

Comments on Sir Christopher Pissarides:

“Structural Perspectives on European Employment:
The Role of Innovation and Growth”

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* Views expressed here are my own and do not necessarily reflect the views of the Federal Reserve Bank of San Francisco or anyone else associated with the Federal Reserve System.

Summary: Innovation and structural change matter

- Innovation is crucial for raising living standards
- Structural change important for getting benefits of innovation
 - Innovation raises employment...but *outside* the innovating sector
- Lots of sensible policy recommendations follow
 - Education/skills, public and private investments in physical capital and R&D
 - More flexible labor and product markets

My main points

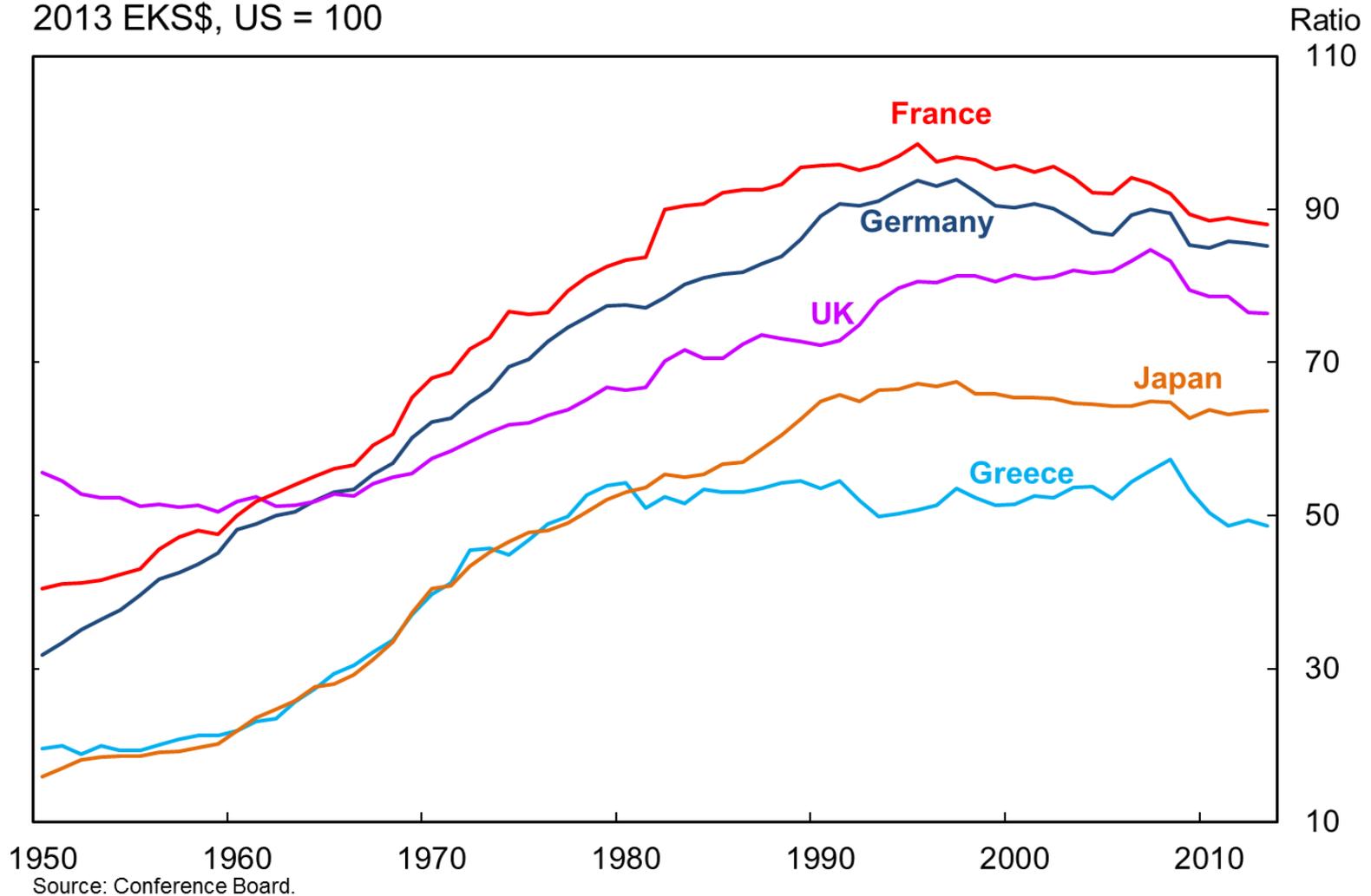
- Innovation has both a global and a local dimension
- Whatever happens, there will be structural change
- Future pace of innovation highly uncertain

Innovation has both a
global and a local dimension

The U.S. productivity “frontier” is a benchmark

GDP per hour relative to the U.S.

