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EUROSYSTEM

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# Potential Output from a Euro Area Perspective

12th Macroeconomic Policy Research Workshop on Growth, Rebalancing, and Macroeconomic Adjustment after Large Shocks

Budapest, 20 September 2013

# Plan of the talk

1. Introduction
2. What do we mean by potential output?
3. Potential output estimates of the euro area
4. Assessing the impact of the crisis on euro area potential output
5. Model based analysis
6. Conclusions

# Introduction

- **Potential output and the output gap are important policy variables, but they are difficult to quantify**
- **Their estimation and evaluation largely depend on the concept and methods applied to derive them**
- **Potential output does vary over the business cycle, although by less than actual output**
- **This presentation aims to review how the recent financial crisis affected euro area potential output**

# What do we mean by potential output?

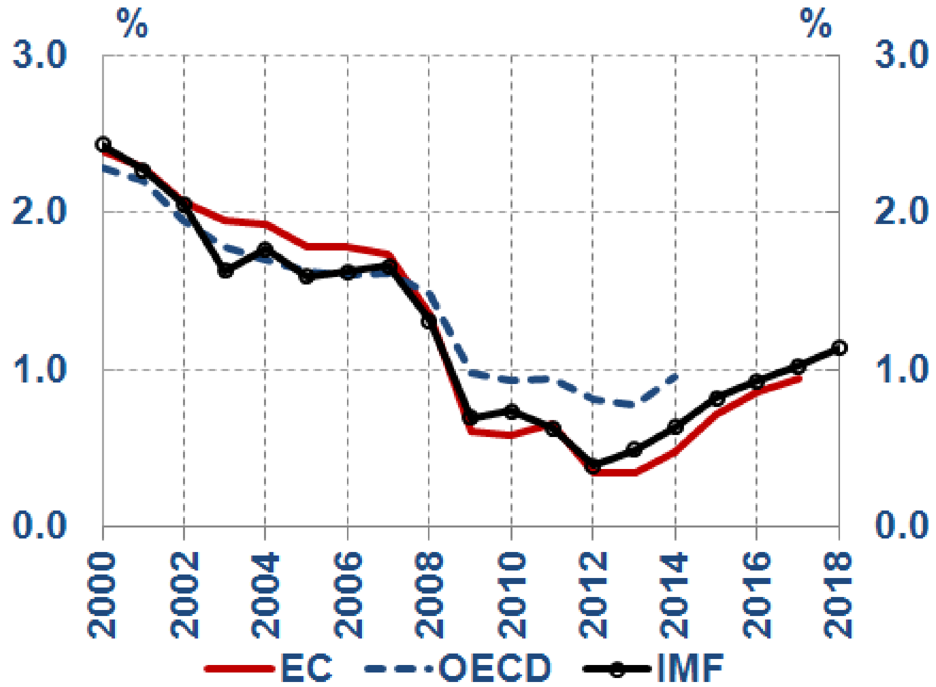
- **First it is important to recall that potential output is unobserved and the estimates depend on the concepts and techniques used for estimation:**
  - **Purely a statistical phenomena: a smoothed component or trend element of actual output (univariate statistical filters)**
  - **The sustainable supply capacity of the economy (production function methods)**
  - **Or the growth rate of output sustainable without generating inflationary (or financial) pressures (multivariate filters)**
- **No matter what, estimates of potential output (growth) tends to fluctuate from year to year and exhibits a certain amount of pro-cyclicality**
- **It seems evident that the recent financial crisis has an effect on potential output growth, the question is how**

# Recent estimates of euro area potential growth

## Shorter term

- Different institutions' estimates differ somewhat, but the common features is: potential output decelerated between 2008 and 2012
- Subdued potential output recovery projected in near term
- Uncertainty about impact of crisis and policies: broadening range

