

# The productivity puzzle: why improving labour productivity is critical for Europe's economic (and political) stability

---

P. Subacchi, M. Colagrossi

Nomura Foundation

Macro Economy Research Conference

**PRODUCTIVITY, TECHNOLOGY, AND GROWTH**

November 16, 2016

**CHATHAM  
HOUSE**

The Royal Institute of  
International Affairs

# Outline

---

- Introduction
  - Labour productivity and the role of human capital
- Productivity growth: a historical perspective
  - Labour productivity and TFP in the long run (1950-2016)
  - The (missing) ICT-driven revolution and human capital mobility
- Productivity growth in Europe
  - Before the crisis: divergent patterns
  - After the crisis: looking for adjustment(s)
- Britain's productivity puzzle
- Italy's lost decade(s)
- Conclusions

# Labour productivity: a simple framework

---

$$\frac{Y}{L} = Af \left( \frac{K}{L}, Util \right)$$

**Labour productivity** ( $Y/L$ ), the output per unit of employment, can be decomposed in three main factors:

- The amount of capital per labour unit ( $K/L$ ), or *capital deepening*;
- The degree of technical efficiency with which labour and capital inputs are combined ( $A$ ), or TFP;
- The degree of utilisation of production factors within the economy (*util*).

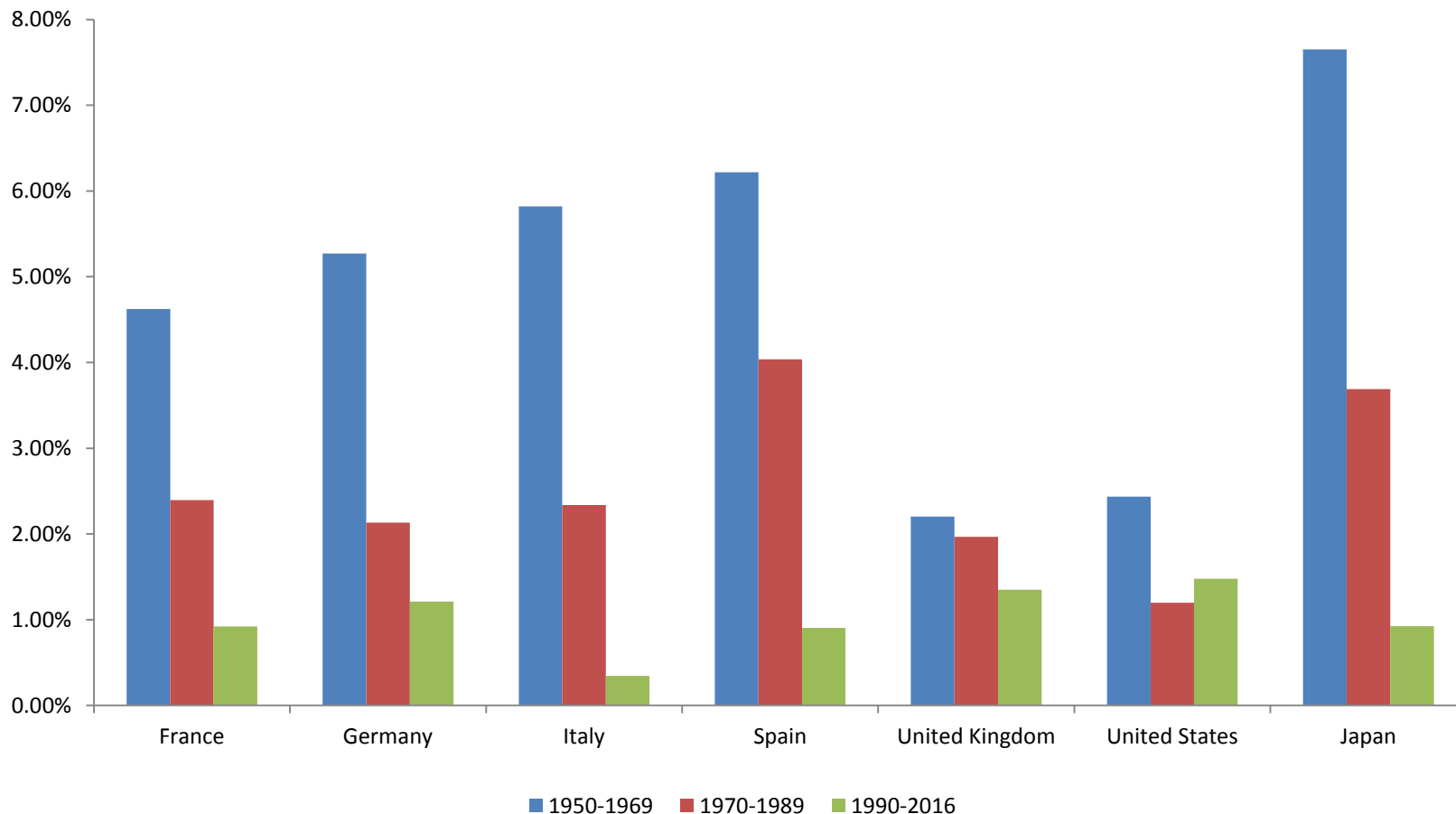
# Introducing human capital

---

“any stock of knowledge or characteristics the worker has (either innate or acquired) that contributes to his or her productivity” (Acemoglu, 2013). Two approaches:

