

What's Happening to Productivity Growth?

Key Macro Trends and Patterns

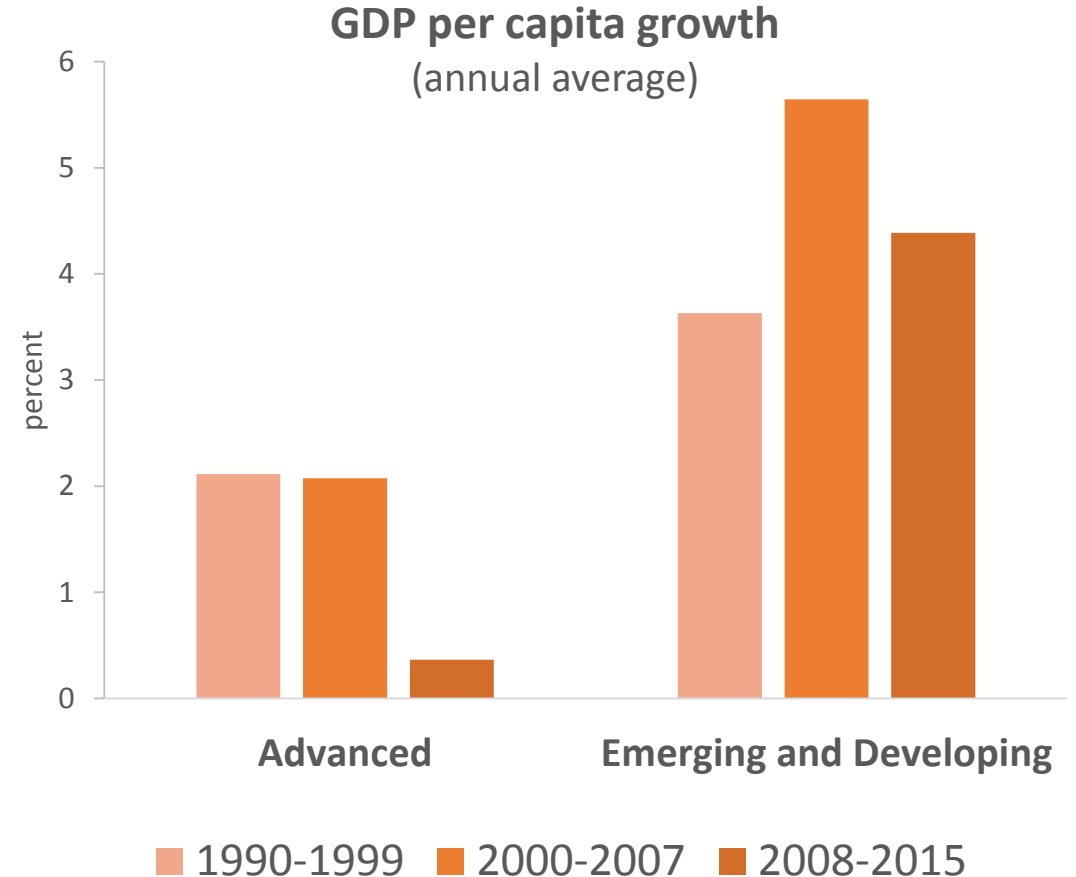
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Motivation

- GDP growth is slowing down around the world, driven in large part by weak productivity growth.
- Labor force participation rates for prime-working-age men have been falling.
- Many advanced and some emerging economies have aging populations.

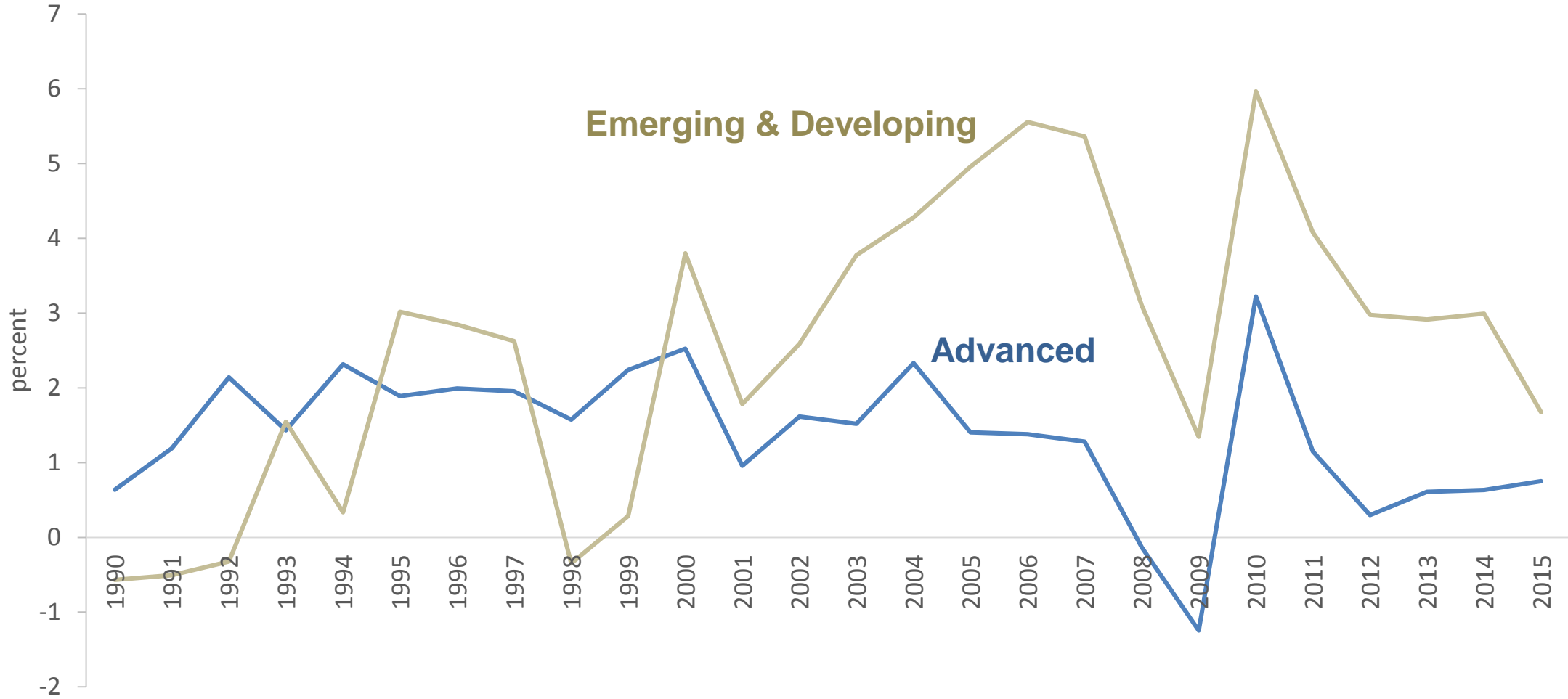
→ Productivity is key to future growth



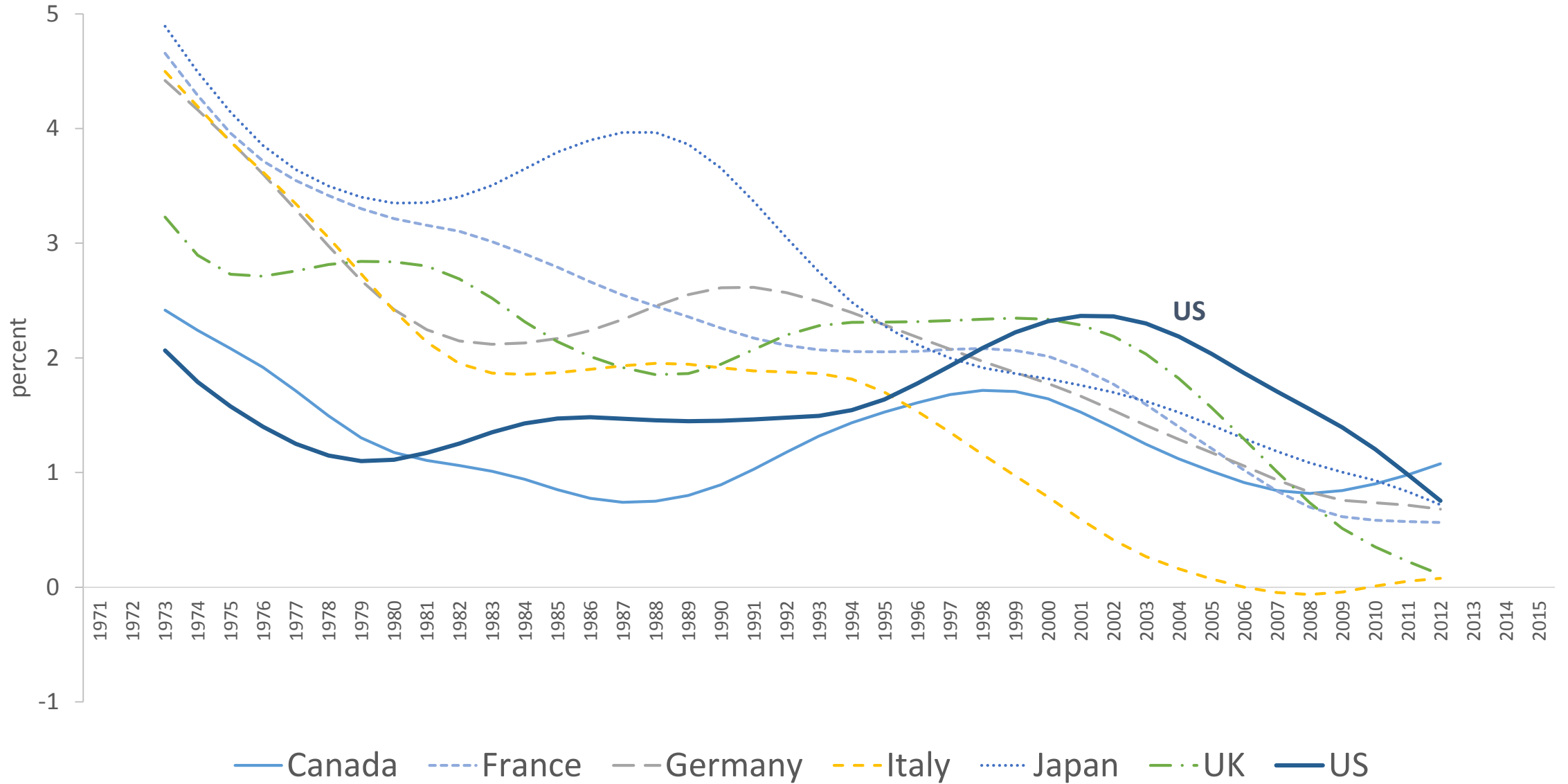
The Bottom Line

- There is a widespread slowdown in labor productivity growth across both advanced and emerging market economies.
- It is primarily driven by slowing TFP growth, but capital deepening has played a more visible role in recent years.
- The slowdown is broad-based, spanning manufacturing and service industries.
- The slowdown predates the crisis in advanced economies, beginning in 2004 in the U.S. after the ICT boom and earlier in Europe and Japan.