### Euro area potential growth according to different institutions







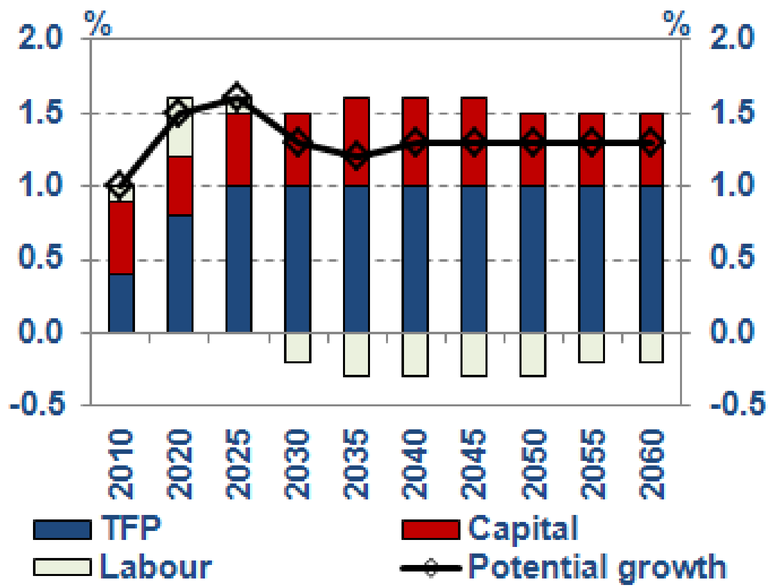

*Source: EC 2013 Spring forecast , IMF WEO 2013 April, OECD Economic Outlook May 2013*

# Recent estimates of euro area potential growth

## Longer term:

- Driven by demographic/structural factors
- Produced by AWG (2060) and OECD (2050)
- Negative labour contribution after 2030 – population ageing offsets other factors
- TFP main driver, convergence among EU countries or to world technology frontier assumed
- OECD: long-run projected growth rate in US exceeds euro area by 0.6-0.8 pp

**Long term potential growth projections of the euro area**

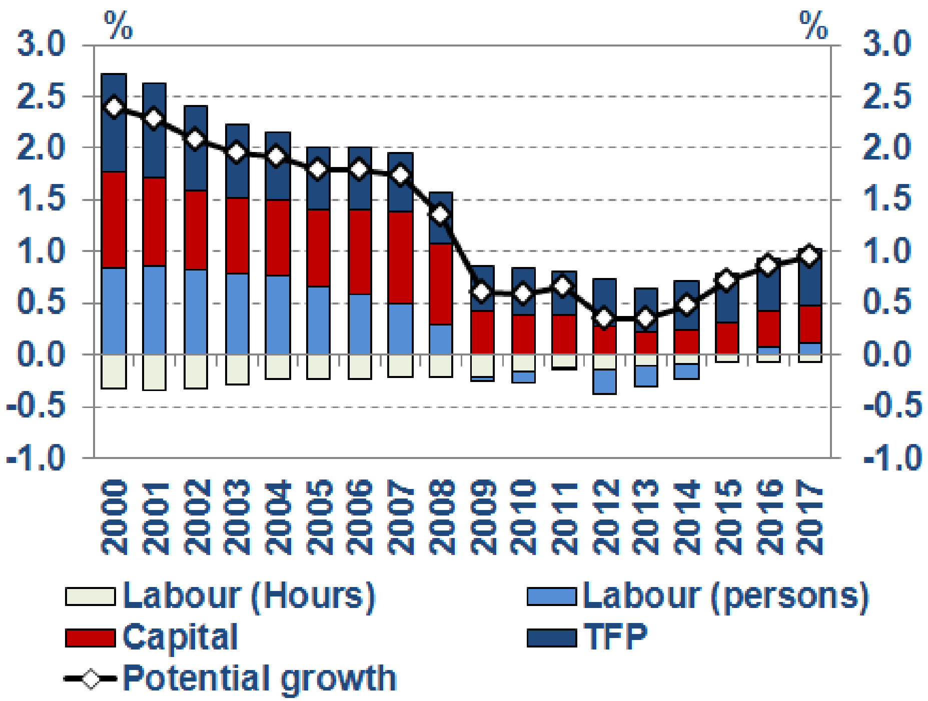



*Source: Ageing Working Group of the EC*

# Assessing the impact of the crisis - overview

- Significant drop in potential growth in 2009 in the euro area
- Labour contribution turned to negative
- Capital contribution much smaller then before
- Less changes in total factor productivity (TFP)
- Only a gradual recovery in potential growth and in its components is expected, remaining considerably below pre-crisis rates of growth by 2017