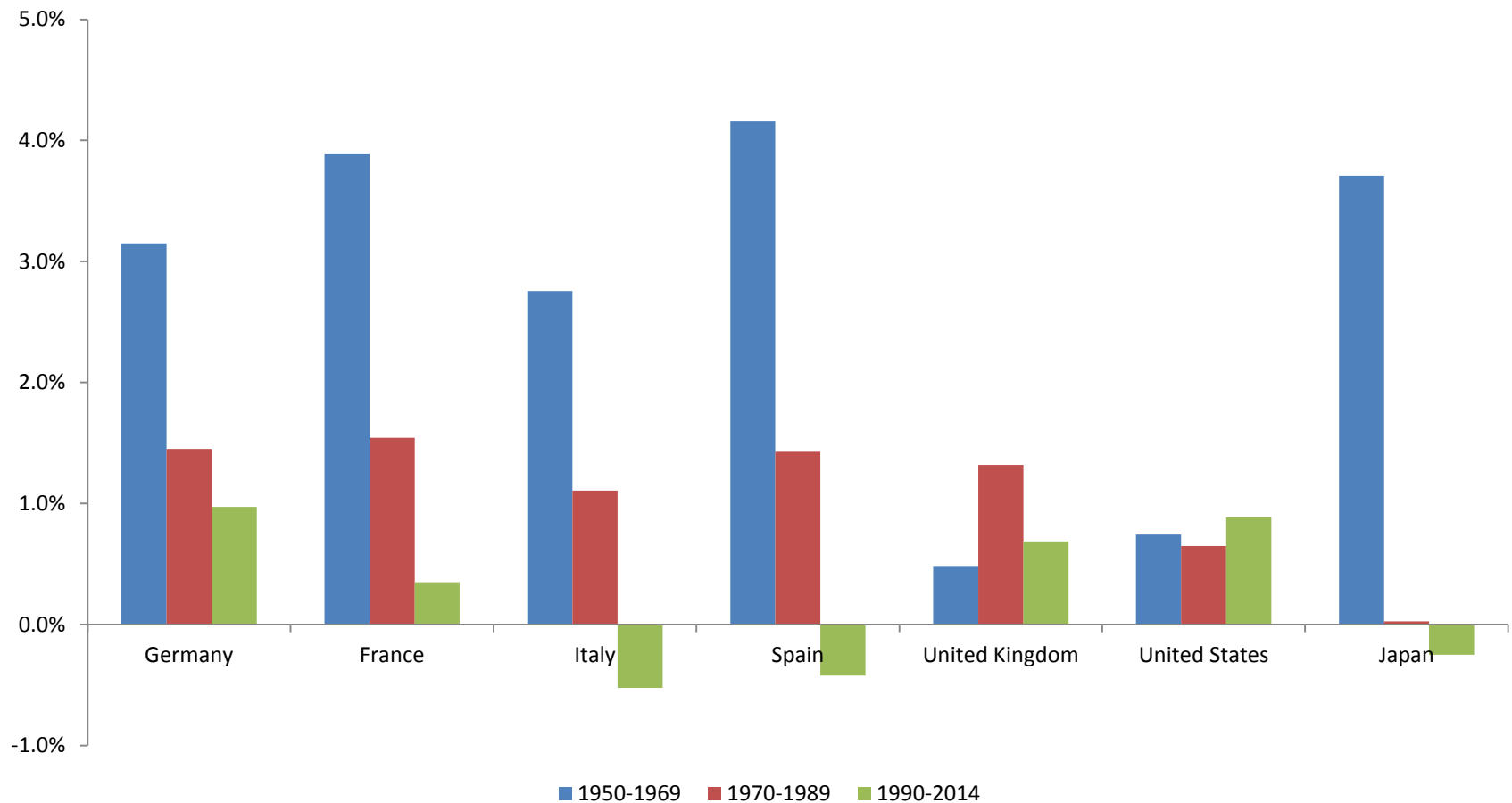
- *The Lucas/Becker view.* Human capital increases workers’ productivity in all tasks, and as such we can think about it as a unidimensional factor of production (H) that is a function of the output (Y) similarly to labour (L) and capital (K).
- *The Nelson/Phelps model.* Human capital does not directly impact the output levels but rather increases the rate of absorption of new technologies, hence TFP is a function of A.

# Labour productivity (1950-2016)



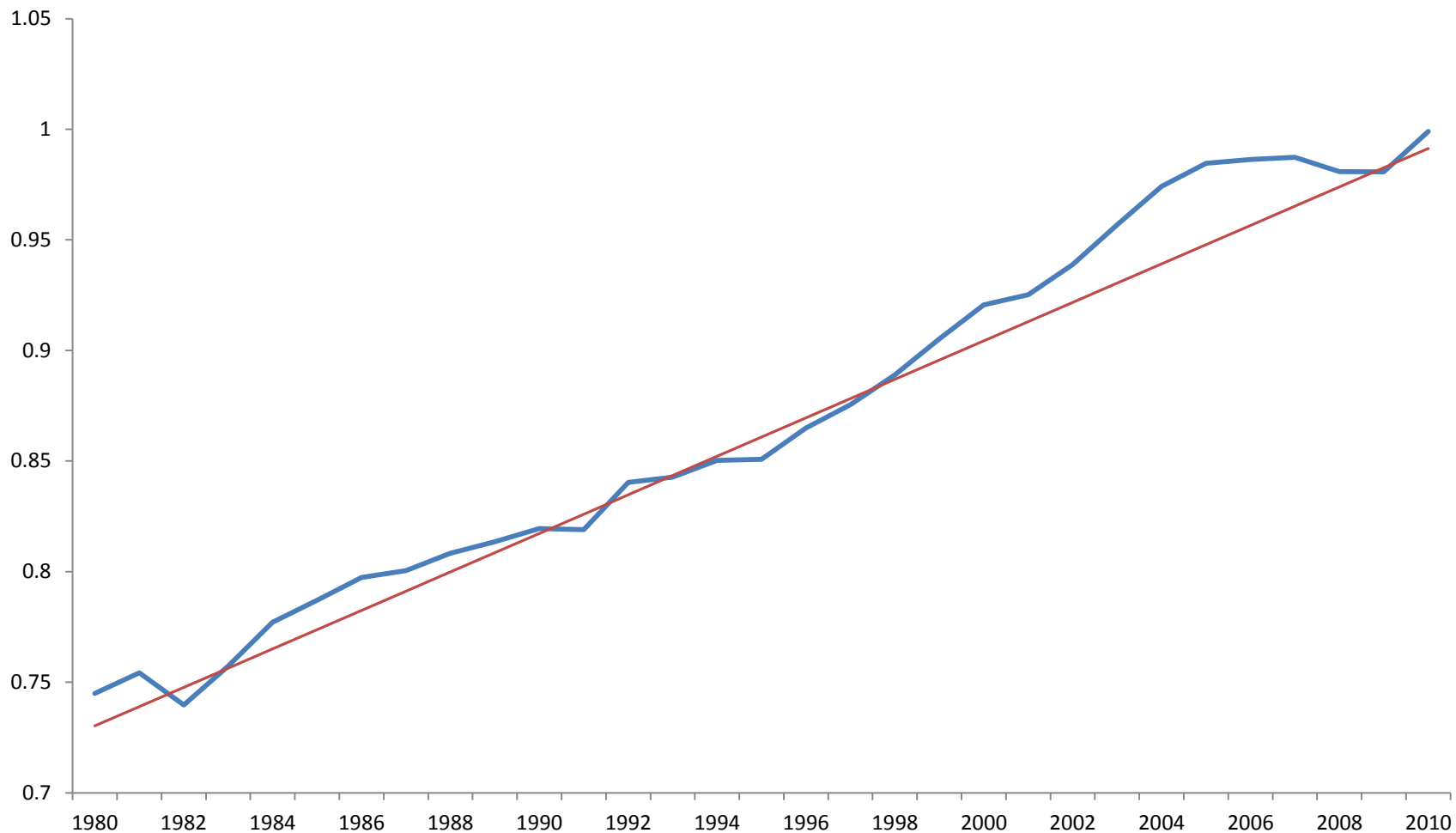
Labour Productivity Average Growth Rates (1950-2016).  
Source: Total Economy Database (TED).