Labor Productivity Growth



Trend Labor Productivity Growth in Advanced Economies

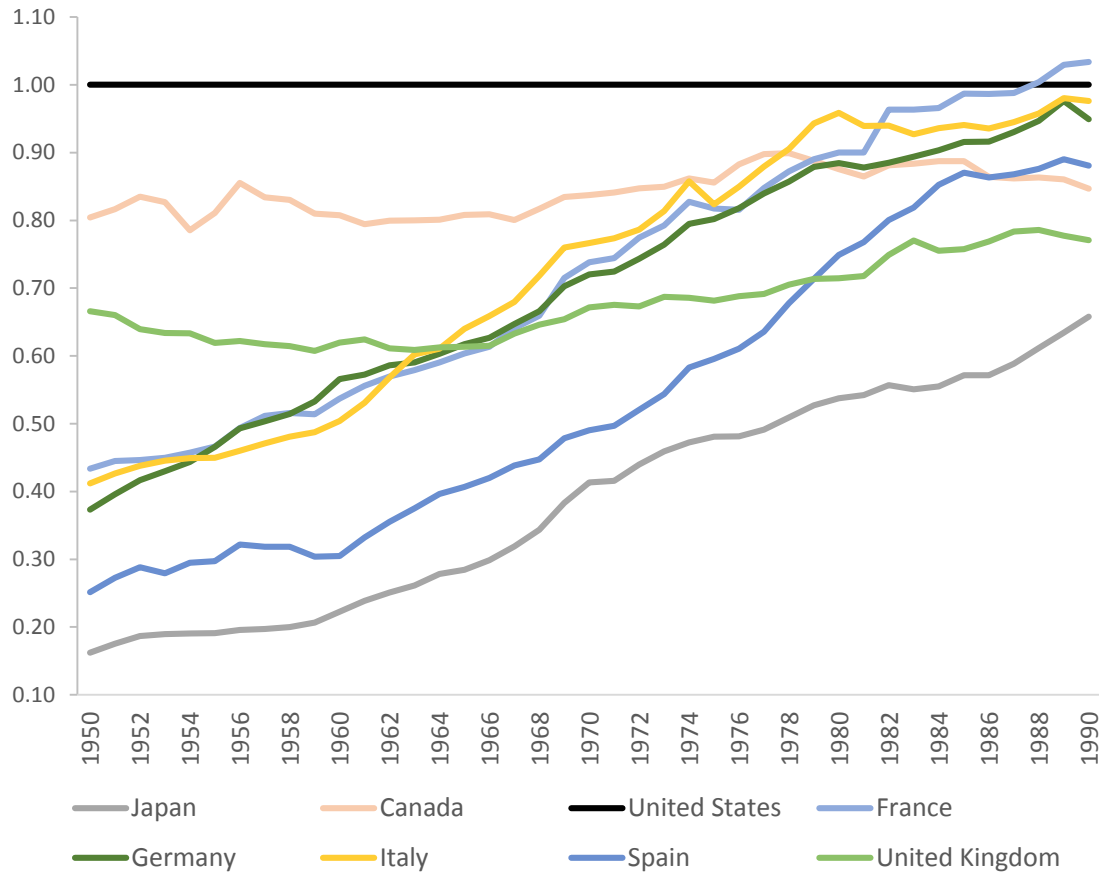


Data source: OECD Productivity Statistics.
Note: Output per hour worked.

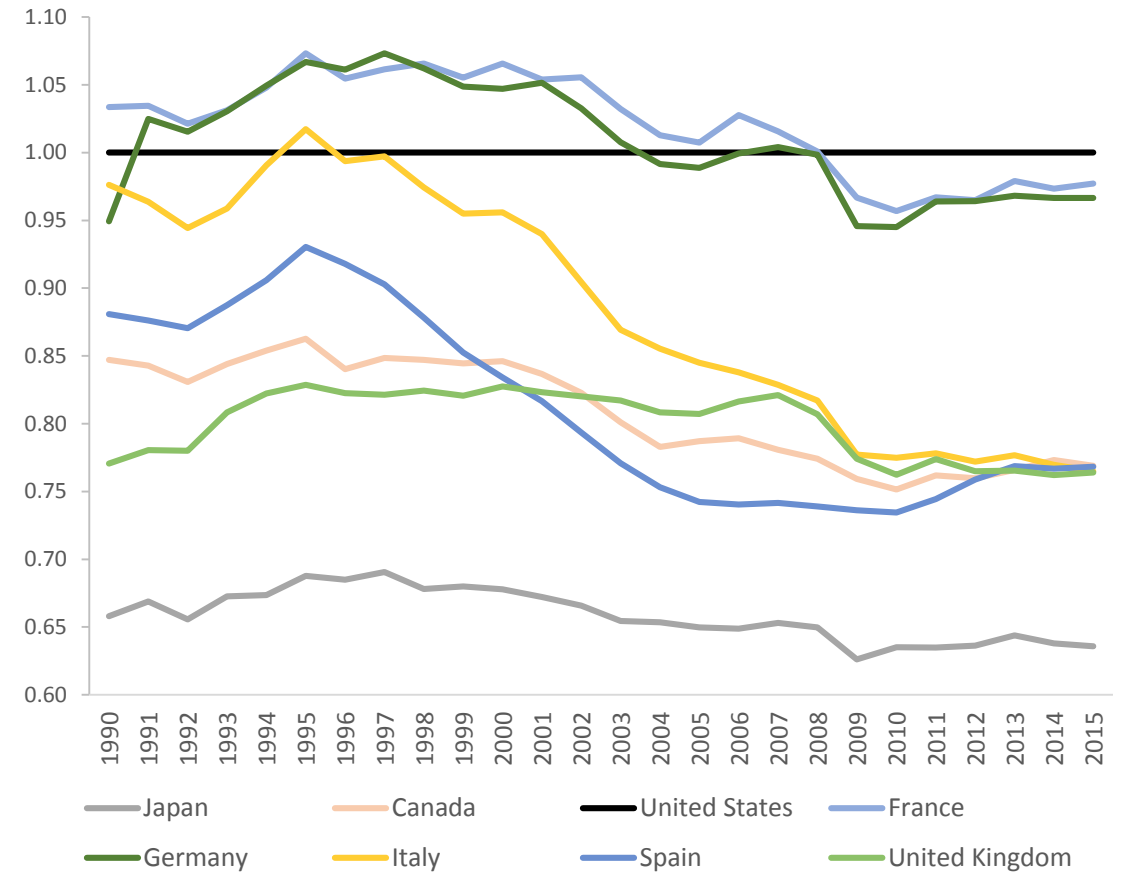
Convergence and Divergence in Labor Productivity

United States = 1

1950-1990



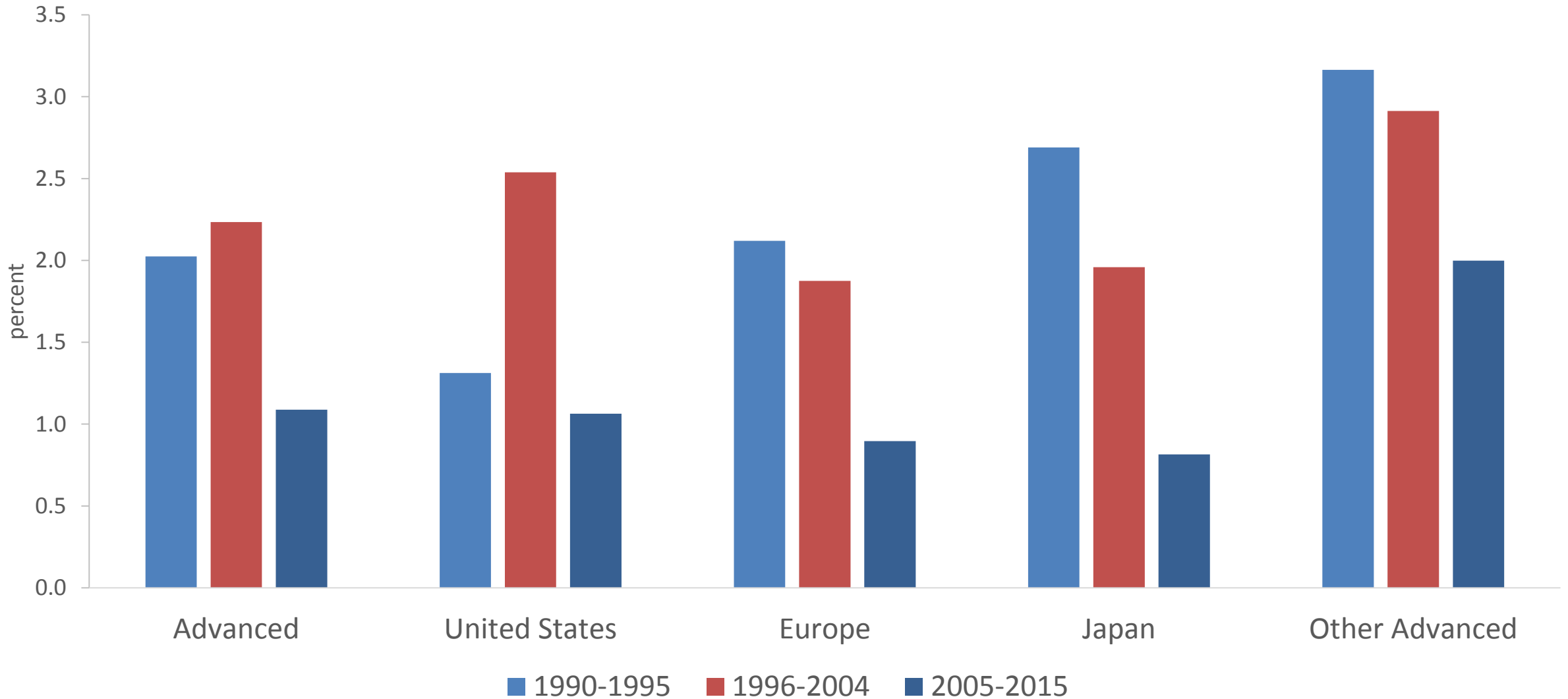
1990-2015



Source: Calculations based on data from The Conference Board.

