability, (2) Political Stability and Absence of Violence/Terrorism, (3) Government Effectiveness, (4) Regulatory Quality, (5) Rule of Law, and (6) Control of Corruption. 100 is the maximum relative level in the rank.

Changes in institutions partly explain why some countries do better/worse than what can be expected on the basis of their initial income level…

Change in per capita income levels compared to EU28 in 1999-2014
(actual vs expected based on 1999 income level)



Average value of the Worldwide Governance Indicator - delivery indicator over time



Notes: The Worldwide Governance Indicator delivery indicator represents the average of four components of the WGI index: Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

Three key lessons on convergence for EMU

1 **Pay attention to convergence both *before* and *after* euro adoption**

2 ***EMU*:**

- **not the root cause of divergence in the euro area…**
- **… yet it makes real convergence more important**

3 ***Policies to take the long-term perspective*: Establish conditions for sustainable convergence to be in place (incl. proper EMU architecture)**

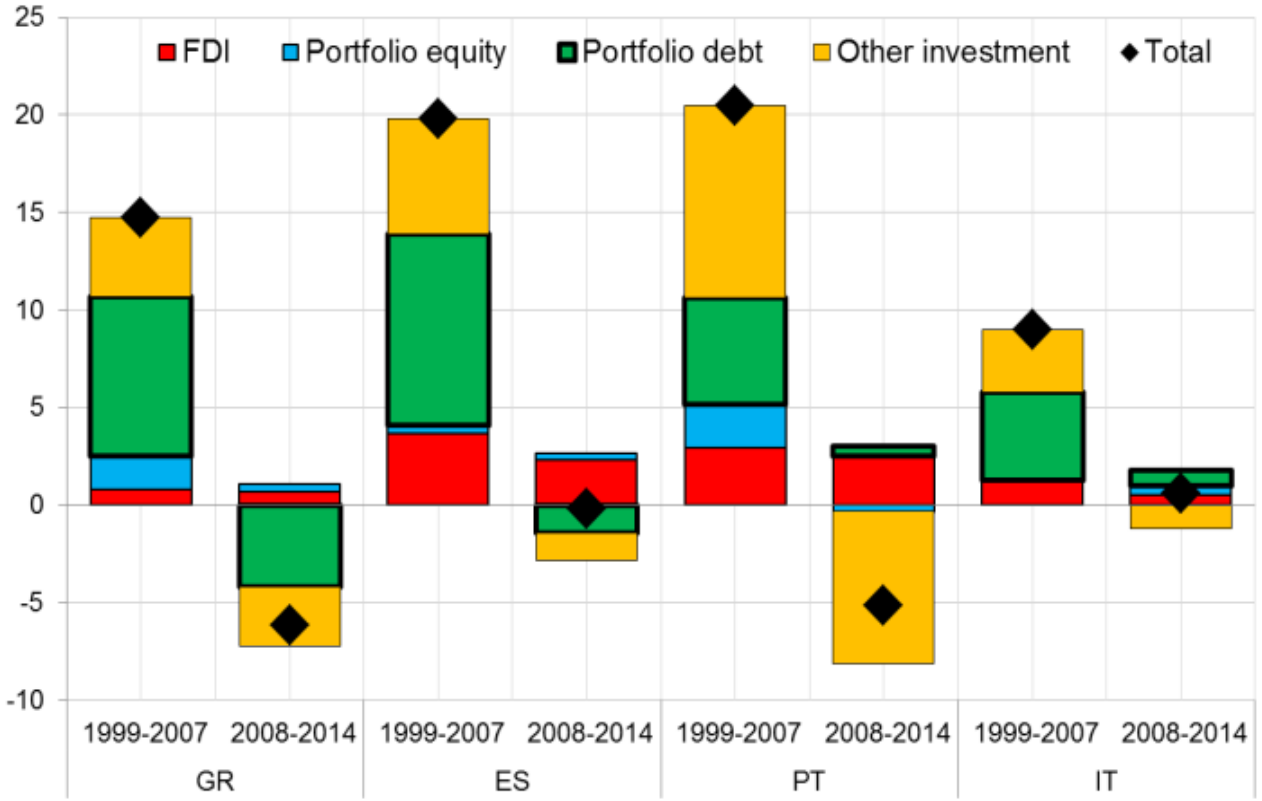
Thanks for your attention!

Background slides

Catching up economies in the EA, along with Ireland experienced a pronounced boom-bust in capital flows

Gross private capital flows to Spain, Greece and Portugal vs. Italy

(Cumulated flows in % of GDP, 1999-2007 and 2008-14)

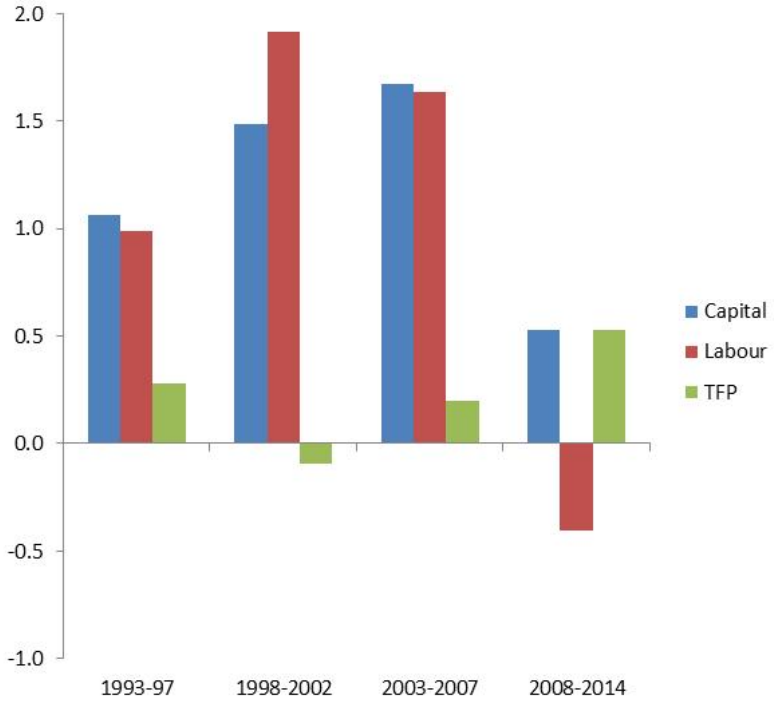


N.B. In Ireland gross private capital flows were six to nine times higher in percentage of GDP than in the other four countries

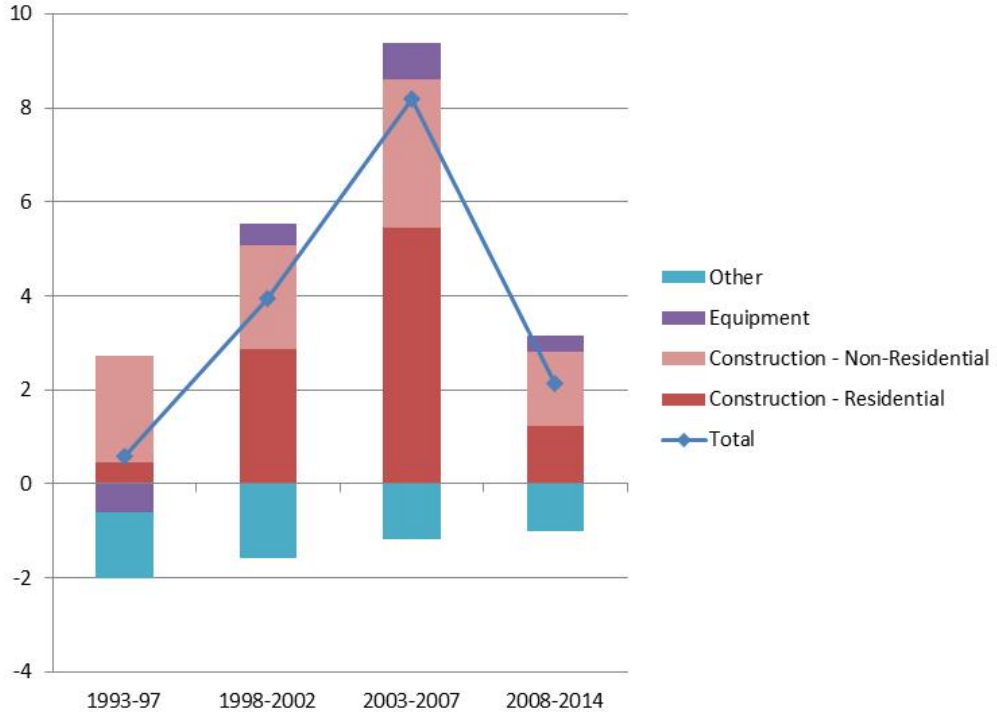
Notes: The item "other investment" excludes flows to the government and the national central bank.