# TFP growth rates (1950-2014)



Total Factor Average Growth Rates (1950-2014).  
Source: Total Economy Database (TED).

# US: ITC-driven TFP resurgence? (1980-2010)



TFP (CNP) United States (1980-2010) with Linear Trend (1980-1989). Sources: DataStream, University of Groningen and our calculation.

# The (missing) ICT-driven revolution

---

Solow Computer Paradox (1987): *computers and new techs have a limited impact on productivity*; initially rejected as myopic, yet not too off the mark.

Gordon (2000); once we filter out the ICT hardware sector *new economy's effects on productivity growth are surprisingly absent*.

More recently Ip (2015) argued that *transformative innovation really is happening on the internet. It's just not happening elsewhere*.



## The (new) role of human capital

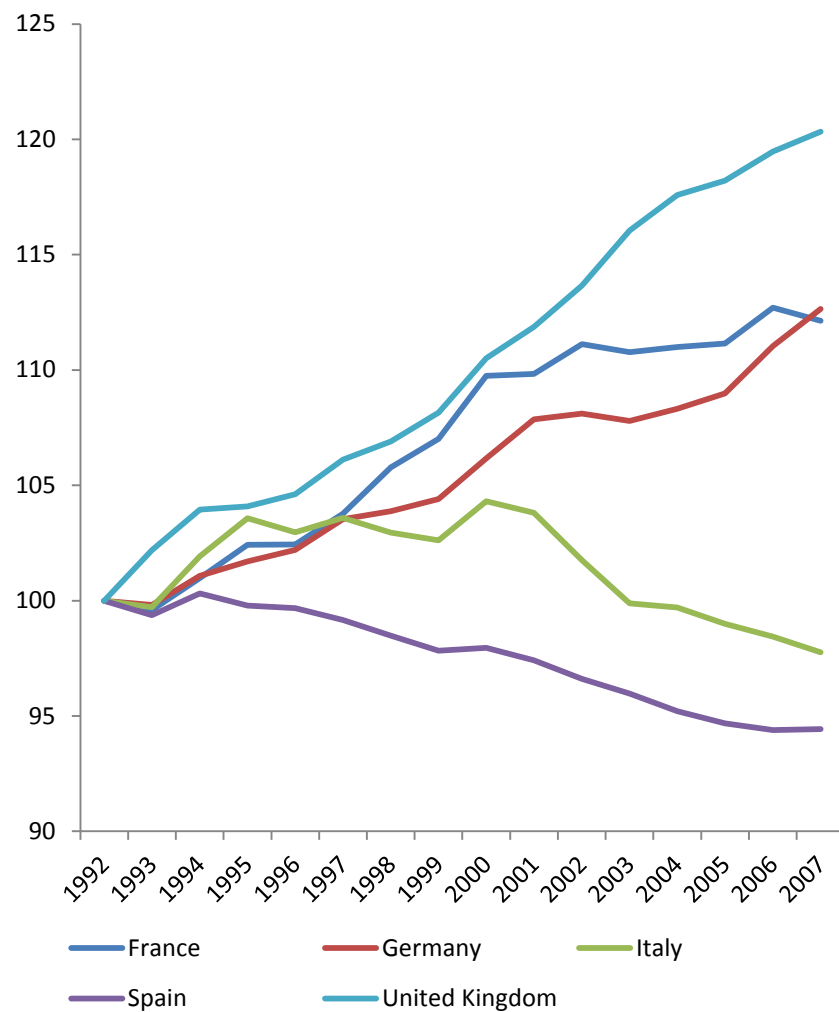
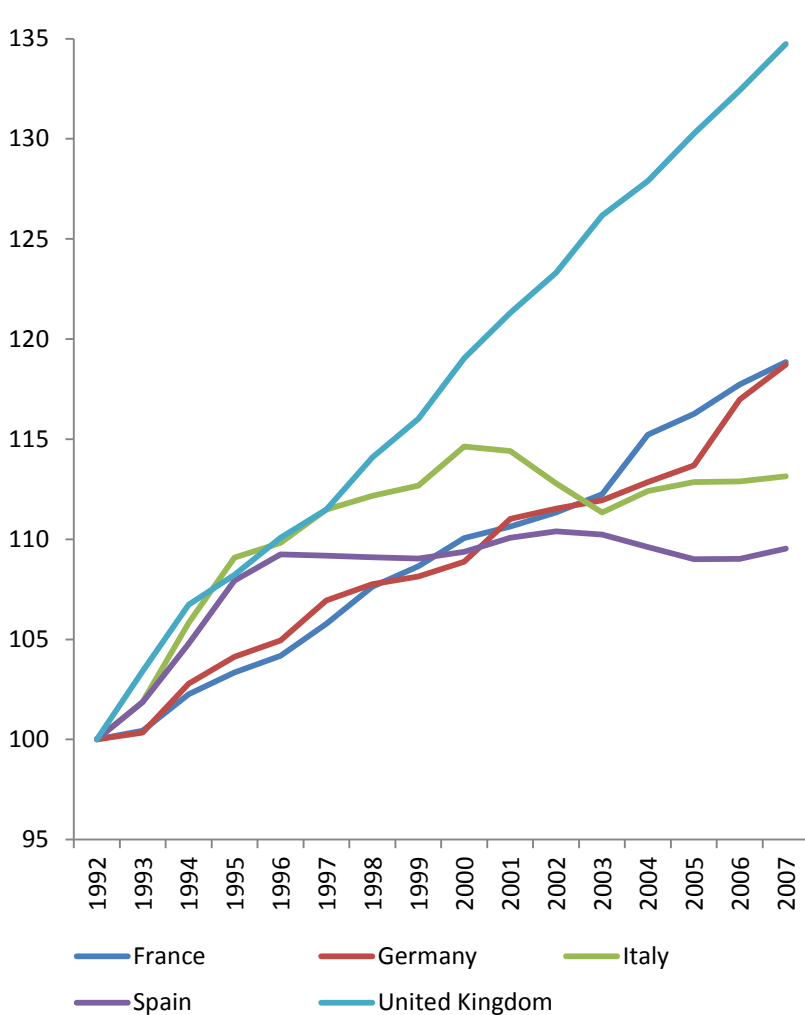
---