Note: Output per hour worked, output in constant 2015 US\$ (converted to 2015 price level with updated 2011 PPPs)

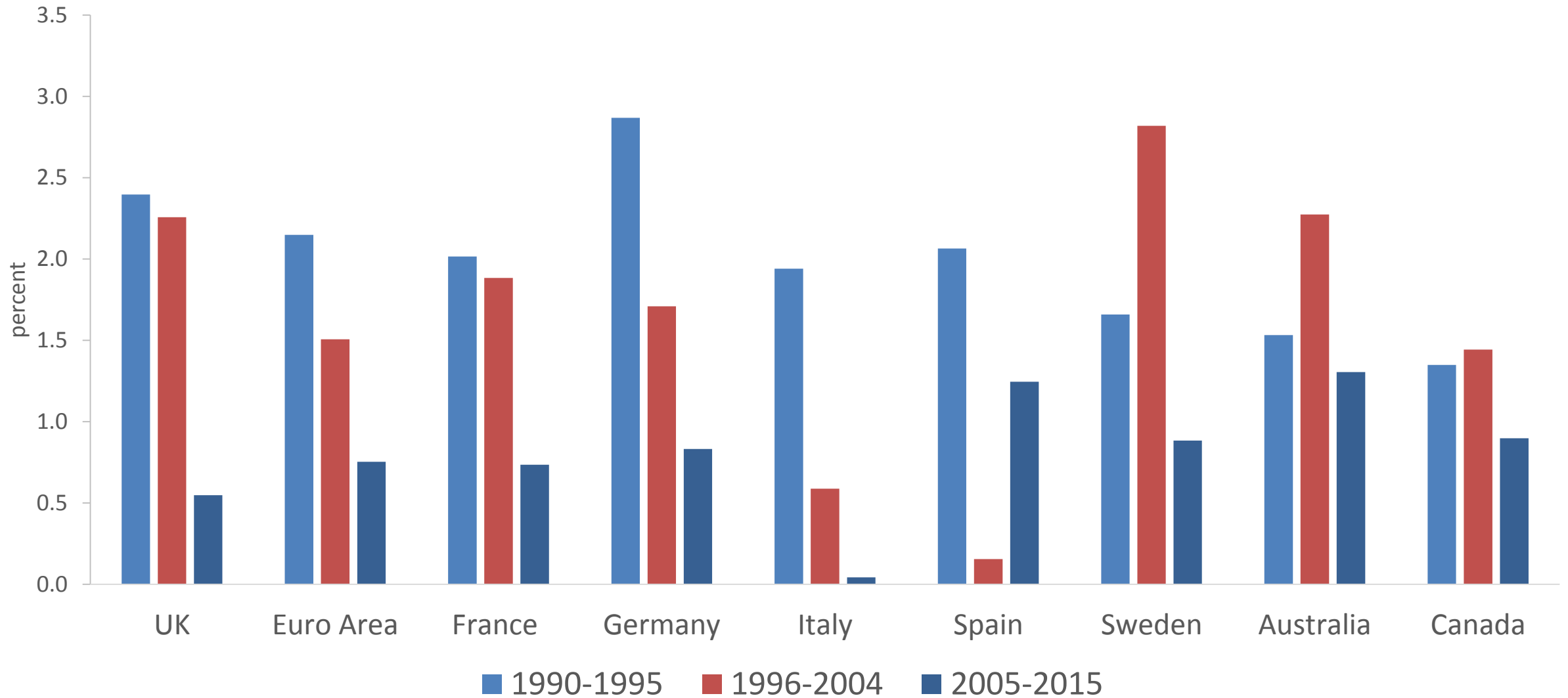
Labor Productivity Growth in Advanced Economies



Source: Calculations based on data from The Conference Board.

Note: Output per hour worked. Groups aggregated using GDP-PPP weights. Other Advanced includes Australia, Canada, Hong Kong, Israel, New Zealand, Singapore, South Korea and Taiwan.

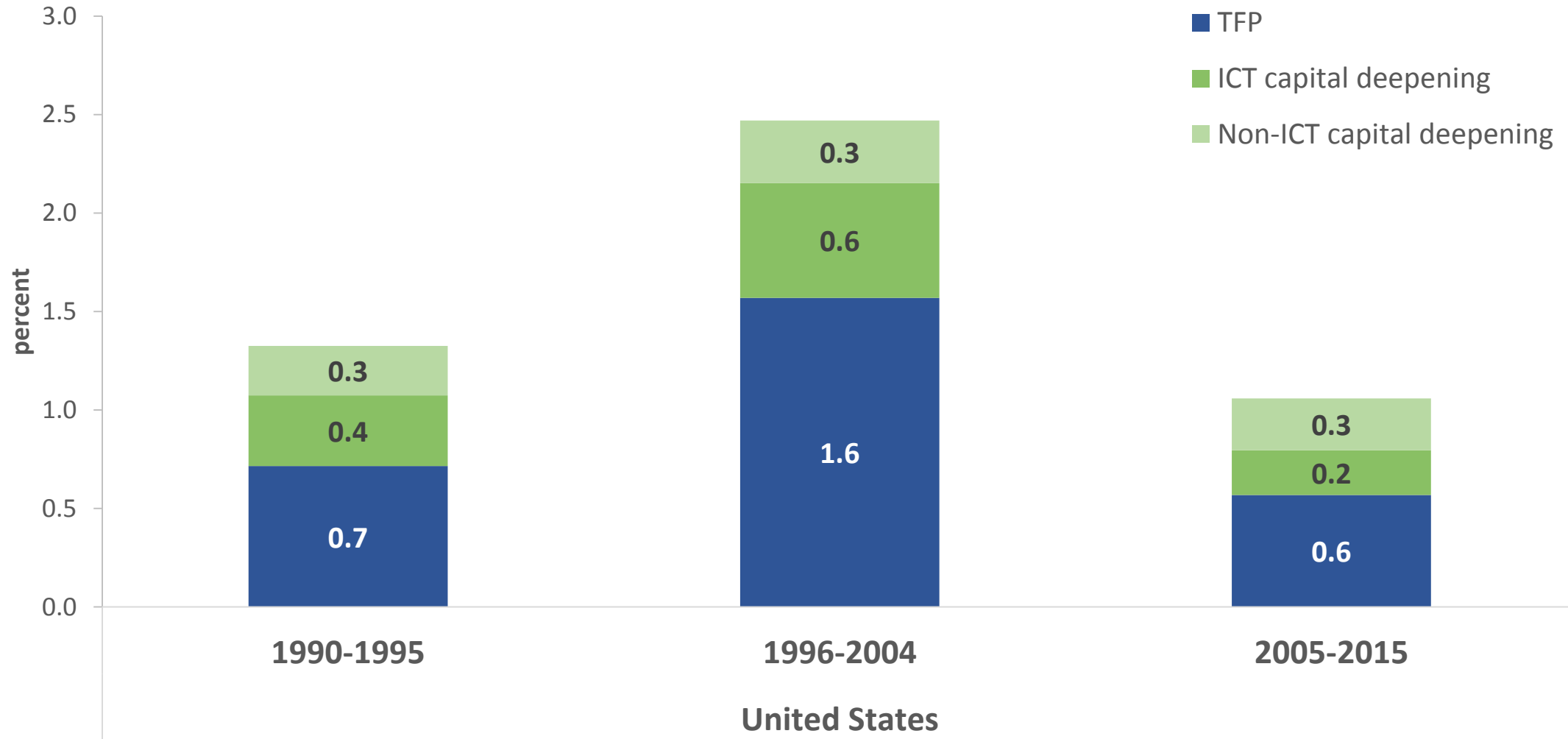
Labor Productivity Growth in Advanced Economies



Source: Calculations based on data from The Conference Board.
Note: Output per hour worked. Groups aggregated using GDP-PPP weights.

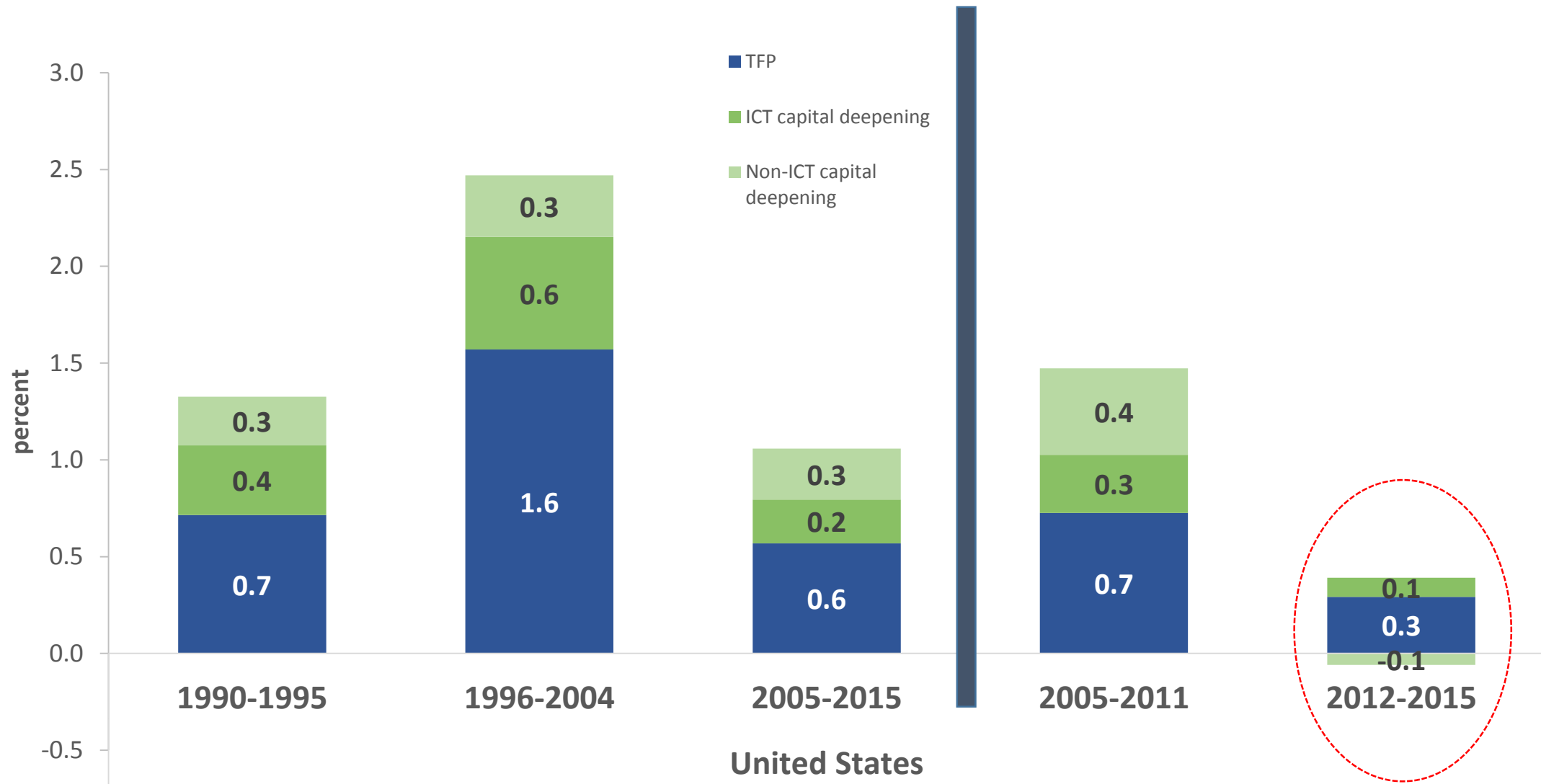
Decomposing Labor Productivity Growth: TFP and Capital Deepening