Part of the perceived convergence in pre-crisis period potential growth reflected growth in unproductive capital

The contribution of capital accumulation to potential growth in Spain (in percentage points)



The main components of the GFCF/GDP ratio in Spain (percentage point deviation from EU15 average)

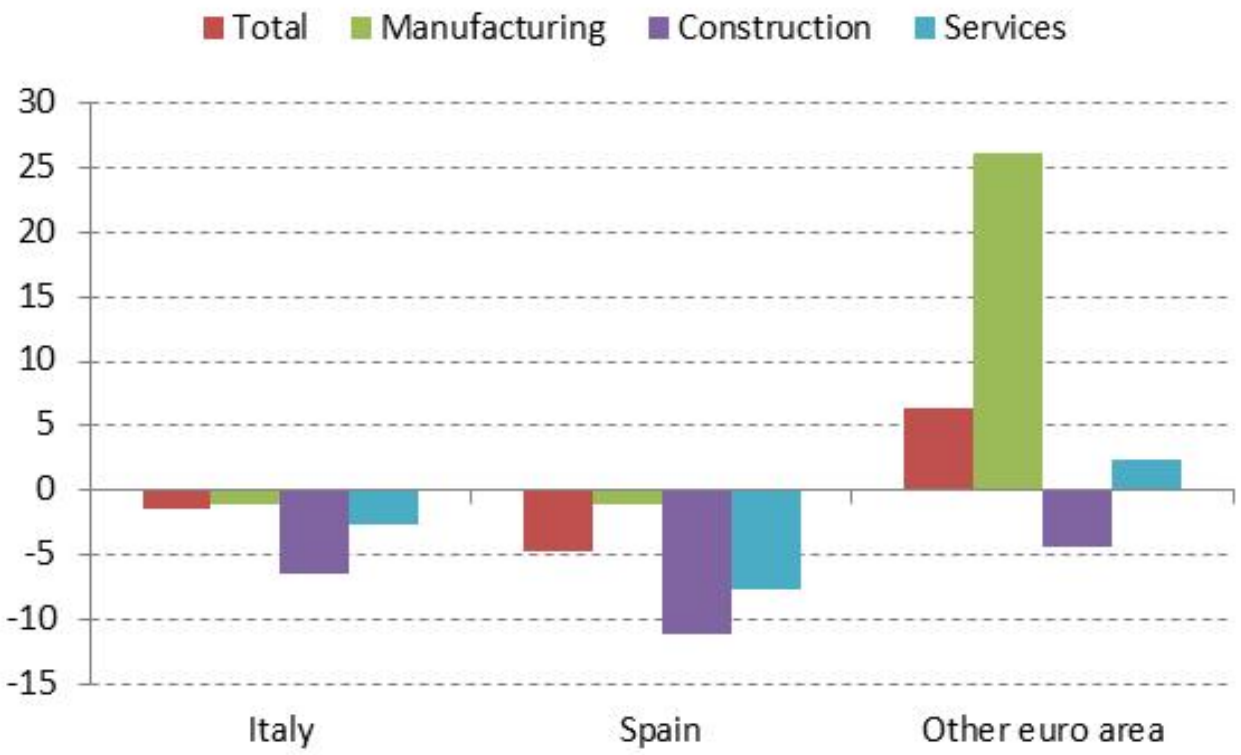


Source: EC Spring 2015 Forecast, EC Ameco database, ECB staff calculations.

But the misallocation of capital to low productivity sectors was not the only reason for lack of convergence

TFP growth in main economic sectors

(percentage changes)

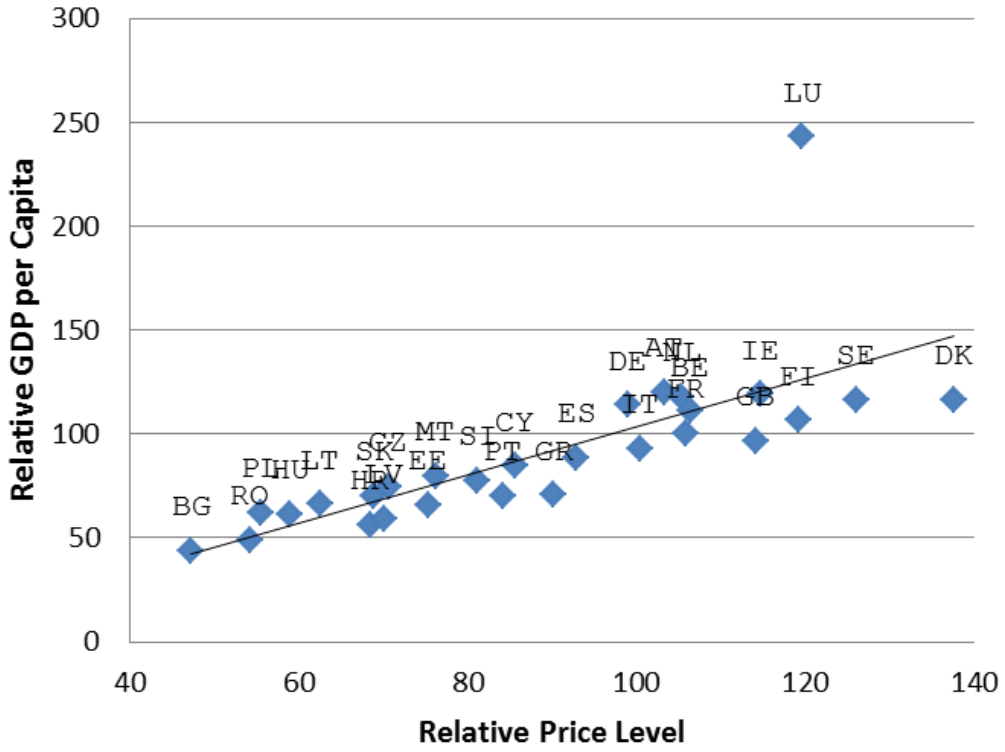


Source: EC, ECB staff calculations. Notes: No data are available for Greece and Portugal. “Other EA” refers to Belgium, Germany, France, the Netherlands Austria and Finland. The 2007 value for Belgium is extrapolated from 2006. Aggregates are un-weighted. "Total" includes also other sectors, such as agriculture and mining, electricity, transport, and financial intermediation.