Given the limited impact of ICT on productivity, renewed attention towards HC.

The latter poses new challenges. Cross-border movements of high skilled labour was neglectable among advanced economies before the 90's. *Brain drain* was a problem of developing countries alone.

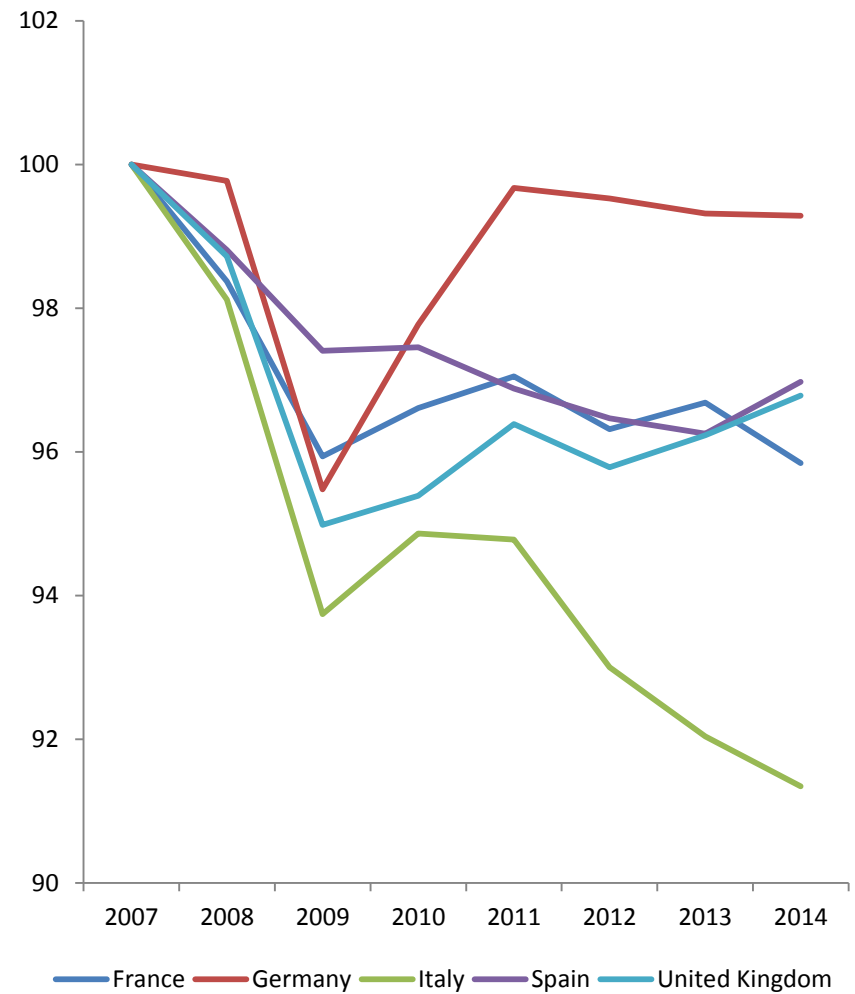
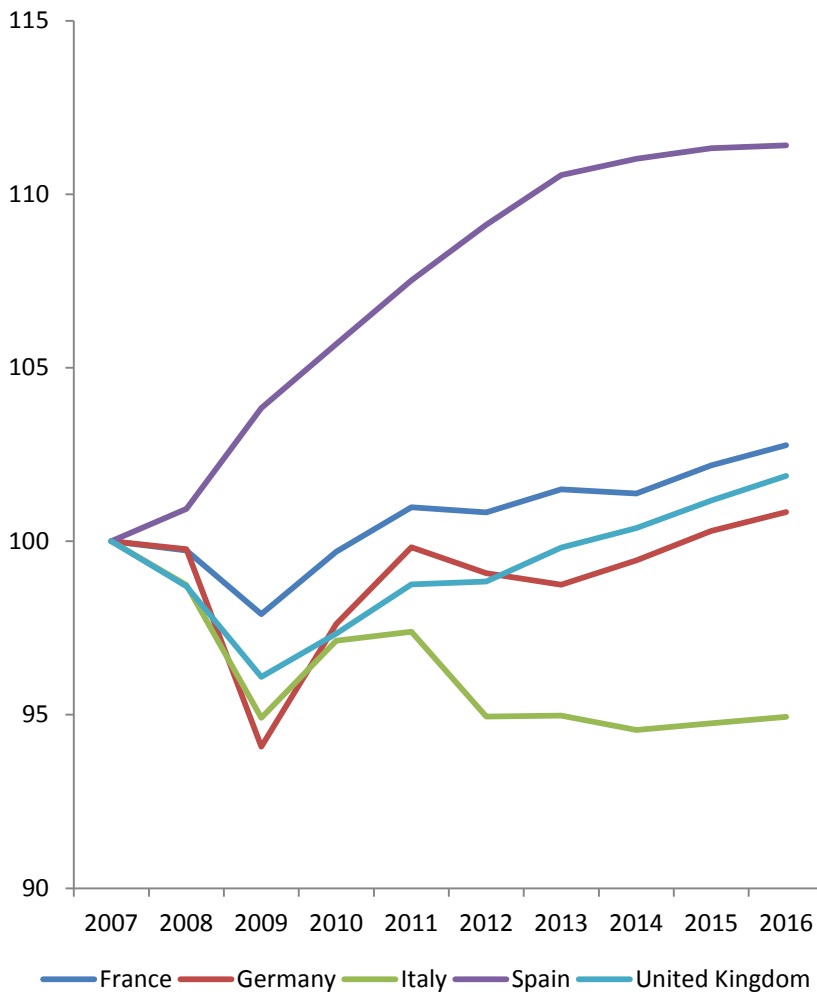
Within Europe, highly skilled workers began to move (*free movement principle*) from the south to the western and northern countries. Is a new source of (potential) imbalances.