United States



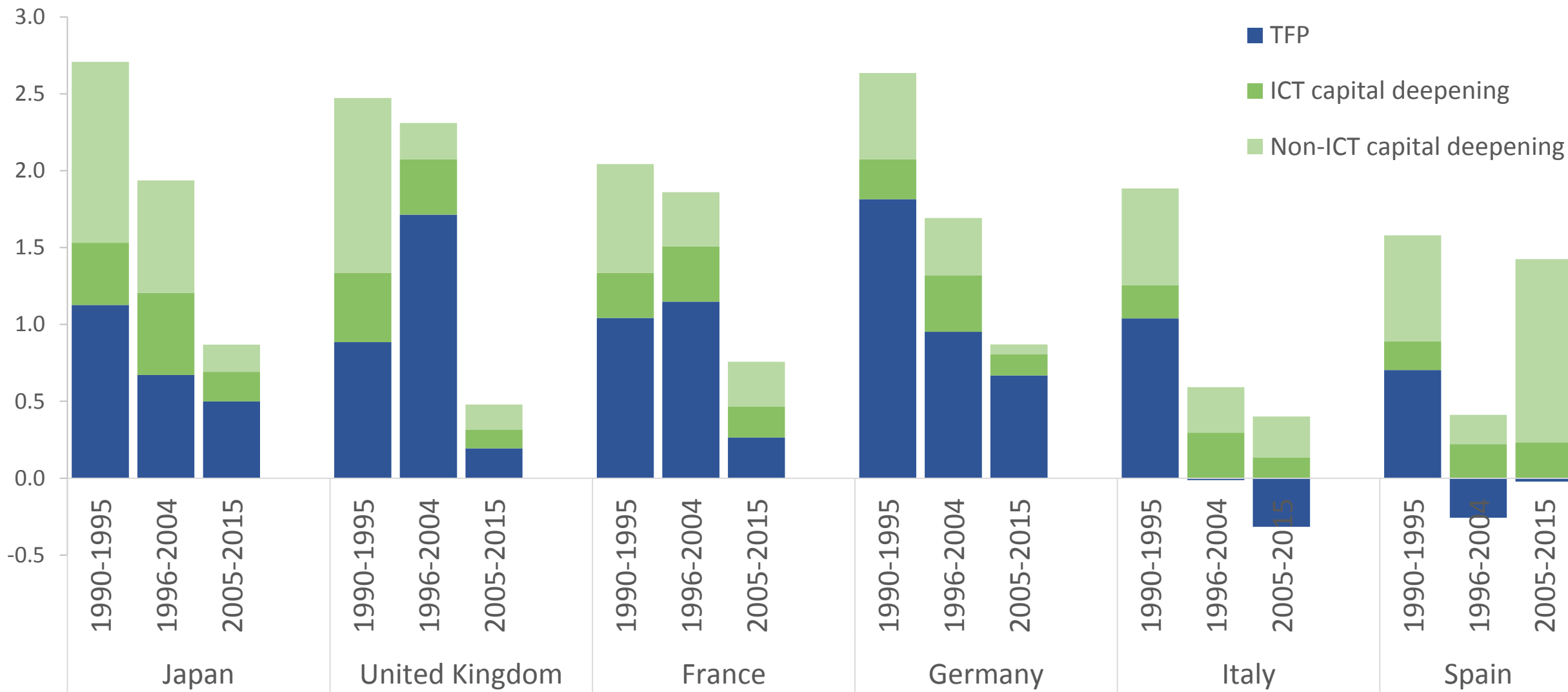
Decomposing Labor Productivity Growth: TFP and Capital Deepening

United States



Decomposing Labor Productivity Growth: TFP and Capital Deepening

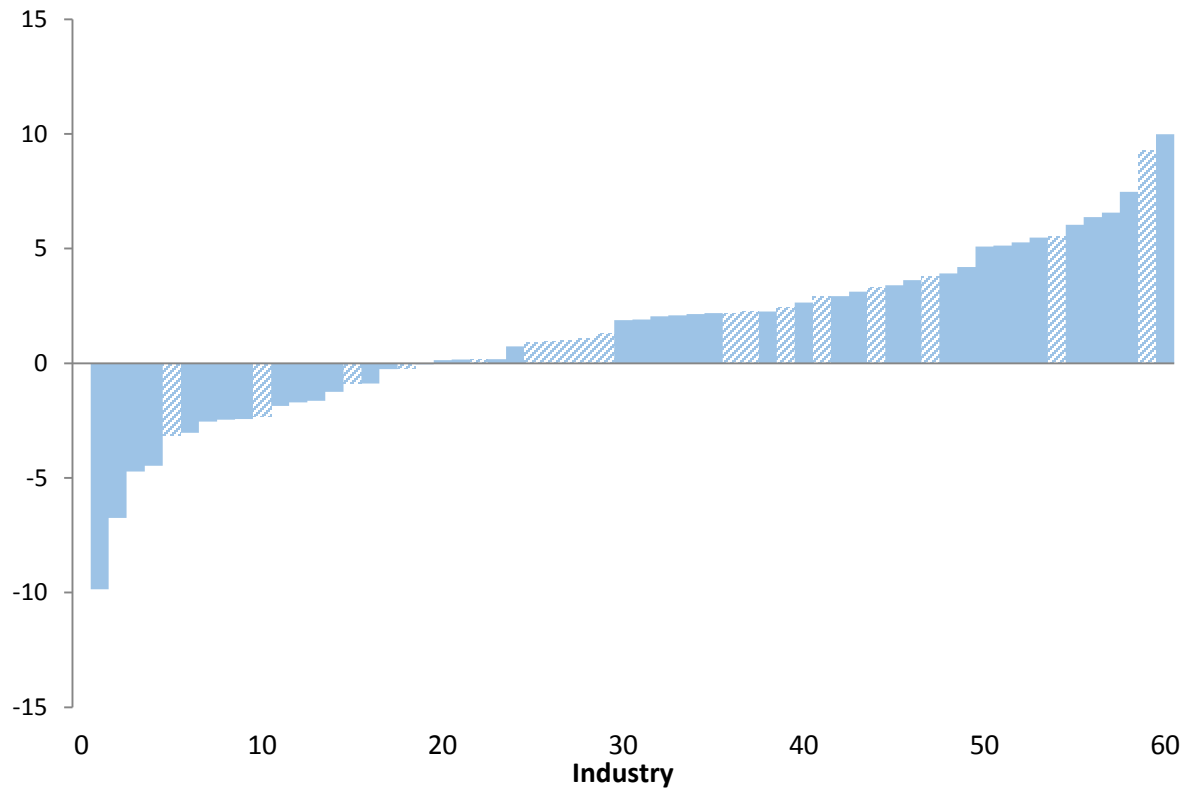
Other Advanced Economies



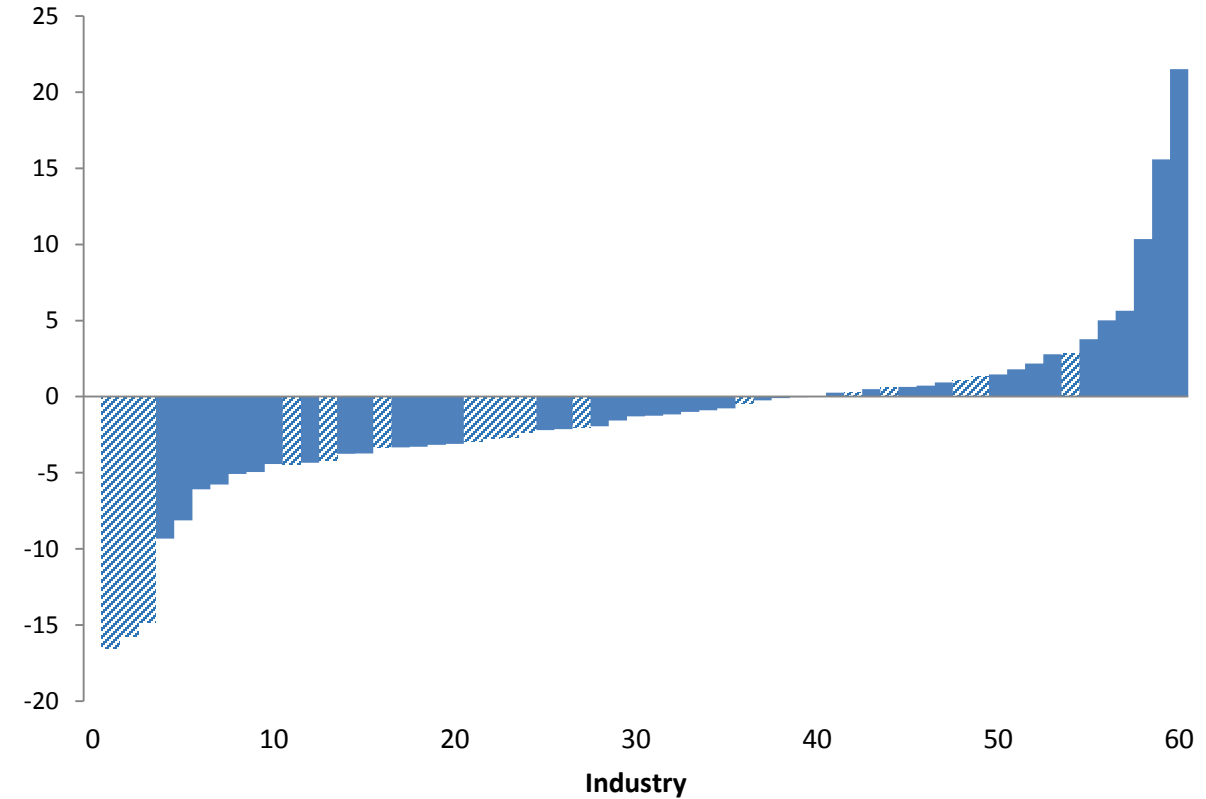
A Broad-Based Rise and Fall in US TFP Growth