The correlation between GDP per capita and price level

Relative GDP per capita and relative price level

(as a percentage of the EU28 average)

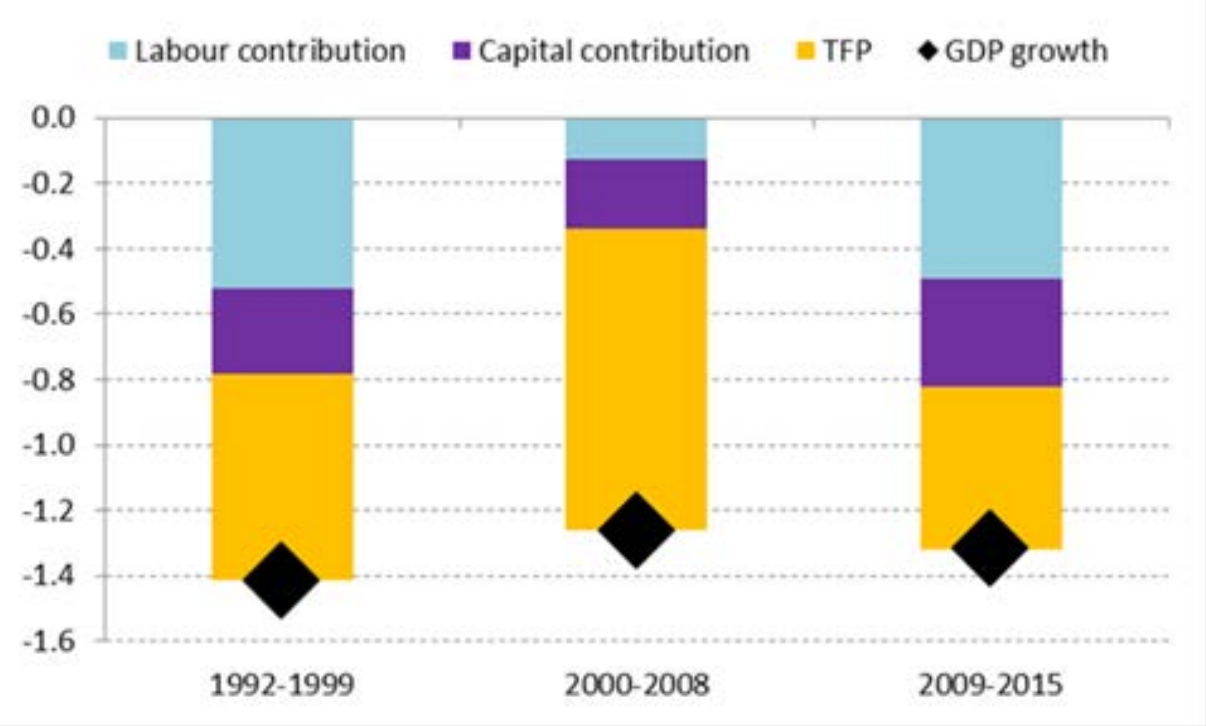


Note: 2012 data for relative price level and 2013 data for relative GDP per capita.

Real GDP growth and its contributors to convergence/divergence: TFP, K and L

ITALY

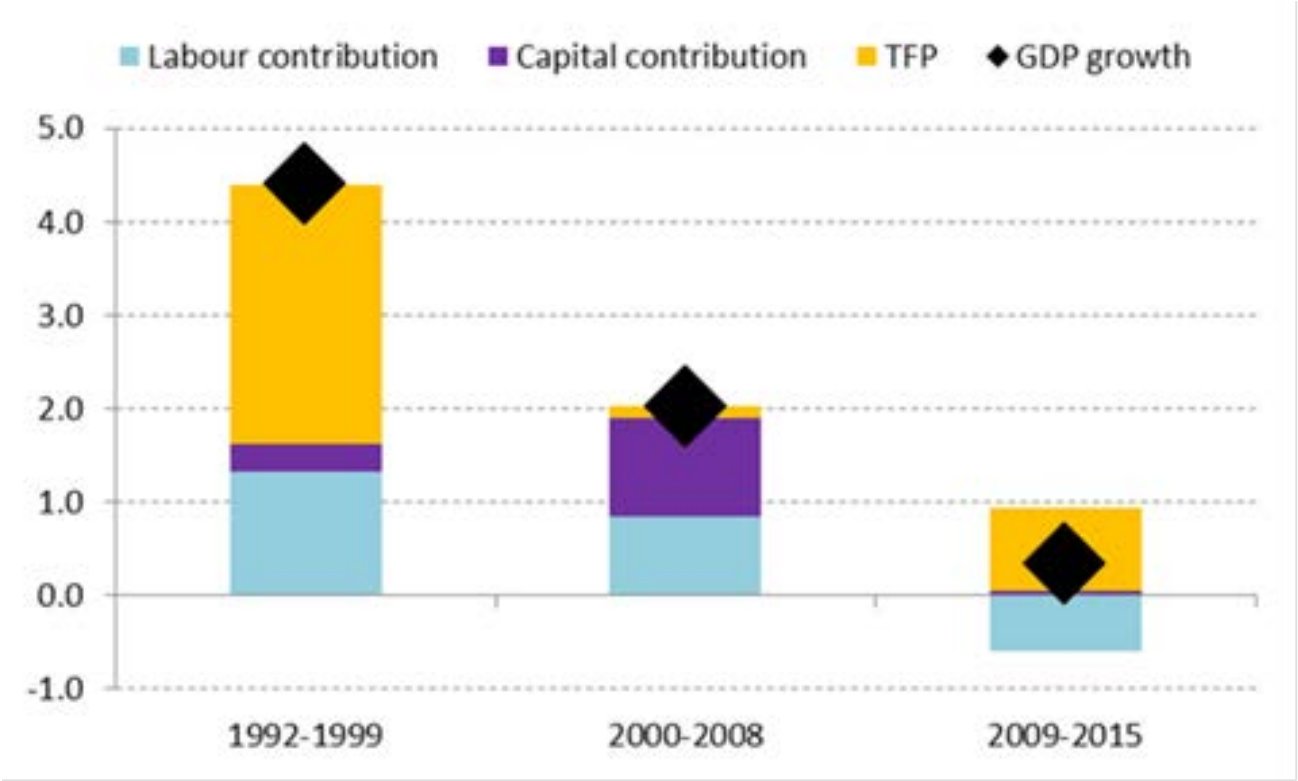
(growth differentials from EU-15 unweighted average)



Real GDP growth and its contributors to convergence/divergence: TFP, K and L

IRELAND

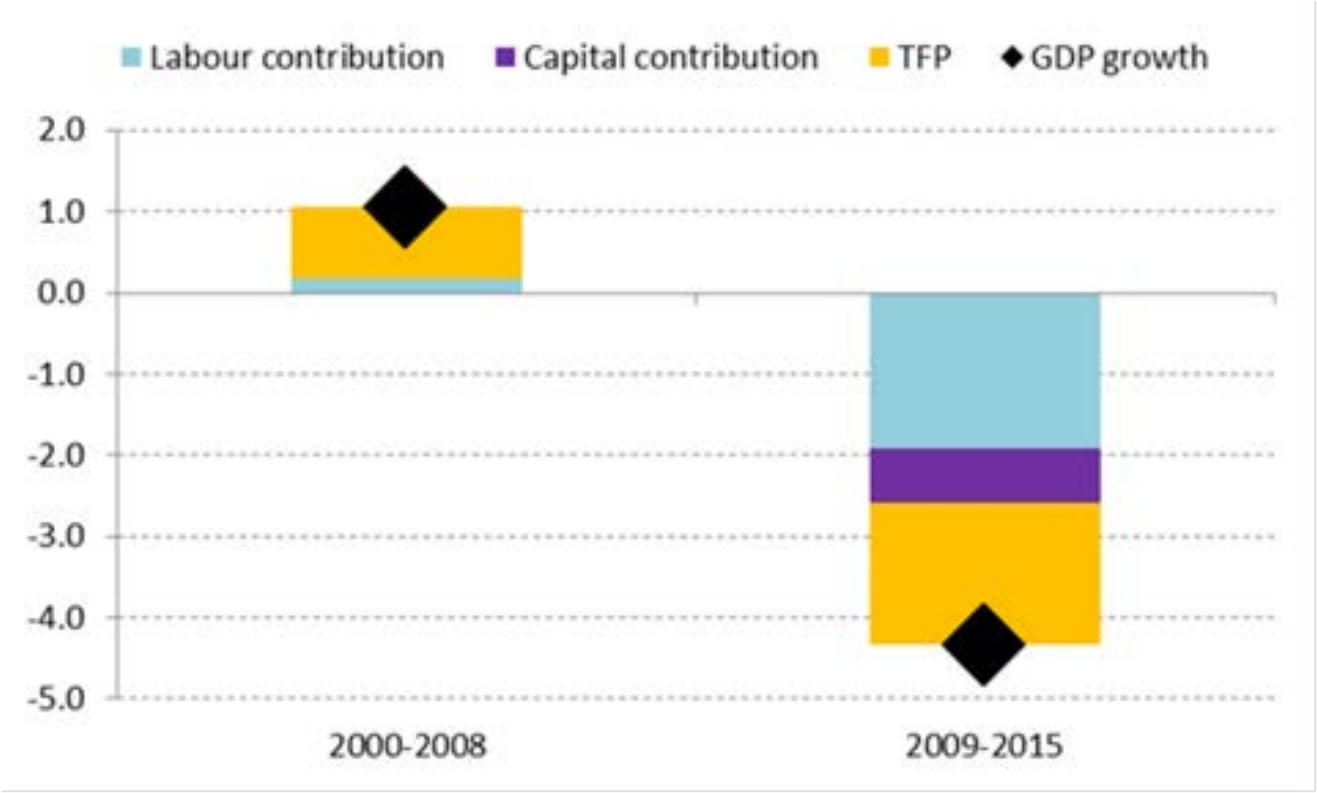
(growth differentials from EU-15 unweighted average)