## Components of potential growth in the euro area



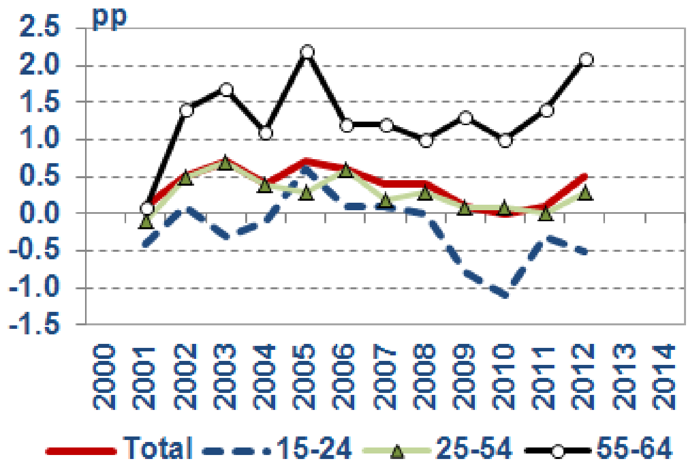

Source: European Commission

# Assessing the impact of the crisis - labour

- Increase in participation came to a halt in 2009-2011 and intensified again in 2012
- Labour supply of the older age group continued to grow strongly during the crisis (role of pension reforms)
- Participation rates of the younger age groups have been falling since 2008 (discouraged workers)

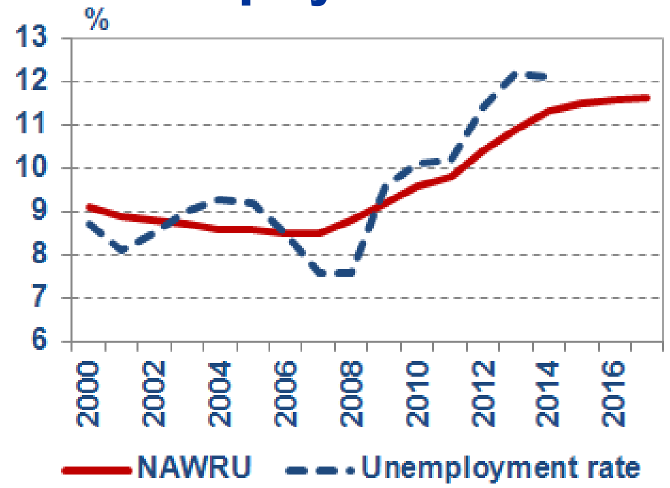
- Estimates show that structural unemployment rate increased significantly and is expected to stay high in the medium term