# Europe: from Maastricht to the crisis (1992-2007)



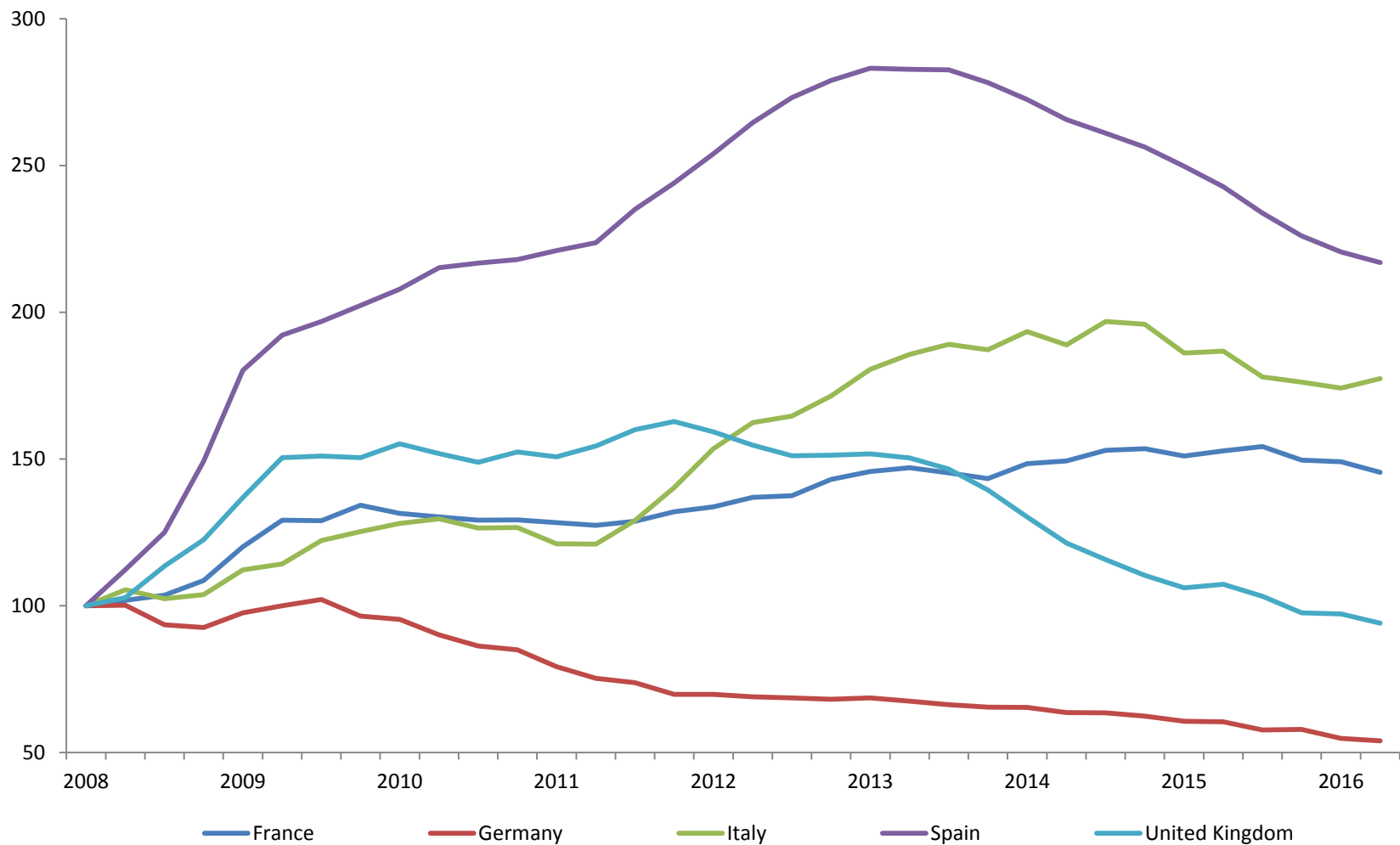
Labour Productivity and TFP (1992-2007). Panel of selected European Countries. 1992=100. Source: Total Economy Database (TED).

# Europe: recovering from the crisis (2007-today)



Labour productivity and TFP (2007-2016/2014). 2007=100. Sources: Total Economy Database (TED) and OECD.

# Europe: post-Crisis unemployment rates (2008-2016)



Unemployment rates (2008-2016). 2008=100. Source: OECD.

## Short/medium term adjustments

---

Persistent regional-based different productivity growth rates are not sustainable: adjustment are needed.