Real GDP growth and its contributors to convergence/divergence: TFP, K and L

GREECE

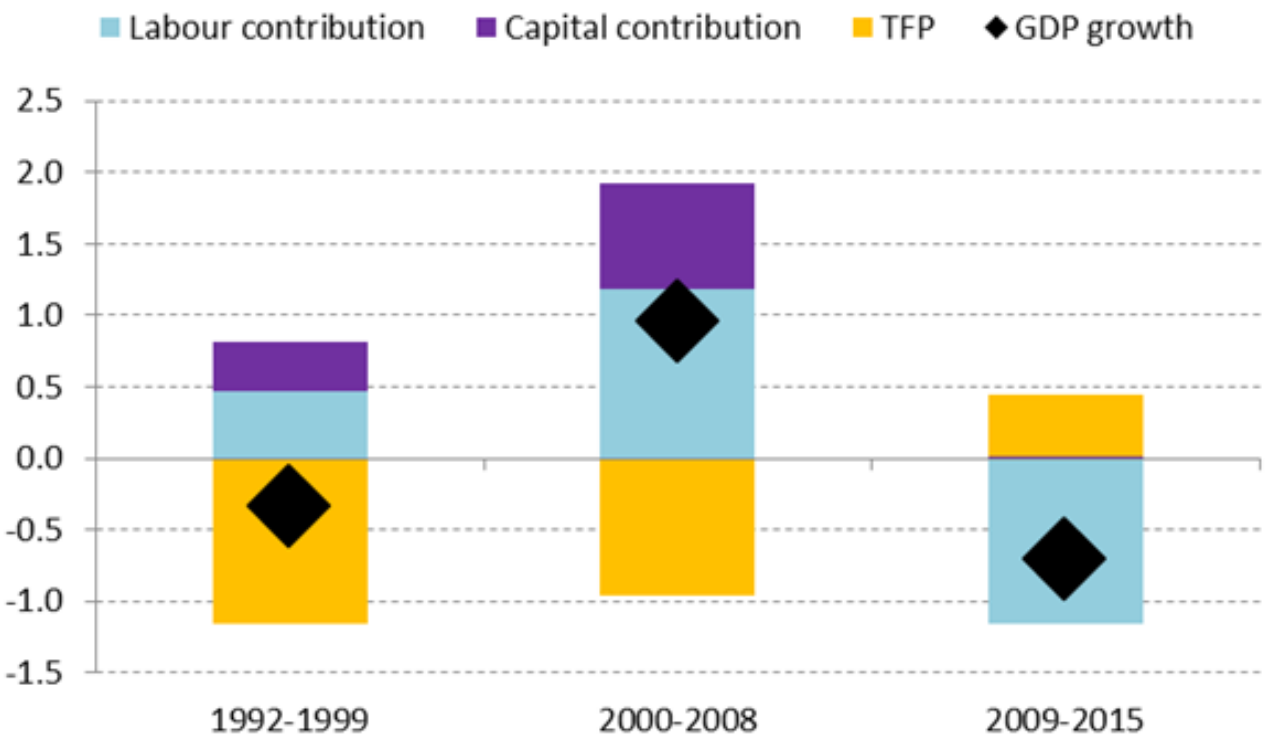
(growth differentials from EU-15 unweighted average)



Real GDP growth and its contributors to convergence/divergence: TFP, K and L

SPAIN

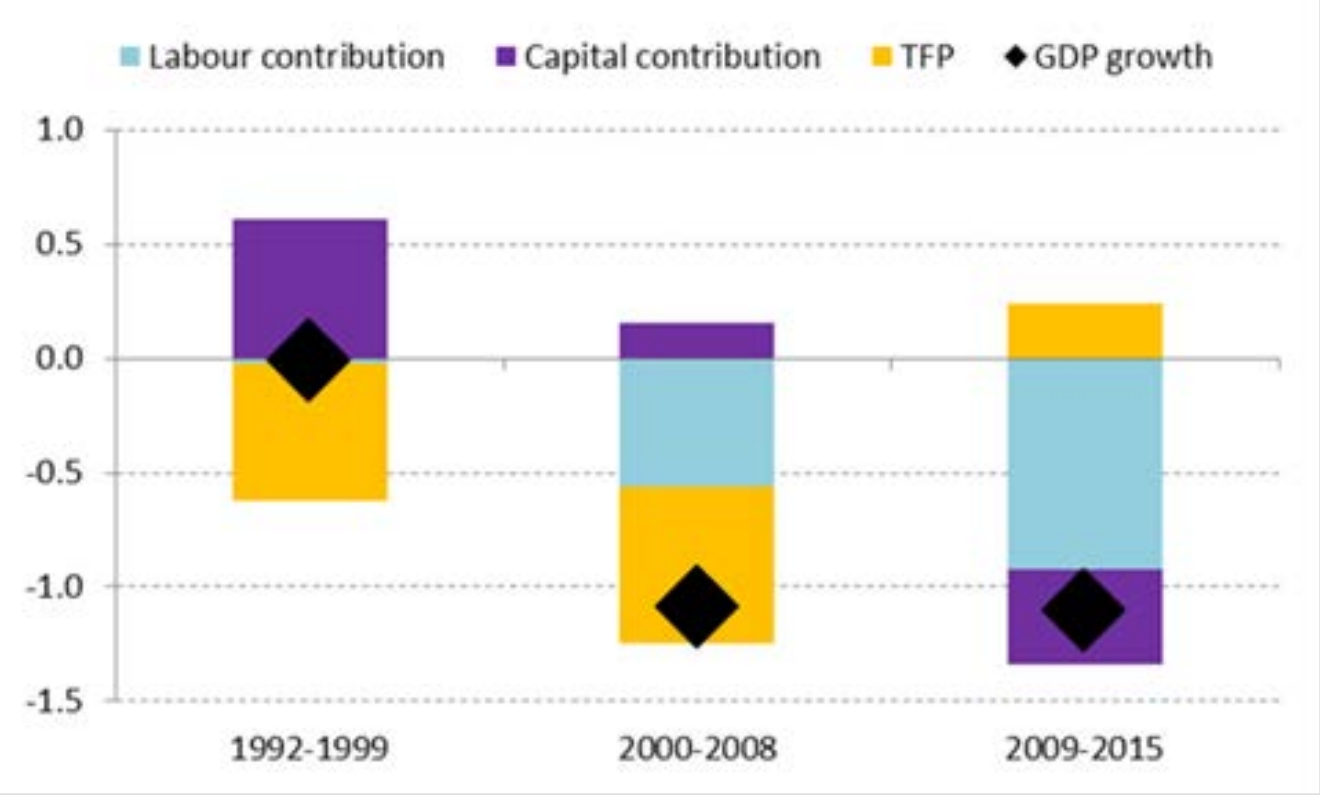
(growth differentials from EU-15 unweighted average)