**Change in participation**




*Source: Eurostat*

**Actual and structural unemployment rates**

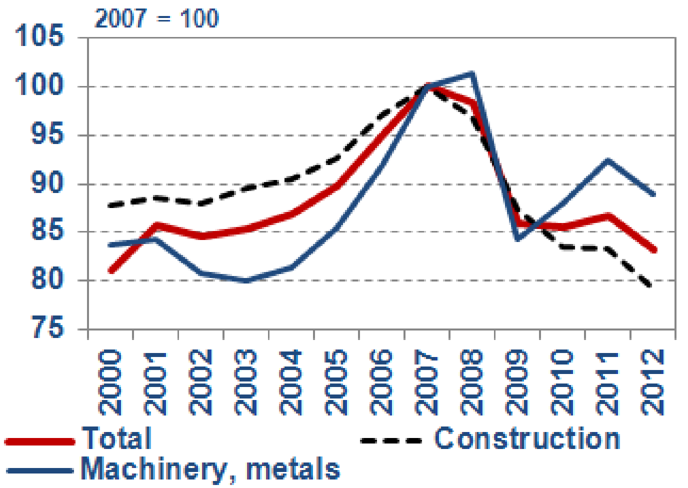



*Source: Eurostat, European Commission*

# Assessing the impact of the crisis - capital

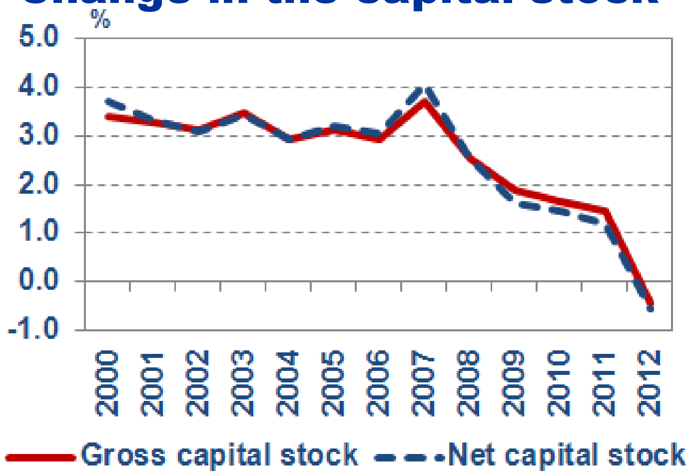
- Deep and protracted decline in investment in euro area
- Large adjustment in countries with excessive pre-crisis growth in construction
- Excessive pre-crisis indebtedness, deleveraging needs
- Negative credit supply shock
- High sensitivity of investment to uncertainty
- Changes in capital scrapping ratio
- Slowdown and decline in capital stock

**Investments**




*Source: Eurostat*

**Change in the capital stock**

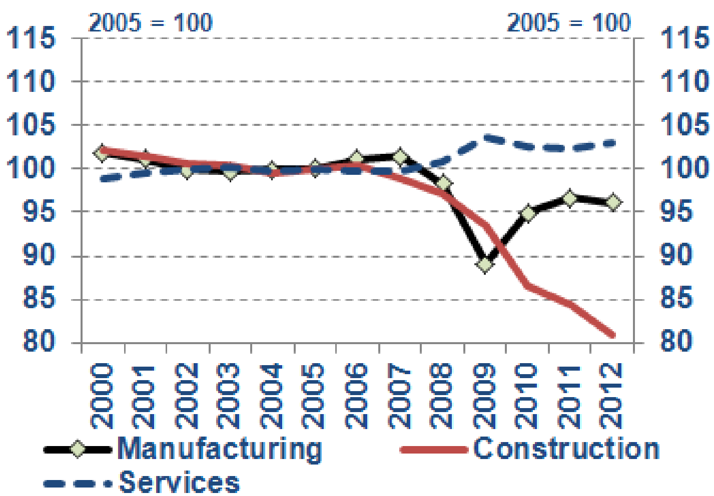



*Source: Eurostat*

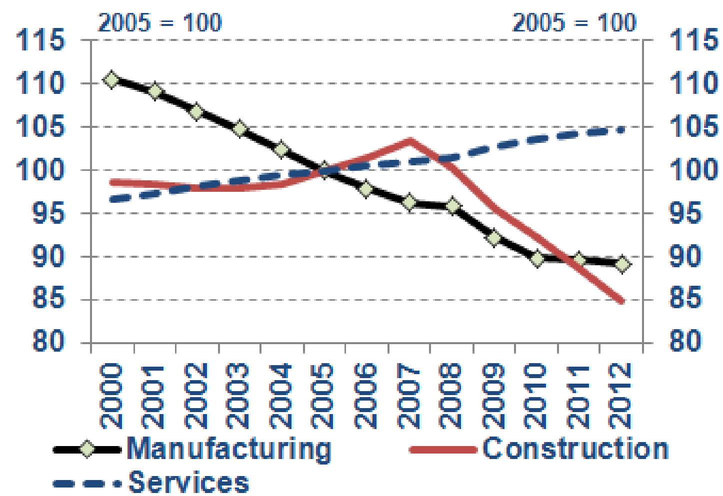
# Assessing the impact of the crisis - TFP