Percentage point change in average industry TFP growth

Broad Rise
1988-1995 to 1996-2004



Broad Fall
1996-2004 to 2005-2014



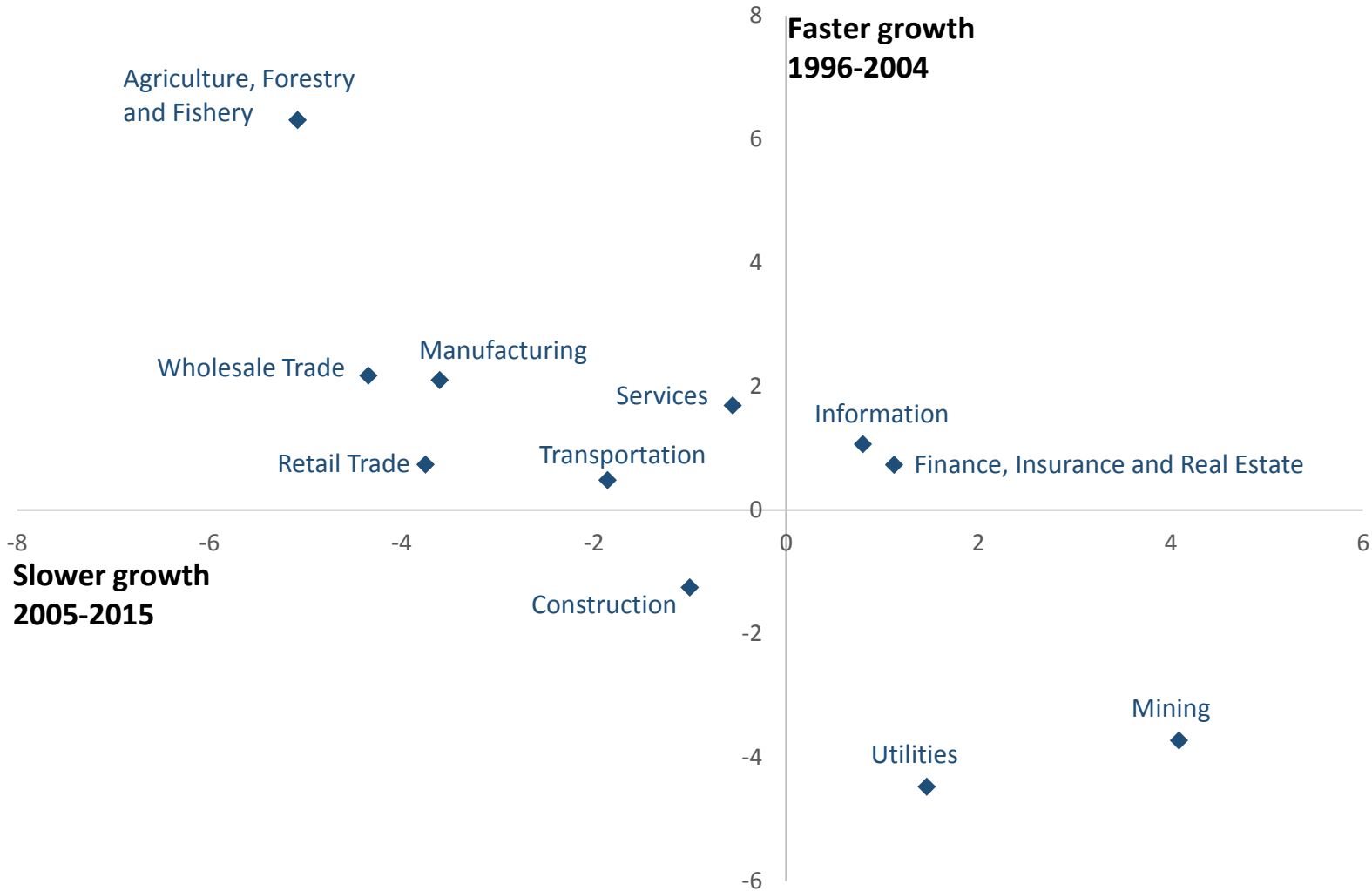
Source: Calculations based on data from Bureau of Labor Statistics Multifactor Productivity database.

Note: Industries ranked by change in average value-added TFP growth between both periods, based on Byrne, Fernald and Reinsdorf (2016). Striped bars denote manufacturing industries.

Industries with largest positive acceleration in recent period (right panel) are (i) funds and trusts, (ii) water transport and (iii) oil and gas extraction. Industries with largest negative deceleration in the same period are (i) apparel and leather and applied products, (ii) petroleum and coal products and (iii) computer and electronic products.

Rising and Falling Together

Average US industry TFP growth

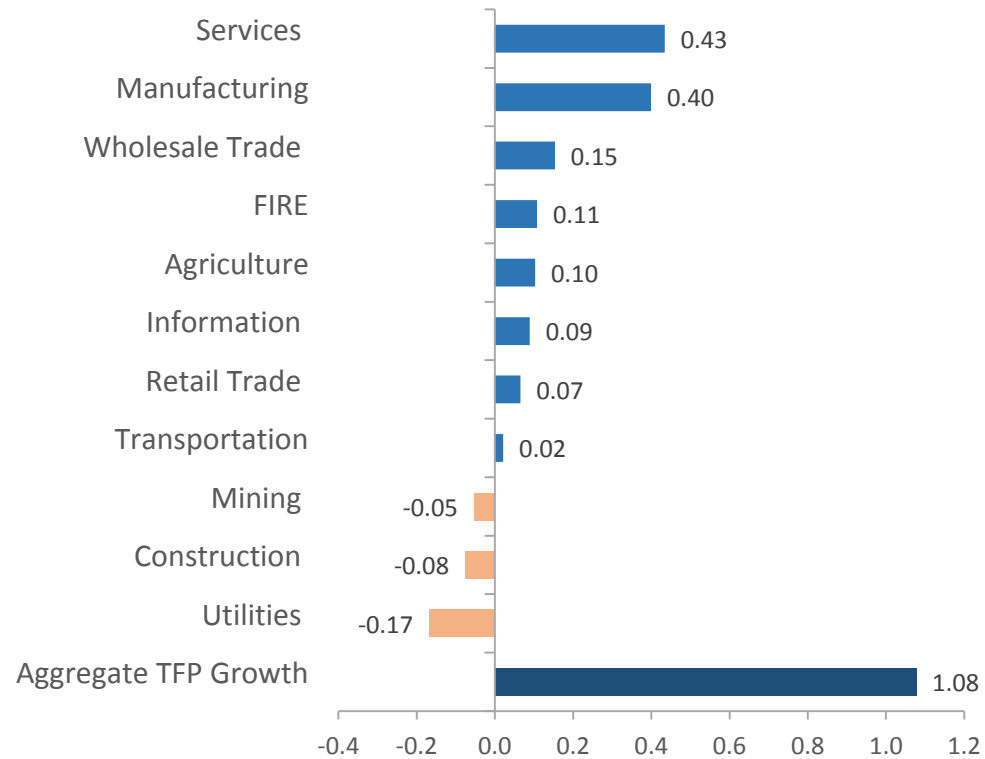


Source: Calculations based on data from Bureau of Labor Statistics Multifactor Productivity database.
Note: Recreated from Baily and Montalbano (2016), but with changes in average value-added TFP growth between both periods, based on Byrne, Fernald and Reinsdorf (2016).