Real GDP growth and its contributors to convergence/divergence: TFP, K and L

PORTUGAL

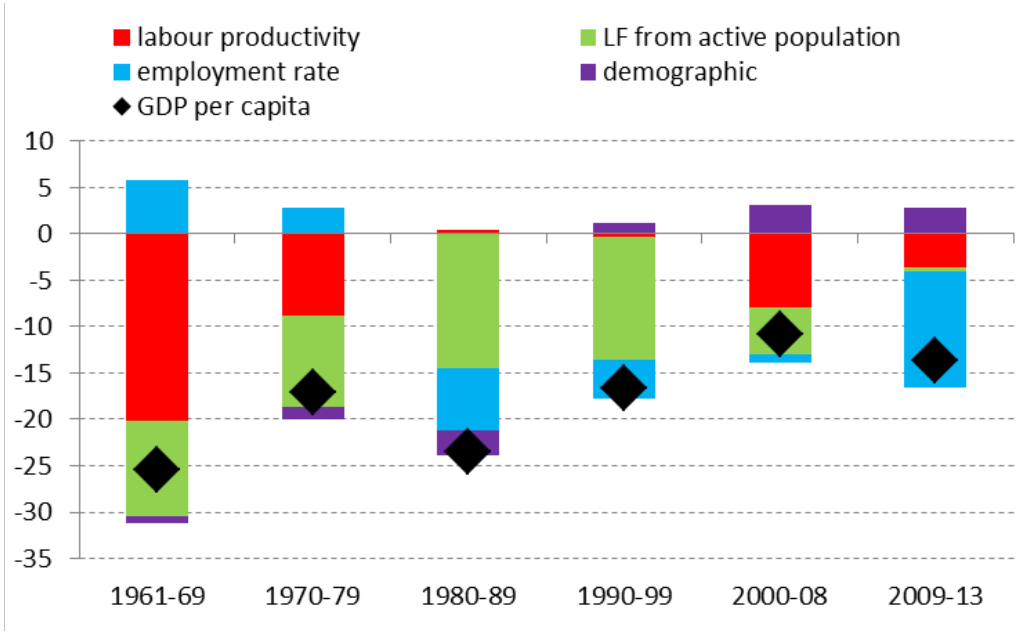
(growth differentials from EU-15 unweighted average)



Drivers of real convergence/divergence in the long run

SPAIN: Rise of productivity and its fall in 2000-08; improving demographics and participation rate; impact of the crisis on employment

GDP per capita level relative to EU-15 and its components
(in PPS; differences from EU-15 unweighted average)



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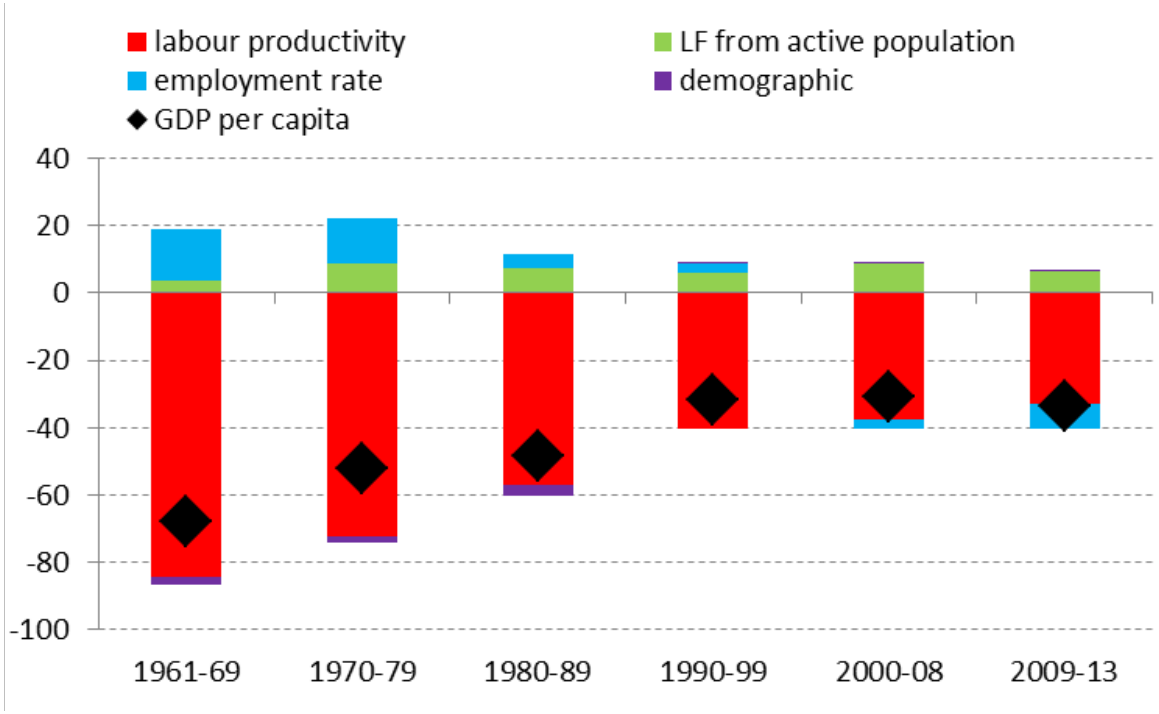
Drivers of real convergence/divergence in the long run

PORTUGAL: Long-term productivity drag on convergence

GDP per capita level relative to EU-15 and its components
(in PPS; differences from EU-15 unweighted average)



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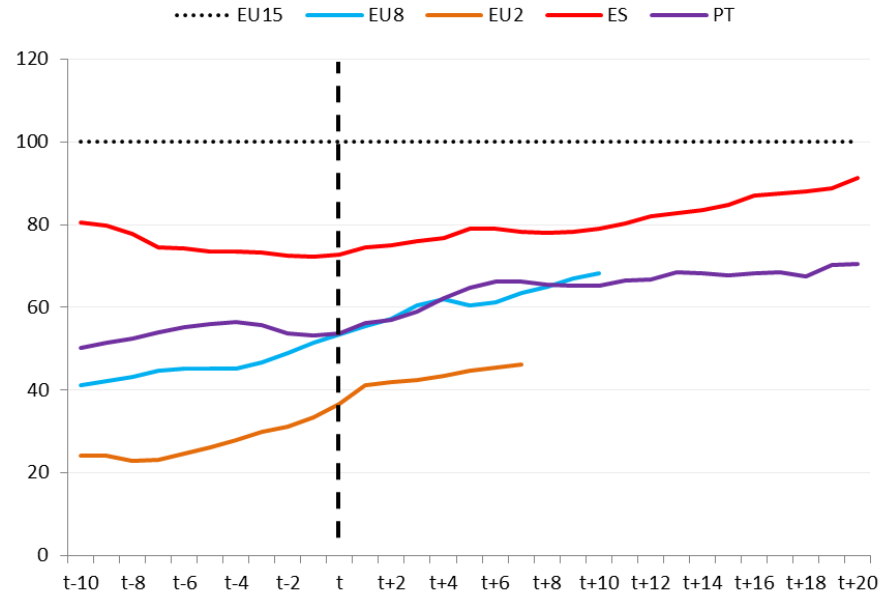
GDP/capita

Did EU membership matter for real convergence?