- The effect of crisis on trend TFP growth is thought to be smaller than on non-TFP components
- Direct effects:
  - Partly through drop of innovations due to increased uncertainty, tight fin. Conditions, etc.
- Indirect effects:
  - Across sectors (reallocation of production factors, capital and labour)
  - Within sectors (entry or exit of firms)
  - These may actually boost TFP and potential output on the longer term as production shifts from less productive sectors to more productive ones

## Relative sectoral shares in value added (left) and employment (right)




*Source: Eurostat, ECB*

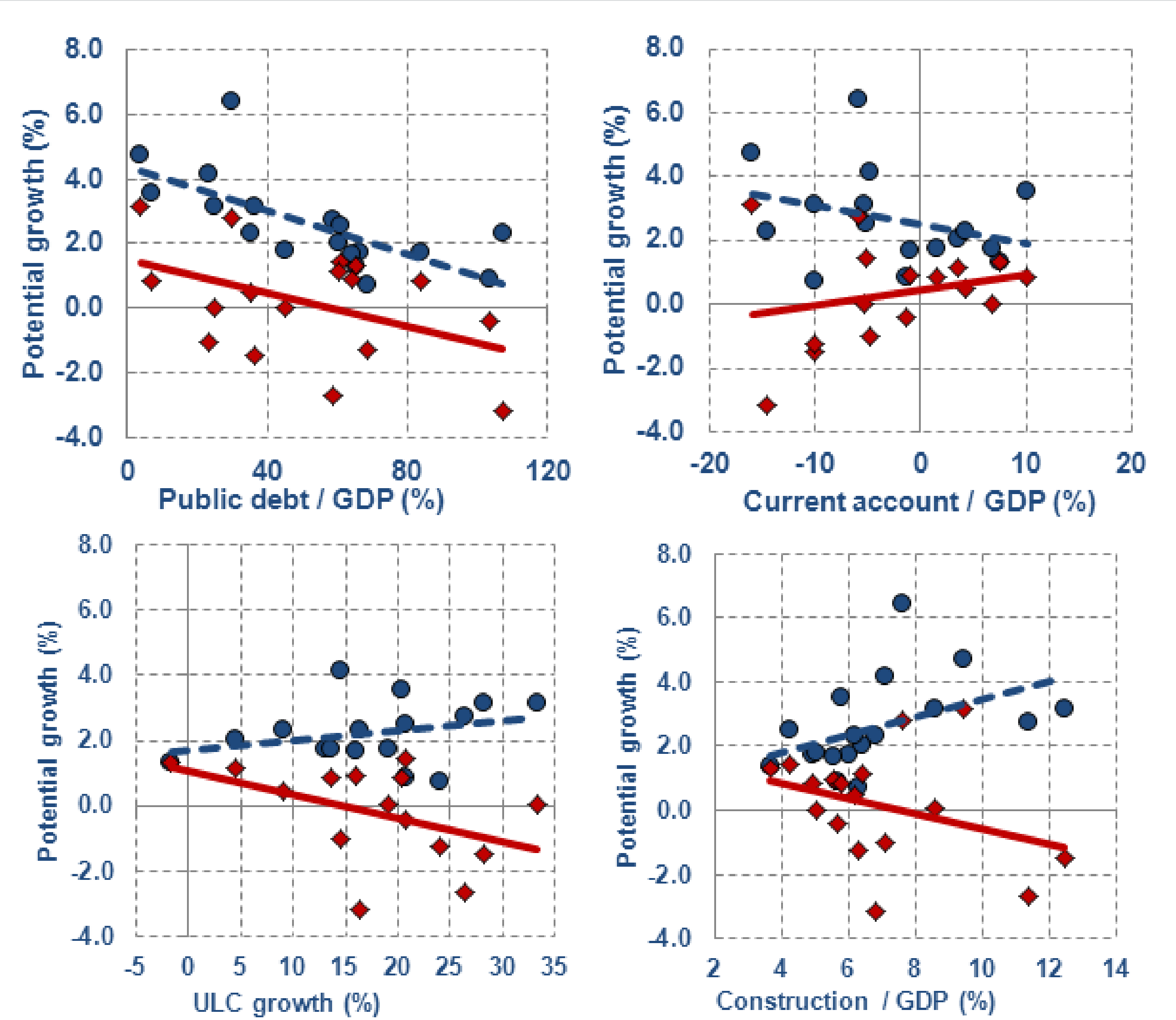



*Source: Eurostat, ECB*

# Cross-country analysis

- Potential output growth declined more in countries with
  - More negative current account balances
  - Stronger ULC growth
  - Extensive construction sector
  - Restrictive labour market regulation
- These are mainly the countries experiencing considerable rebalancing of their economies (ES, PT, GR, IE)
- Higher public (and private) debt goes together with slower potential growth – both before and after the crisis