Industry Contributions to the Rise and Fall in US TFP Growth

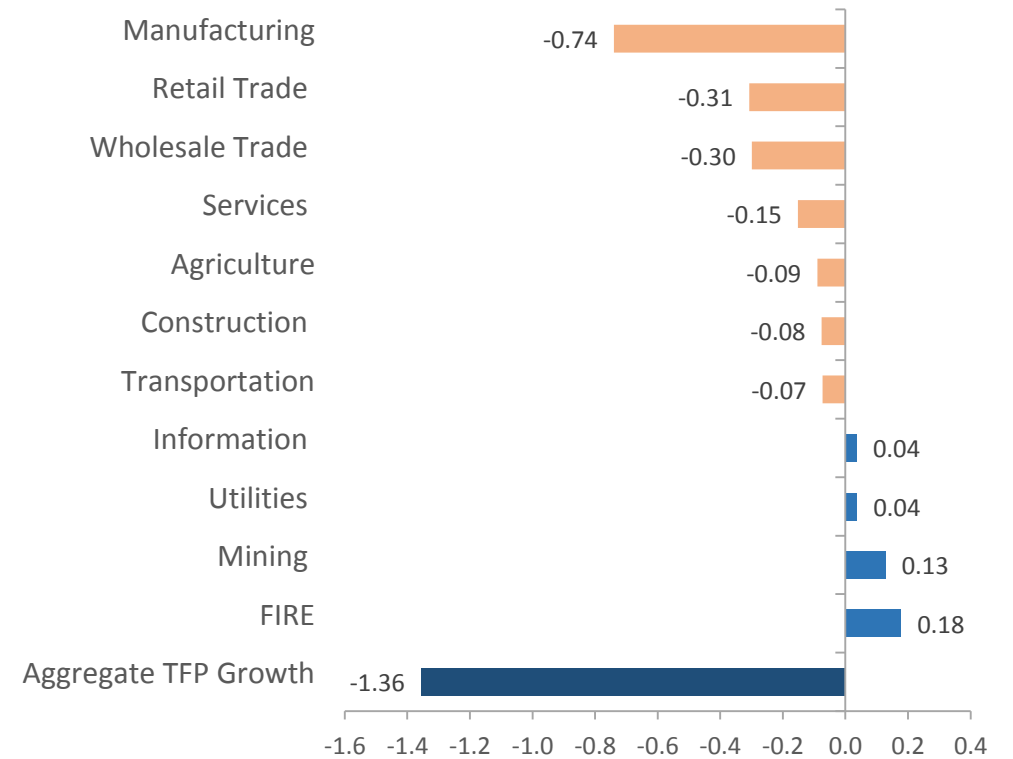
The Rise

Contributions to TFP Growth 1996-2004 minus
Contributions 1987-1995



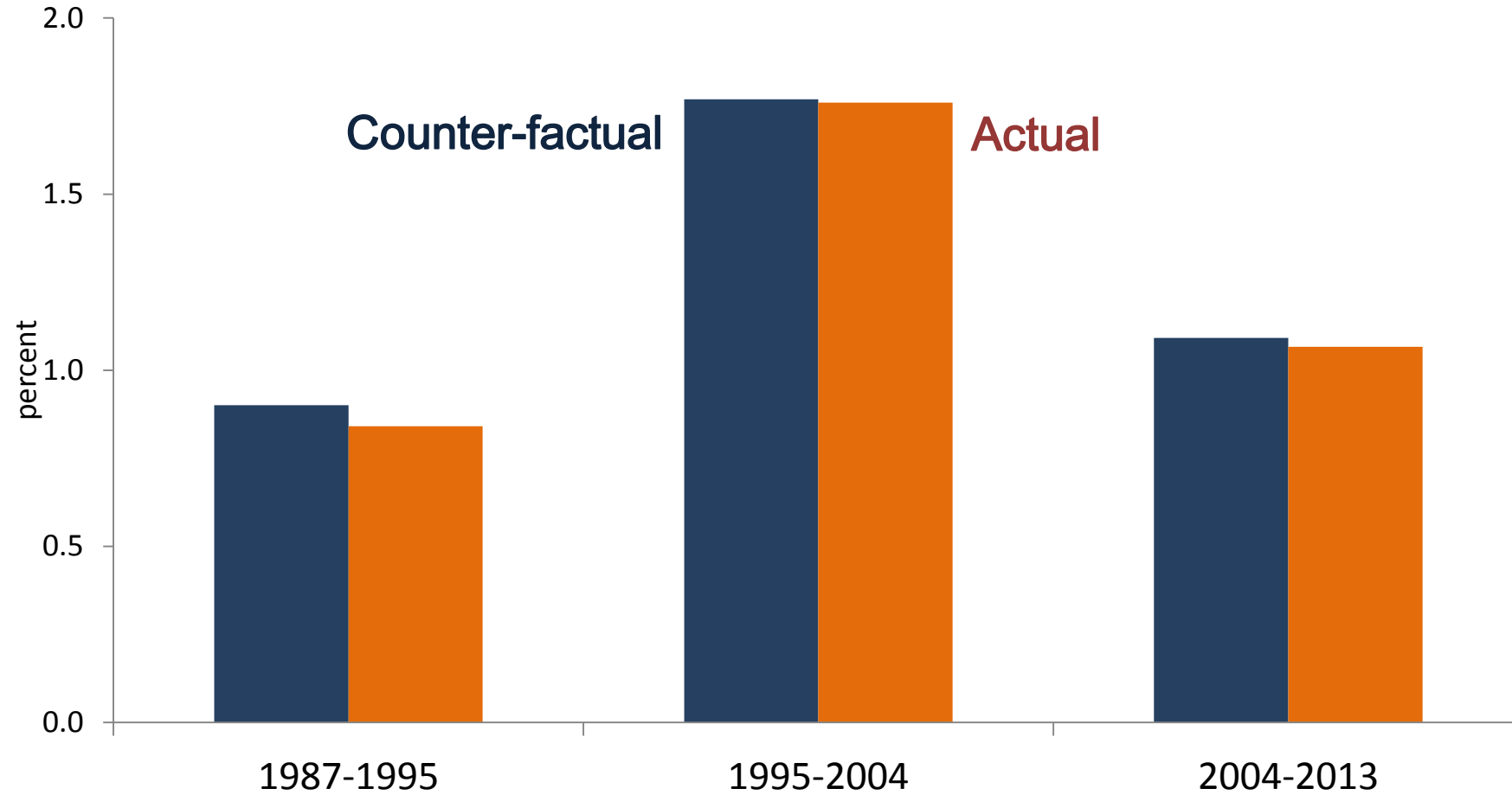
The Fall

Contributions to TFP Growth 2005-2014 minus
Contributions 1996-2004



Holding Industry Weights Fixed

United States average TFP growth

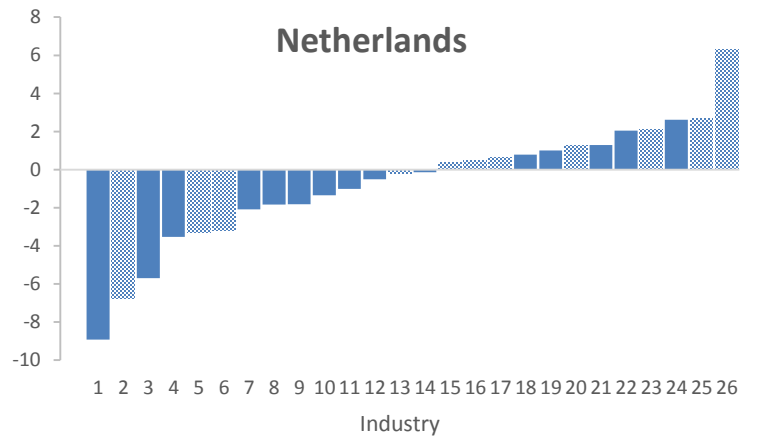
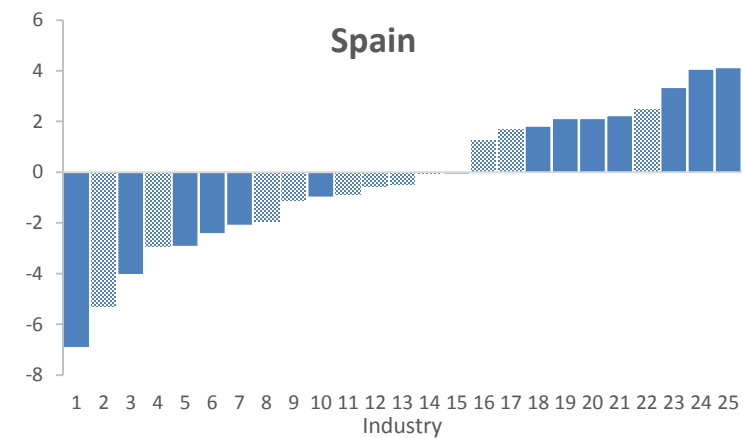
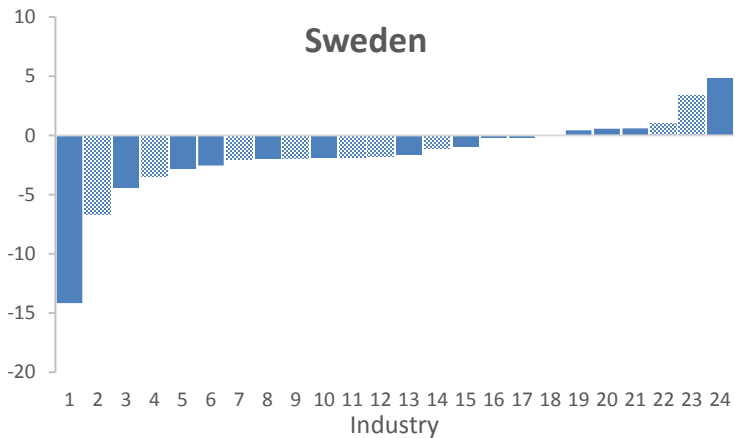
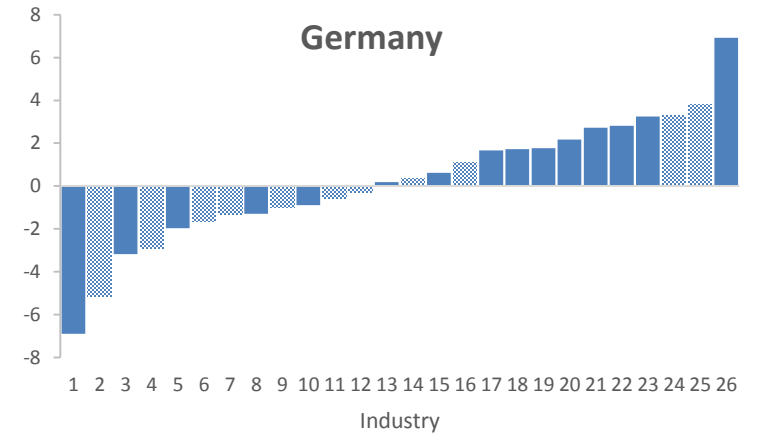
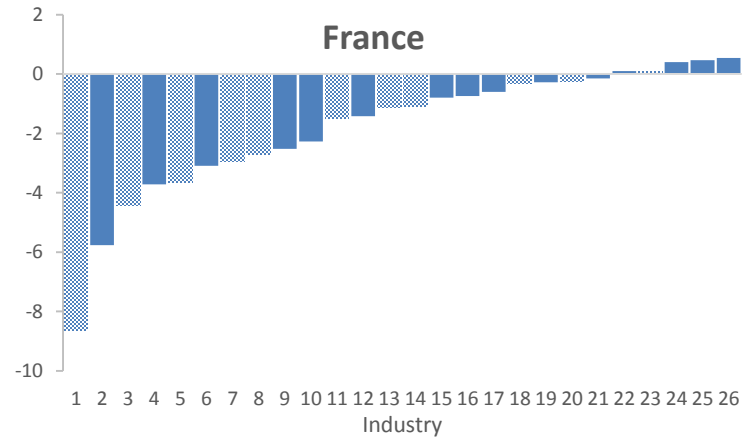
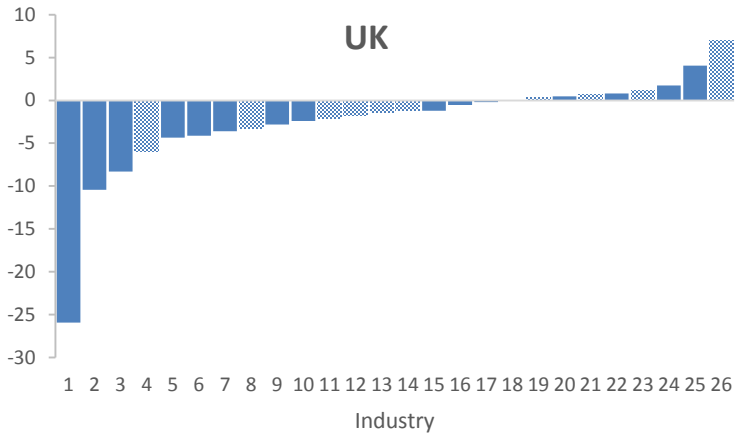


Source: Byrne, Fernald and Reinsdorf (2016).

Note: Orange bars show actual average growth in business sector TFP. Blue bars show counterfactual where industry weights (shares in aggregate value added) are held constant at 1987 values.

A Widespread, Broad-Based Slowdown

Percentage point changes in industry TFP Growth: 1996-2004 to 2005-2014

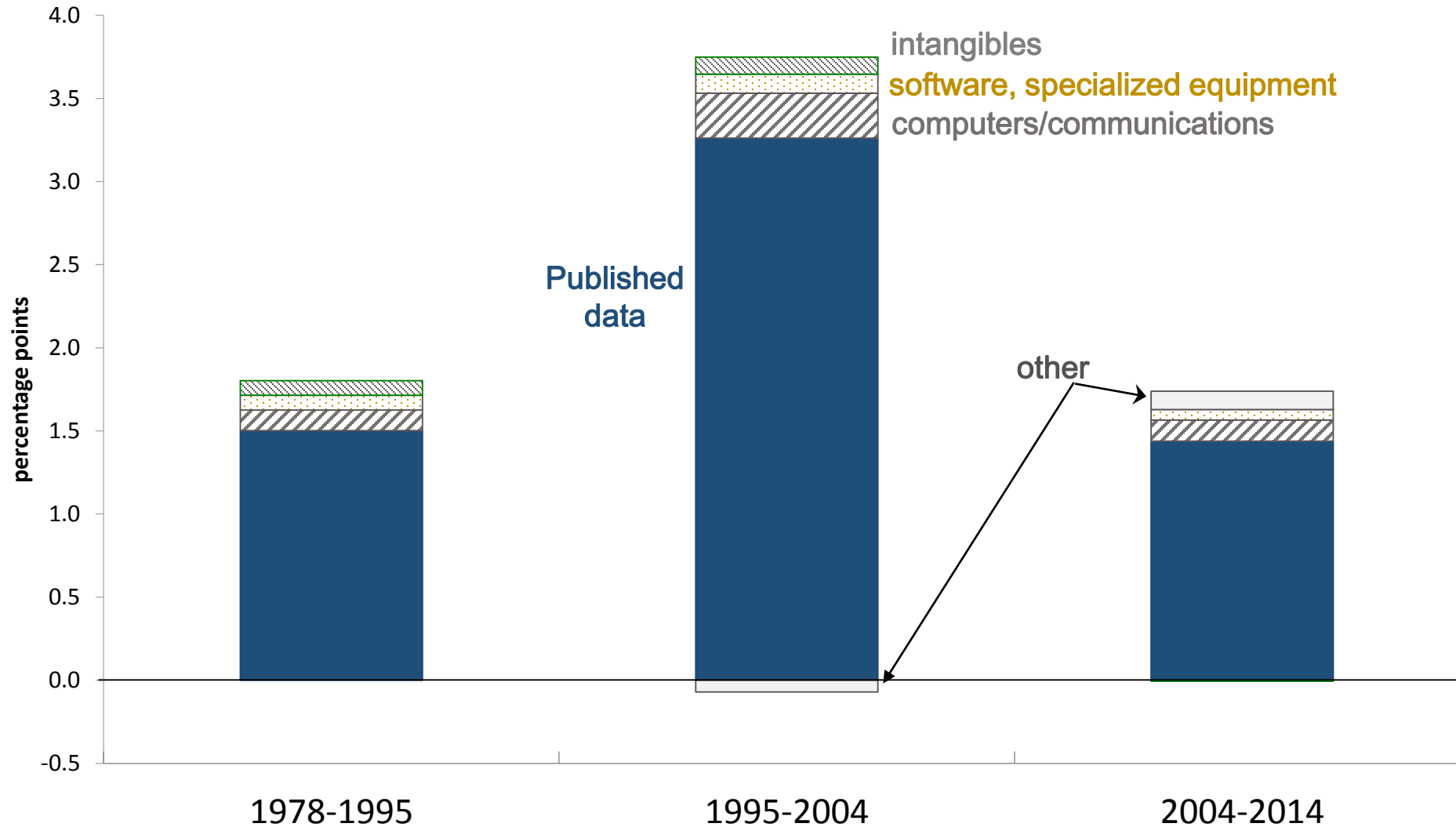


Source: Calculations based on data from EU KLEMS.