Real convergence before and after t = EU entry

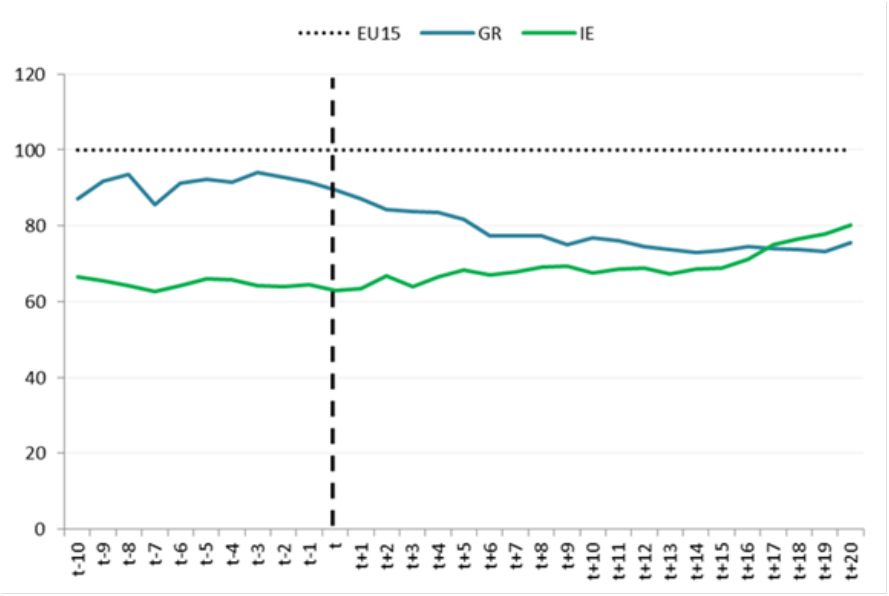
(GDP per capita in PPS; EU15=100)

EU entry – and, in some cases, its perspective – may have acted as a catalyst for convergence …



Notes: EU8: Countries in Central and Eastern Europe that entered the EU in 2004 (CZ, EE, HU, LT, LV, PL, SK and SI). EU2: Countries that entered the EU in 2007 (BG and RO).

… but Greece and, partly, Ireland stand out



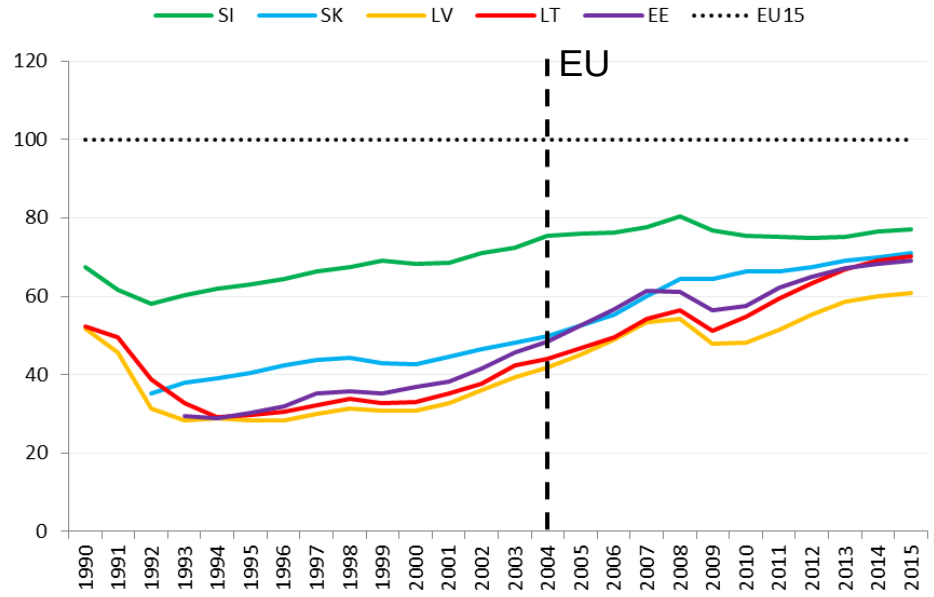
Notes: IE entered the EU in 1973. GR entered the EU in 1981.

New EU Member States: Euro adopters converged more

Real convergence before and after the date of EU entry

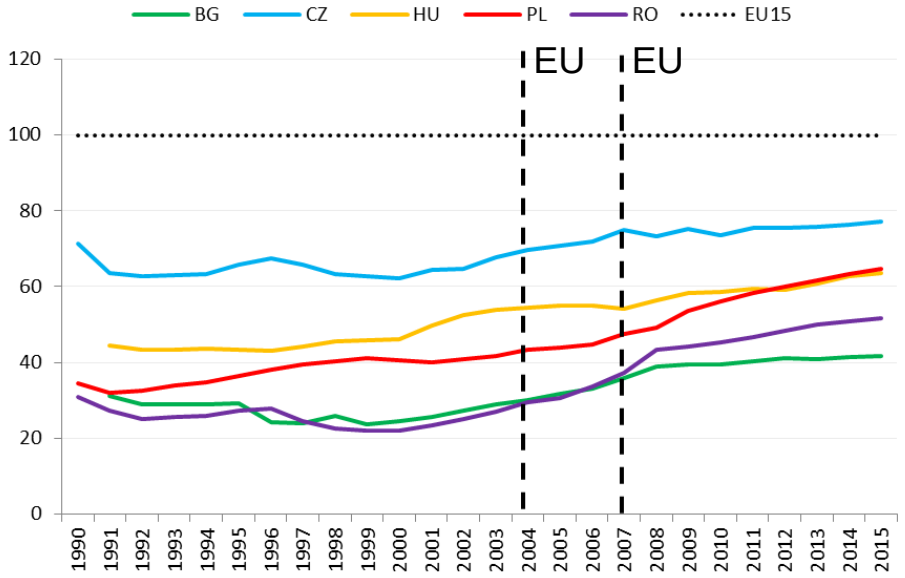
(GDP per capita in PPS; EU15=100)

NMS that have adopted the euro



Notes: Dates of euro adoption: SI 2007, SK 2009, EE 2011, LV 2014, LT 2015. All these countries entered the EU in 2004.

Pre-ins

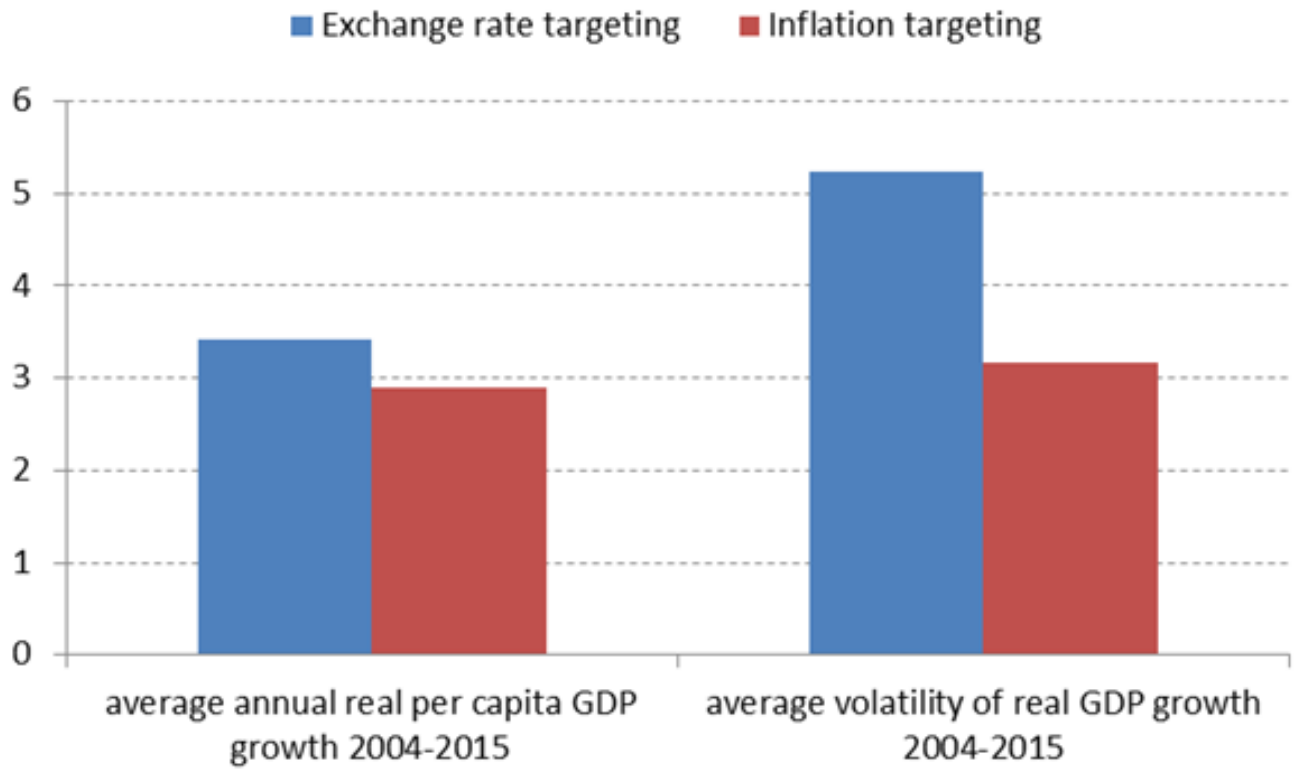


Notes: CZ, HU and PL entered the EU in 2004; BG and RO in 2007.