In the short/medium term there are 3 ways:

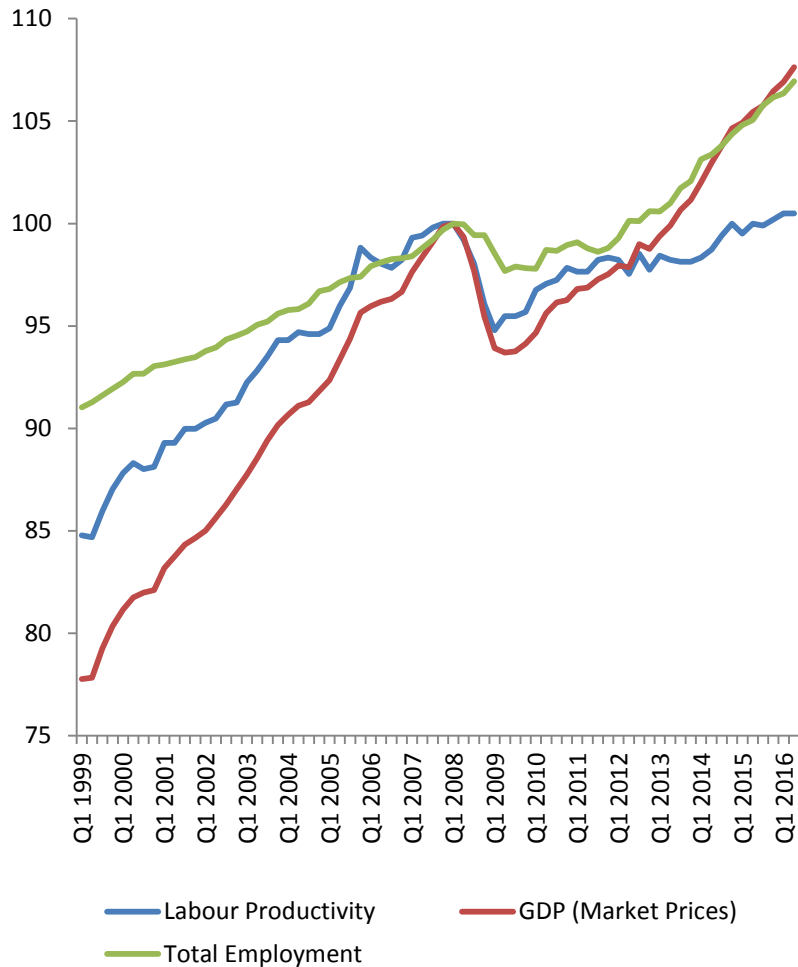
1. Increase production factor utilisation (*util*);
2. Increase the capital within the economy;
3. Increase the HC within the economy (Lucas/Becker view).

## Long term adjustment(s)

---

- (1) real wages competition; achievable through labour reforms or higher levels of inflation;
- (2) increase of HC to improve the absorption of technological innovations (Nelson/Phelps framework).

# Britain's productivity puzzle



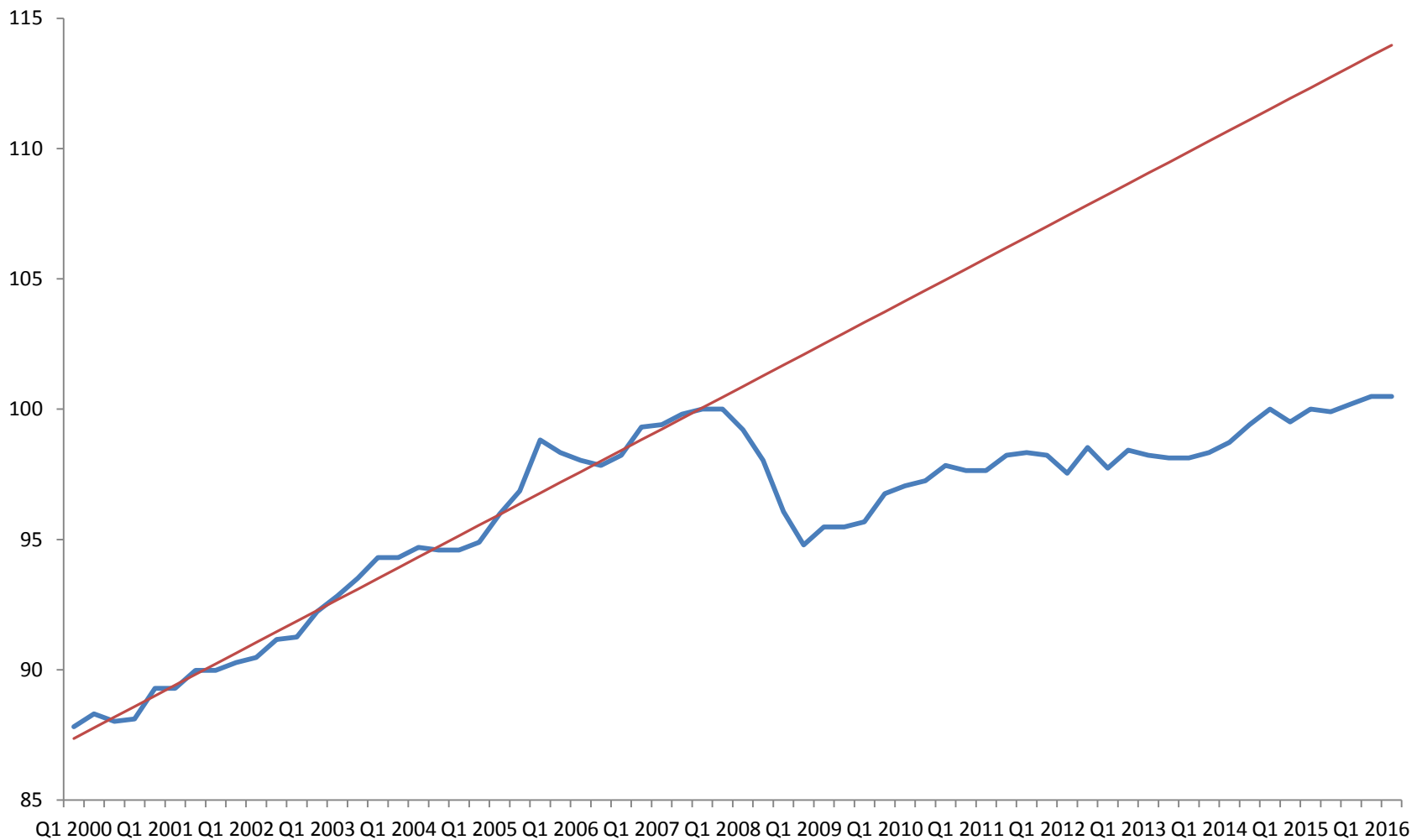
In the aftermath of the financial crisis UK labour productivity took a divergent path from the economy employment levels and GDP growth.