Note: Lighter shade bars denote manufacturing industries. UK data begins in 1999, Germany and Netherlands data begins in 2001, Sweden data ends in 2013.

A Word on Measurement

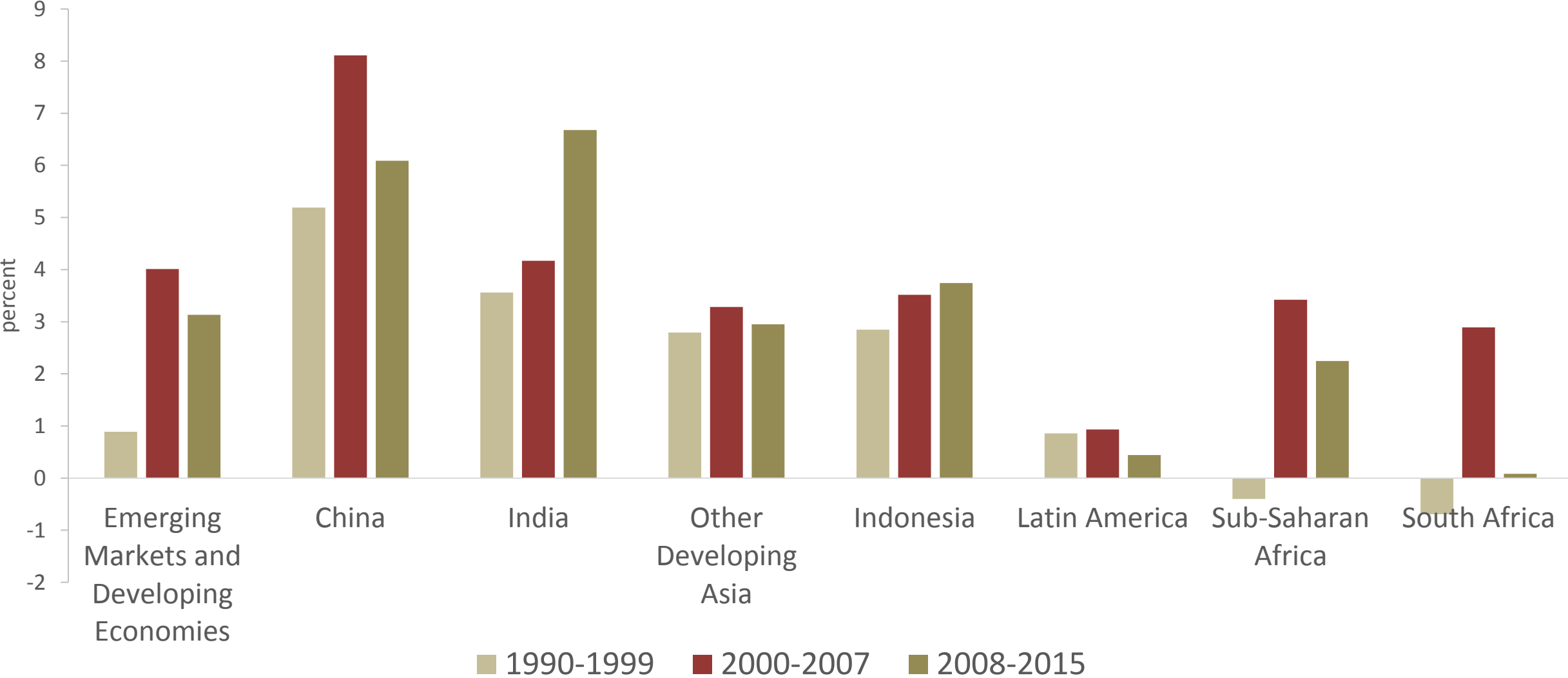
Adjustments to growth in US output per hour



Source: Byrne, Fernald and Reinsdorf (2016).

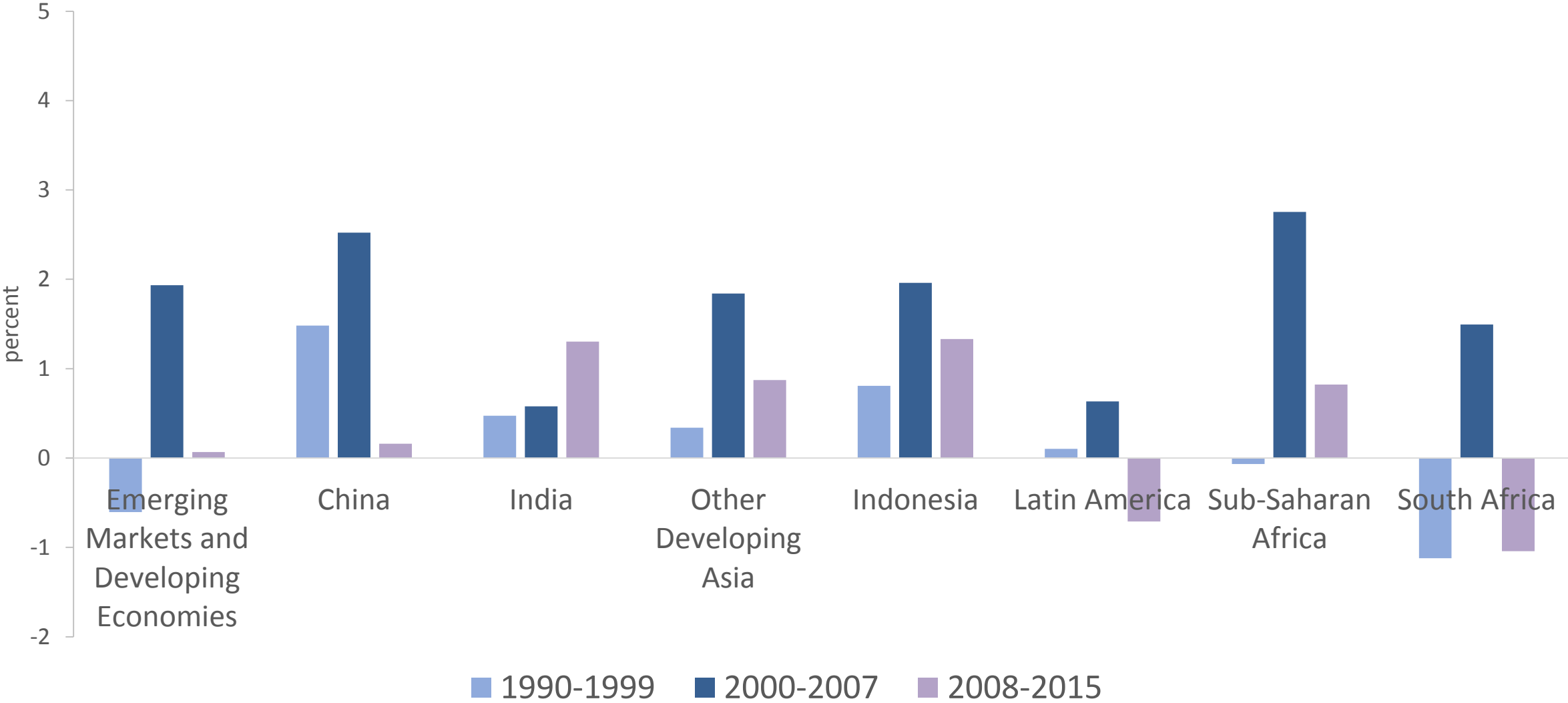
Note: Other comprises Internet, free digital services, globalization and fracking.

Labor Productivity Growth in Emerging and Developing Economies



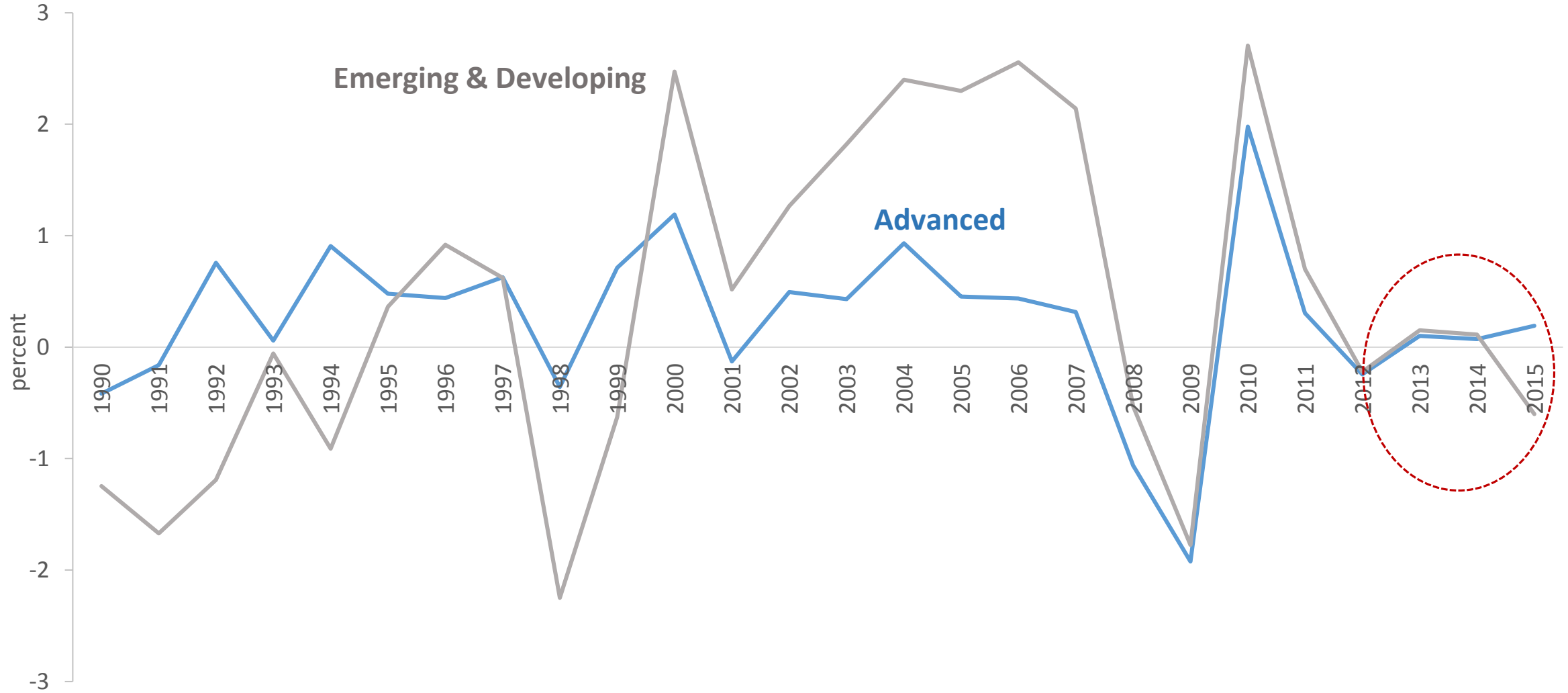
Source: The Conference Board.
Note: Output per person employed.