Does the exchange rate regime matter for real convergence? In the New EU Member States, it mattered to smooth business cycle fluctuations, not as a driver of real convergence

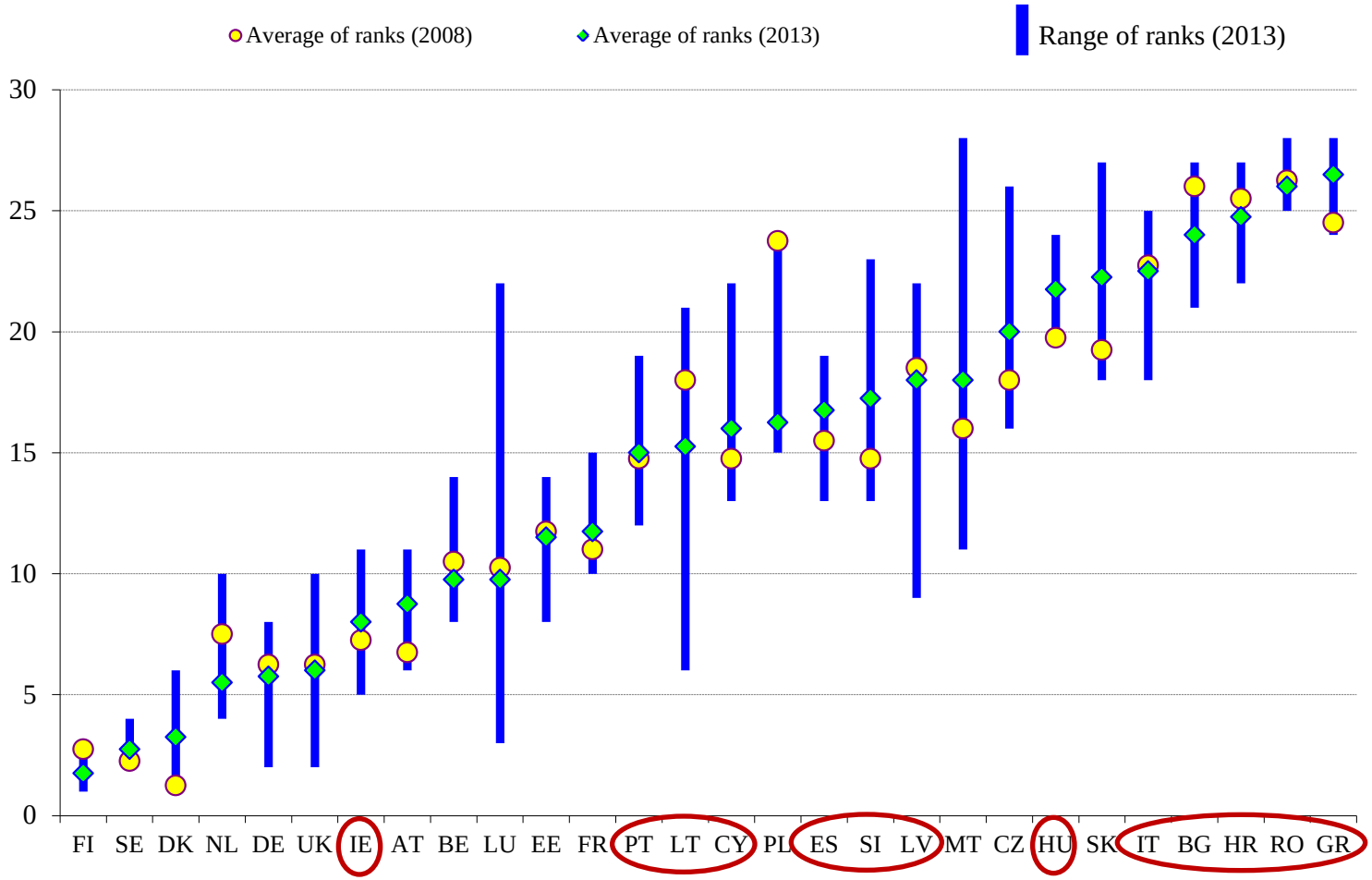
Exchange rate regime, output volatility and GDP per capita

(Selected New EU Member States, 2004-2015 latest)



Notes: Exchange rate targeting countries: Unweighted average for BG, LT, LV, HR; Inflation targeting countries: unweighted average for PL, HU, RO and CZ.

Institutional convergence: Country rank in the EU (2013)

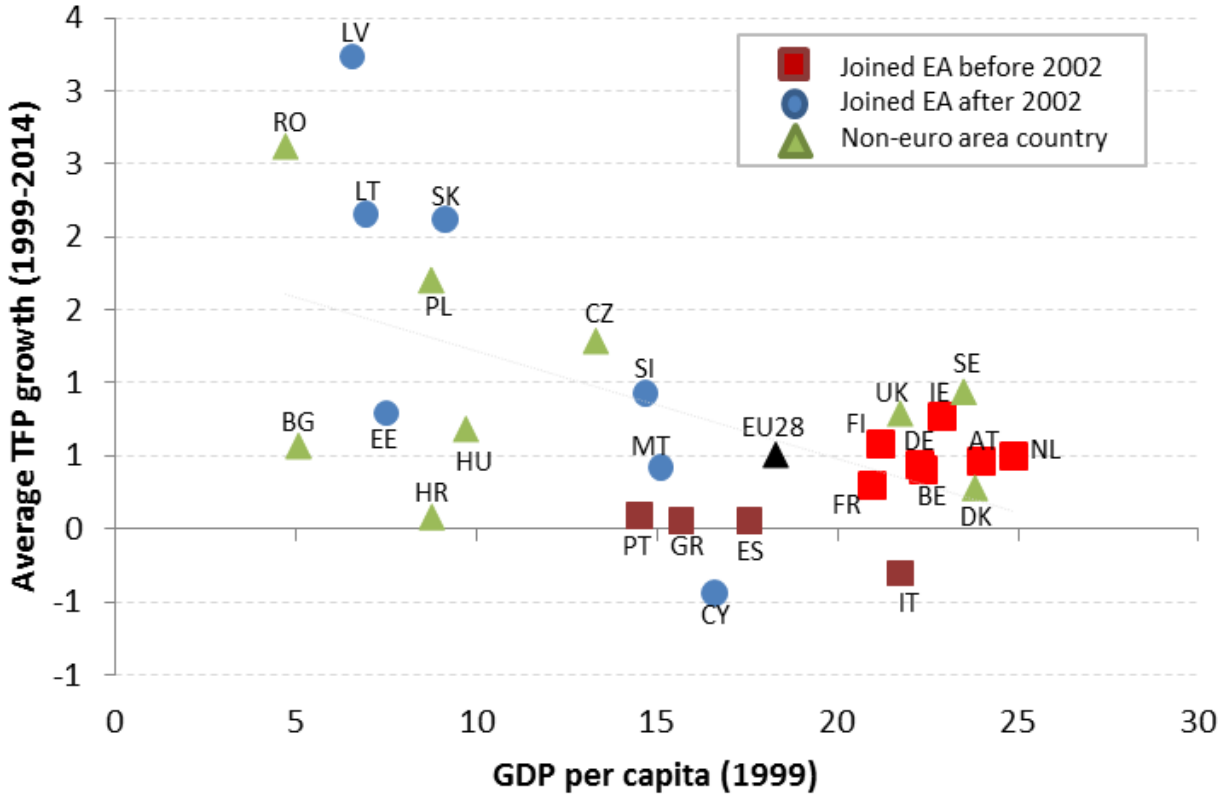


Sources: **(1)** Worldwide Governance Indicators 2013, **(2)** The Global Competitiveness Report 2013-2014 rankings (World Economic Forum), **(3)** Corruption Perceptions Index 2013 (Transparency International) and **(4)** Doing Business 2014 (the World Bank and the International Finance Corporation).
Note: Countries are ranked from one (best performer in the EU) to 28 (worst performer in the EU) and ordered according to their average position in the 2013 rankings. **The countries with an IMF/EU programme and/or a major banking crisis and/or strong GDP underperformance since 2008 are circled in red.**