While the latter experienced an upward trend, since the onset of the financial crisis the British economy documented persistently weak labour productivity levels.

This paradox is known in the literature as the British productivity puzzle.

Labour Productivity, GDP Market Prices and Total Employment, (1999-2016). Q1 2008=100. Sources: ONS, Datastream and our calculations.

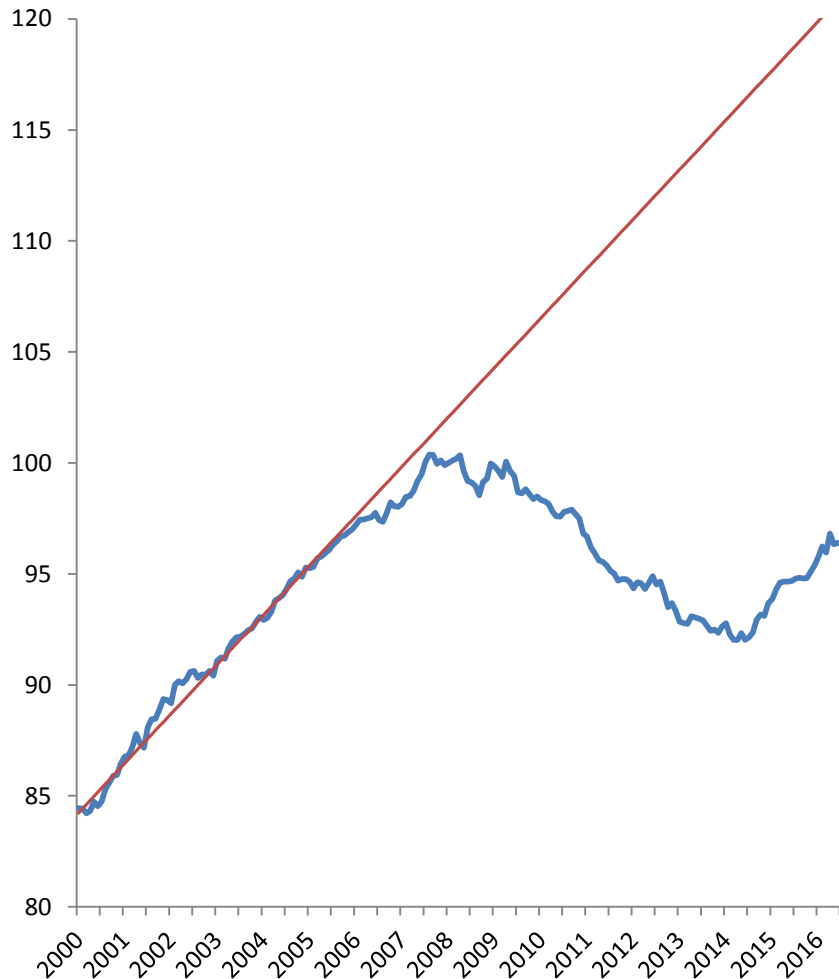
# Labour productivity in the UK (2000-2016)



Labour Productivity, United Kingdom (2000-2016). 2008=100. Linear Trend (2000-2004). Source: ONS and our calculation.



# UK: depressed real earnings (2000-2016)



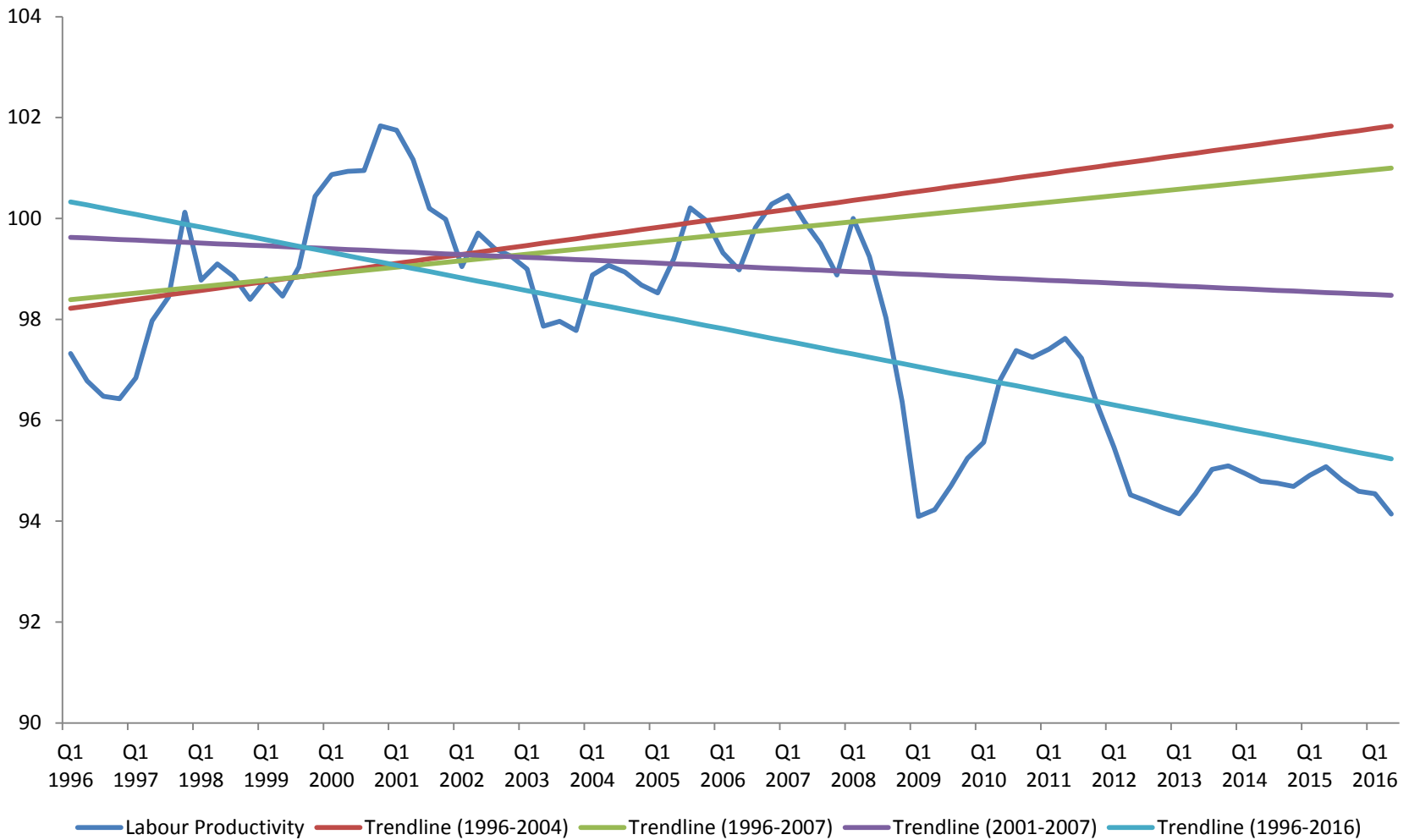
Real Average Weekly Earnings, United Kingdom. (2000-2016). 2008=100 with 2000-2004 trend. Sources: ONS and our calculation.