- Larger imbalances, etc. before the crisis are also associated with larger (negative) output gaps
- Countries that suffered smaller decline in (potential) growth, notably DE, AT and BE, have more balanced economies and less debt

# Cross-country analysis



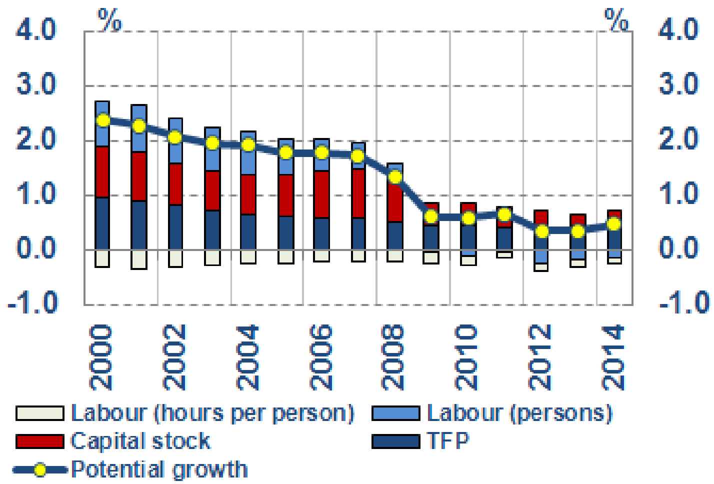

***Y axis: Blue and dashed: 2007***
***Red and solid: 2012***

*Source: Eurostat, ECB*

# Comparing the euro area and the US

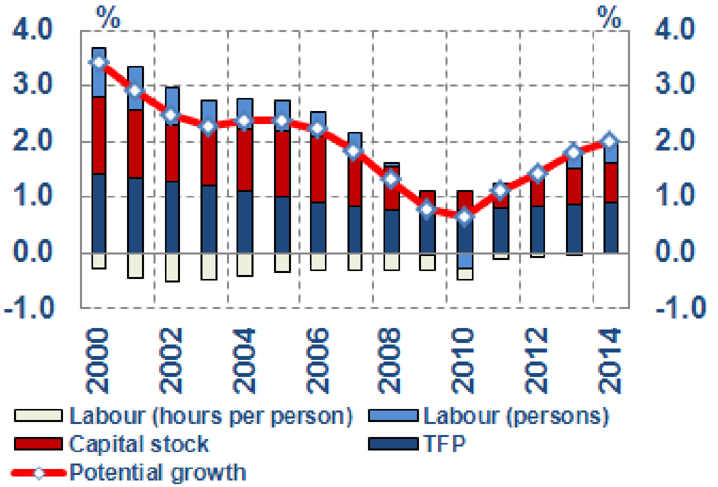
- **Similarities: deceleration in 2009, lower contributions from capital and labour, TFP contribution declined only marginally**
- **Difference: EA potential growth still weak in 2011-12, but recovering in the US**
  - Sovereign debt crisis
  - More flexible economy in US
- **Looking forward, a recovery in potential output growth in US to pre-crisis levels, but weak in EA**
- **US potential growth more than twice of the EA in 2014**
- **TFP:**
  - slower advances in technology in Europe, especially in ICT
  - Difference in productivity in some services sector, e.g. distributive trades
  - The impact of product market regulation