TFP Growth in Emerging and Developing Economies



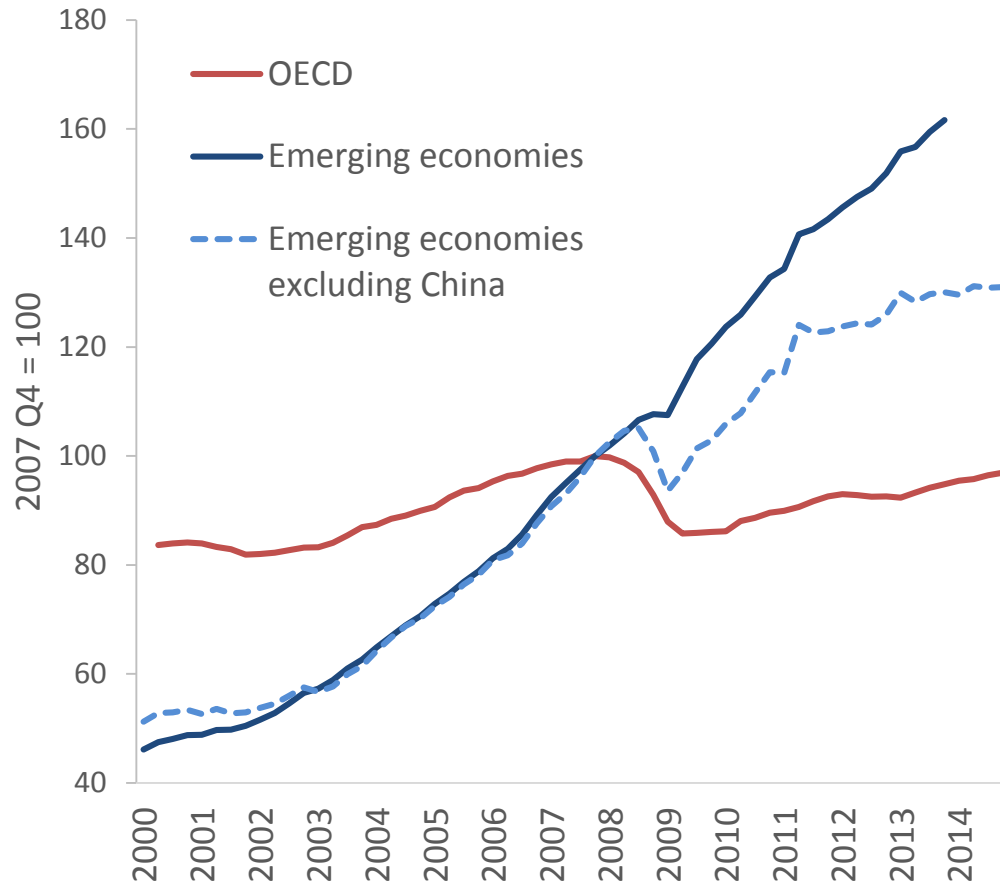
Source: The Conference Board.

Total Factor Productivity Growth

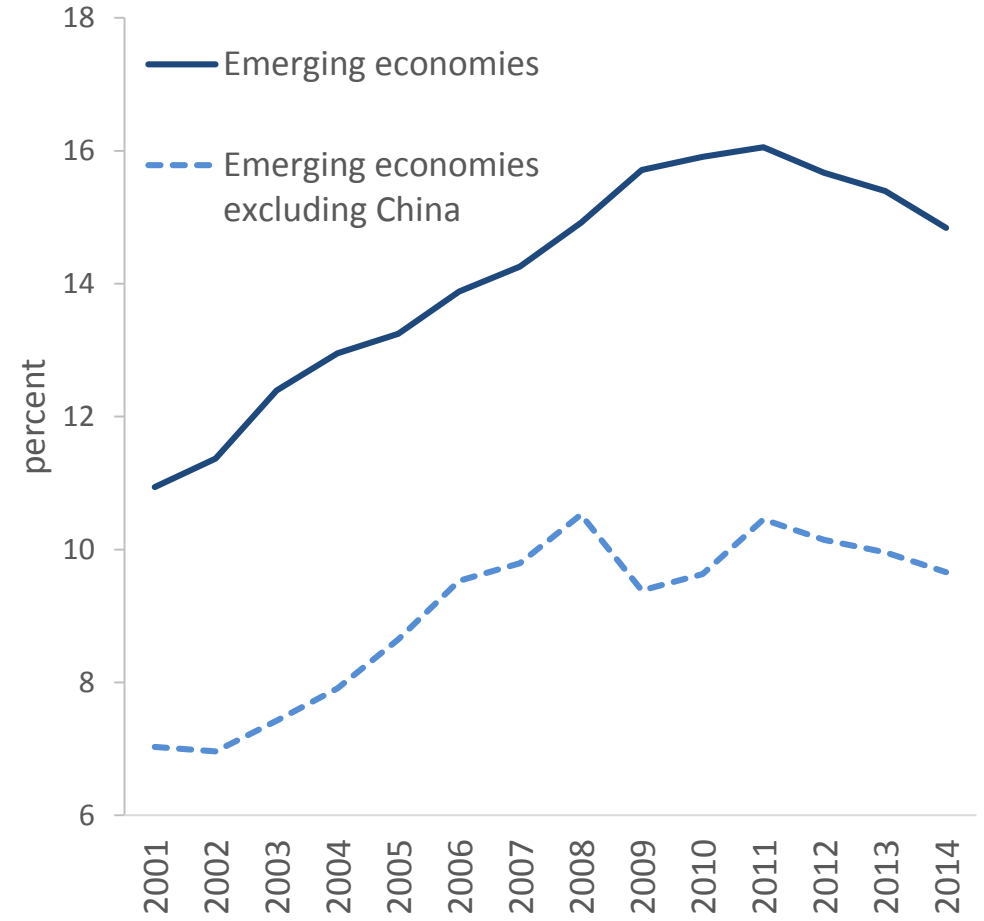


Weak Investment in Advanced Economies Slowing Investment in Emerging and Developing

Real Gross Investment
2007 Q4 = 100



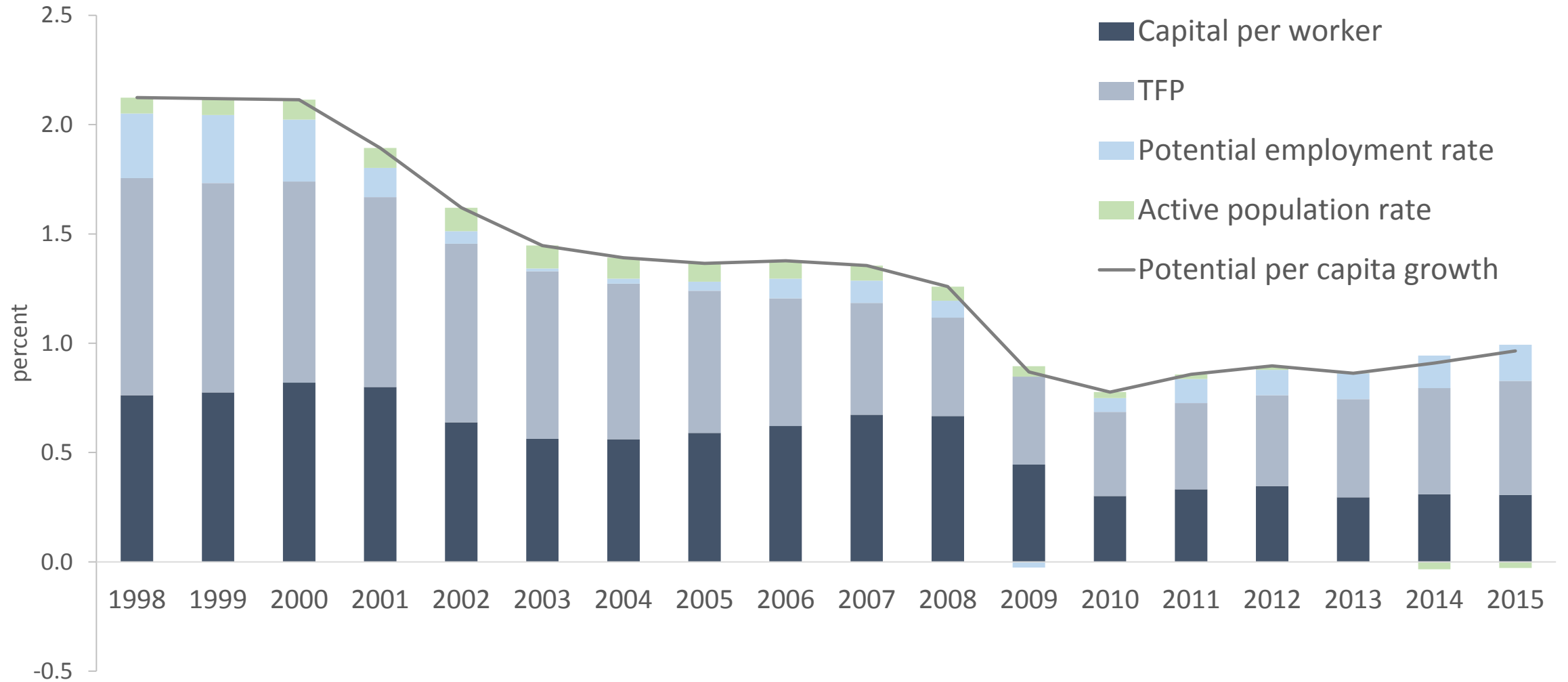
Investment-to-Capital Ratio



Sources: OECD Economic Outlook June 2015 for Real Gross Investment figure; IMF World Economic Outlook April 2015 for Investment-to-Capital ratios via Laeven and Valencia (2014).

Notes: For gross investment, "emerging" includes Brazil, China, India, Indonesia, Mexico, Russia, South Africa and Turkey. For investment-to-capital ratio, they include Brazil, China, India, Mexico, Russia and Turkey.

Potential Output Growth in Advanced Economies (OECD)



Source: OECD Economic Outlook, June 2016.

Notes: Potential employment rate refers to potential employment as a share of the working-age population. Active population rate refers to the share of the population of working age in the total population.

The Bottom Line

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- It is primarily driven by slowing TFP growth, but capital deepening has played a more visible role in recent years.
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Possible Explanations to Explore

- Slowdown in innovation or diffusion? Dispersion in firm-level TFP growth suggests that weak diffusion has played a role (OECD 2015).
- Declining business dynamism and increased market concentration. Impacts on productivity?
- Weak investment despite lower price of investment (investment paradox?).
- Skill-biased technological change, skills mismatches and constraints.
- Barriers to innovation, regulatory distortions, misallocation of inputs.