Firms find more profitable to increase labour rather than capital being the first relatively cheaper.

Low real wages are driven by an high labour-supply in form of highly skilled and educated migrants from the south of Europe.

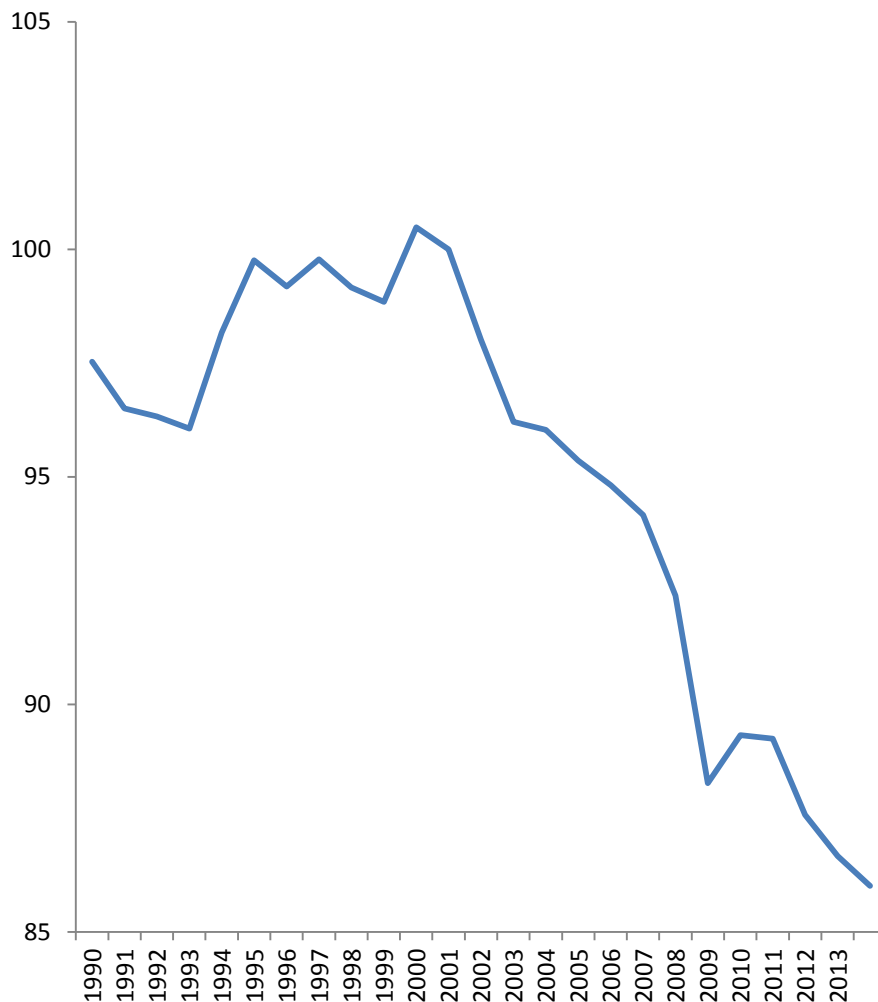
Such labour hoarding is capable to explain low labour productivity levels in a context of high GDP growth.

# Labour productivity in Italy: lost decades



Labour Productivity, Italy (1996-2016), Q1 2008=100 and linear trend. Sources: OECD and our calculations.

# Total Factor Productivity (1990-2014)



TFP growth in Italy has been particularly worrisome.

It is however consistent with the brain drain the country experienced since the 90's, who caused both labour productivity to drop (Becker/Lucas) and lowered the absorption of new techs (Nelson/Phelps), hence depressing TFP growth.

Investment in education and research might restore long term growth possibilities.

Total Factor Productivity, Italy (1990-2014), 2001=100. Source: OECD.

## Short/medium term adjustments

---

Persistent regional-based different productivity growth rates are not sustainable: adjustment are needed.

In the short/medium term there are 3 ways:

1. Increase production factor utilisation (*util*);
2. Increase the capital within the economy;
3. Increase the HC within the economy (Lucas/Becker view).

# Conclusions

---

- European countries experienced regional-based productivity growth differential.
- The latter have been exacerbated by labour mobility: highly skilled workforce moved from the south of Europe towards the western/northern countries, following capital flows.
- Human capital mobility can help us explain both the “British productivity puzzle” and the “Italian lost decade(s)”.
- Adjustments are needed. Mediterranean countries should engage themselves in labour market reforms and investments in human capital.

# Thank you

---

*Productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker.*

*Paul Krugman, The Age of Diminishing Expectations (1994)*