**Potential growth in the EA**




*Source: European Commission*

**Potential growth in the US**

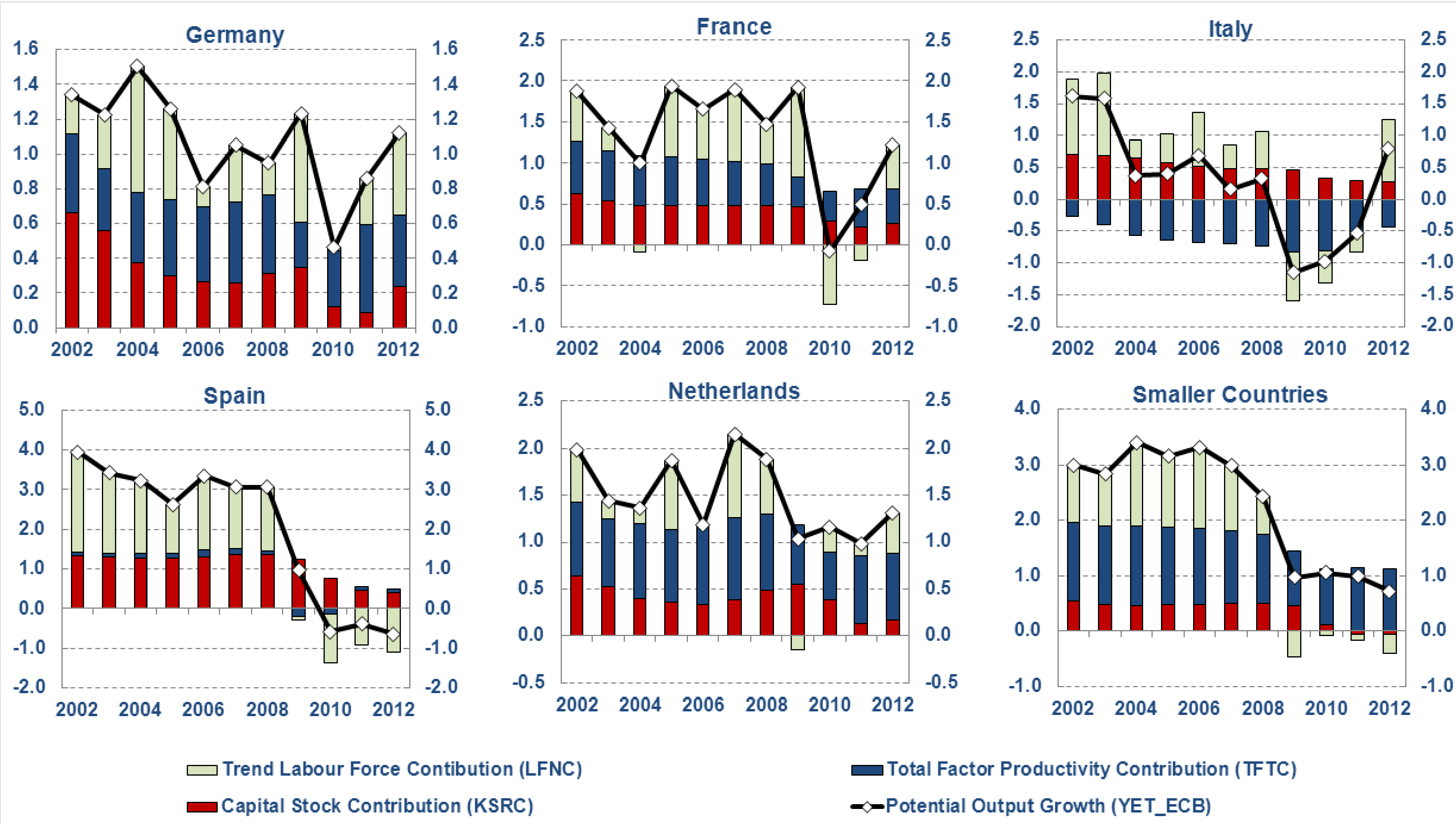



*Source: European Commission*

# Model based potential growth estimates

- Model used: New MCM
- Estimates suggest that the crisis had a marked affect on FR, IT, ES, and NL potential growth, but less so in DE
- In case of DE, IT and FR, potential output is estimated to quickly return to its pre-crisis pace of growth – notably on the back of higher labour force contributions
- By contrast, in case of ES and the smaller countries, recovery in potential growth has yet to occur
- Potential growth beyond 2012 might be supported by stronger investments boosting capital contribution, and stronger TFP developments (due to sectoral reallocations away from low productivity sectors), in particular in ES
- Over the longer term, aging population, is likely to exert a strong negative effect on potential growth, notably on DE

# Model based potential growth estimates




*Source: ECB*

# The role of structural reforms – model based estimates

- **Using EAGLE to simulate the effects of a 10pp decrease in wage markups**
- **Coordinated and non-coordinated reforms are considered**
- **The results suggest that reforms implemented only by one country at a time in the euro area produce positive effects, but cross-country coordination of reform implementation produces larger and more evenly distributed (positive) effects.**

| Case | | Non-coord | | Coordinated | |
|---|---|---|---|---|---|
| Country | | Home | REA | Home | REA |
| | | | | | |
| Real GDP | | 3.44 | 0.01 | 3.64 | 3.55 |
| Consumption | | 3.05 | 0.03 | 3.49 | 3.43 |
| Investment | | 2.85 | 0.02 | 3.43 | 3.30 |
| Hours worked | | 3.76 | 0.00 | 3.76 | 3.66 |
| Real Wages | | -0.68 | 0.03 | -0.26 | -0.21 |
| Exports | | 2.57 | 0.14 | 3.30 | 2.48 |
| Imports | | 2.56 | 0.14 | 3.30 | 2.50 |
| Real Exchange Rate | | 1.04 | 0.01 | 1.07 | 0.72 |
| Terms of trade | | 2.17 | -0.01 | 1.84 | 0.85 |

*Source: ECB*

# Conclusions

- The recent financial crisis affected euro area potential growth negatively on the short to medium term