Relative productivity developments in the euro area may in part have reflected differences in institutional dynamics

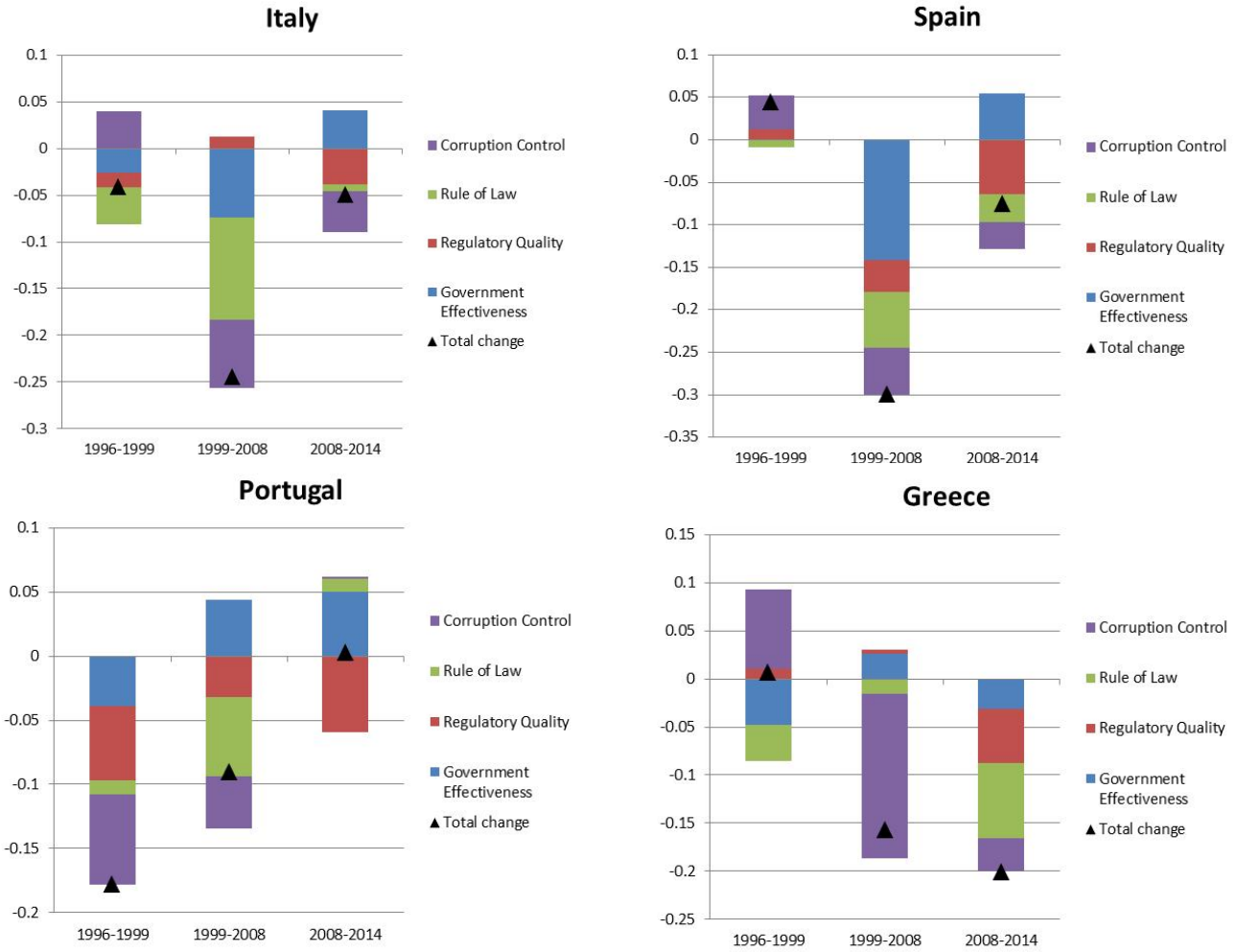
GDP per capita and average TFP growth in the euro area

(in PPS)



Since 2008 the deterioration of institutional quality has come to a halt in EA-South, with the exception of Greece

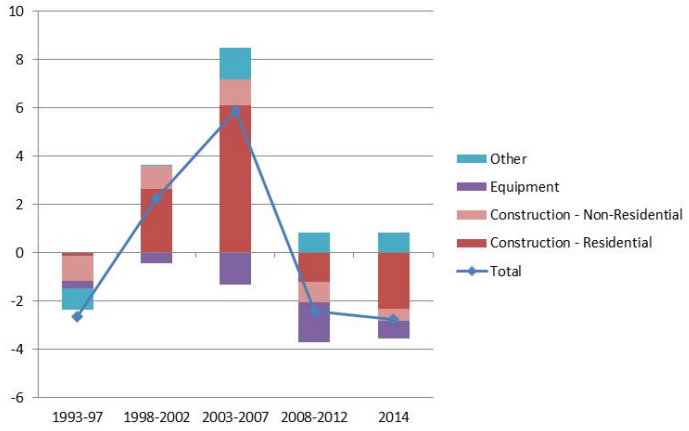
Changes in the Average value of the WGI delivery indicator compared to EA-North



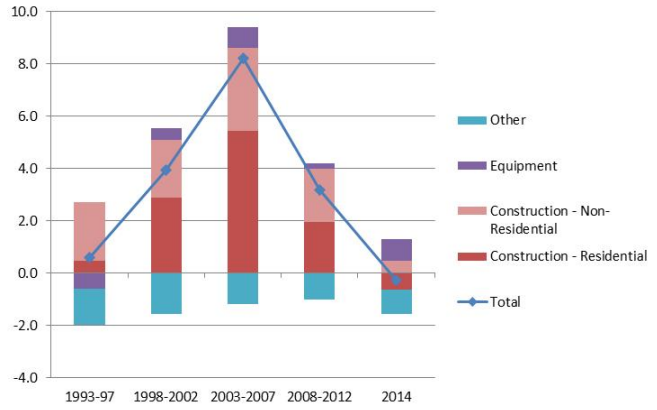
Notes: The Worldwide Governance Indicator delivery indicator represents the average of four components of the WGI index: Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

EA stressed countries: Periods of fast convergence in GFCF/GDP ratio were mainly driven by unproductive capital

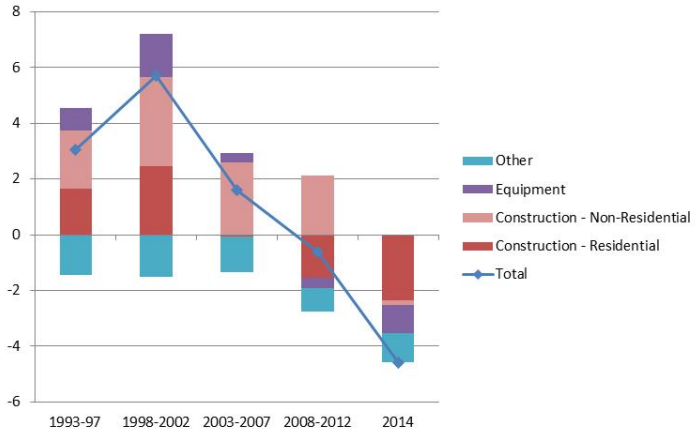
Ireland - GFCF GDP ratio and its main components
(percentage point deviation from EU15 average)



Spain - GFCF GDP ratio and its main components
(percentage point deviation from EU15 average)



Portugal - GFCF GDP ratio and its main components
(percentage point deviation from EU15 average)



Greece - GFCF GDP ratio and its main components
(percentage point deviation from EU15 average)