- Both capital and labour contribution to potential growth declines, the contribution of trend TFP did less so
- Potential growth declined more in countries with larger pre-crises imbalances and more rigid labour markets
- Recovery of the euro area potential growth is likely to be only gradual and heterogenous among the member states
- On the long term, trends in population growth weigh on potential growth
- Long term potential growth outlook depends on structural reforms on product and labour markets; these play a crucial role in
  - Boosting growth potential
  - Mitigate the effects of (negative) cycles on potential growth

# Thank you!

# Background slides

- **Details on EAGLE**
- **Micro-founded, features nominal price and wage rigidities, capital accumulation, and international trade in goods and bonds.**
- **Explicit micro-foundations allow for the clear identification of structural parameters and to properly analyse the impact of structural changes, while the general equilibrium framework allows to appropriately take into account the effects of households' and firms' behaviour.**
- **Monopolistic competition in product and labour markets. The degree of competition in the two markets is captured by a mark-up between the marginal costs and final prices, and between the marginal rate of substitution between consumption and leisure and wages. These mark-ups are inversely related to the degree of substitutability between goods or labour varieties. By permanently modifying these elasticity parameters we can simulate the impact of structural reforms that modify the degree of competition in the considered market.**

# Background slides

- Details on NMCM
- CES production function
- Technical progress, although estimated in the data utilising a quite flexible functional specification, is primarily determined by exogenous processes.
- Hence, the only fully endogenous determinant of potential output is the capital stock, the accumulation of which (net investment) is conditional on the underlying projected macroeconomic developments.