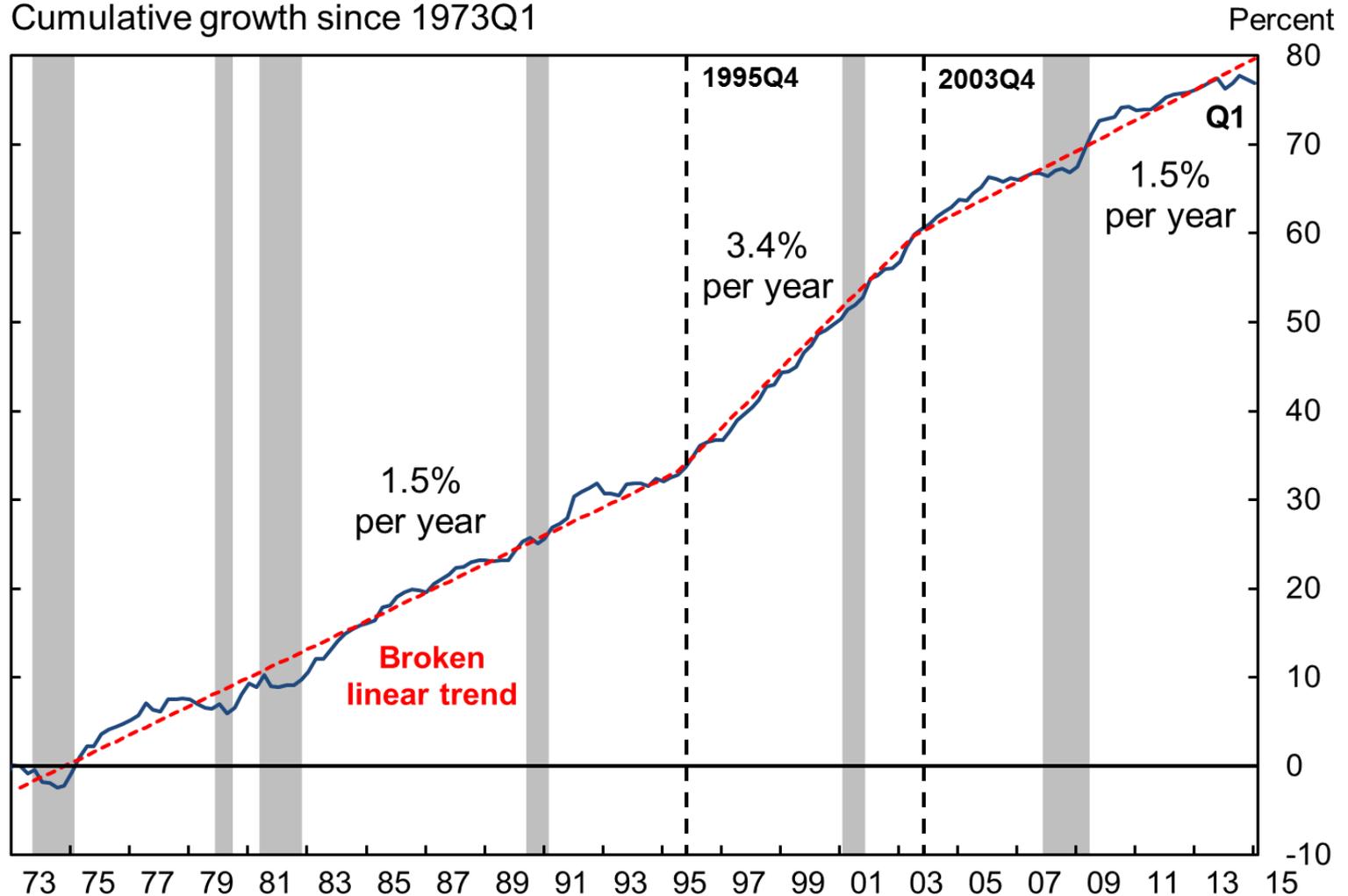
2013 EKS\$, US = 100



U.S. productivity growth slowed prior to Great Recession

Business sector labor productivity

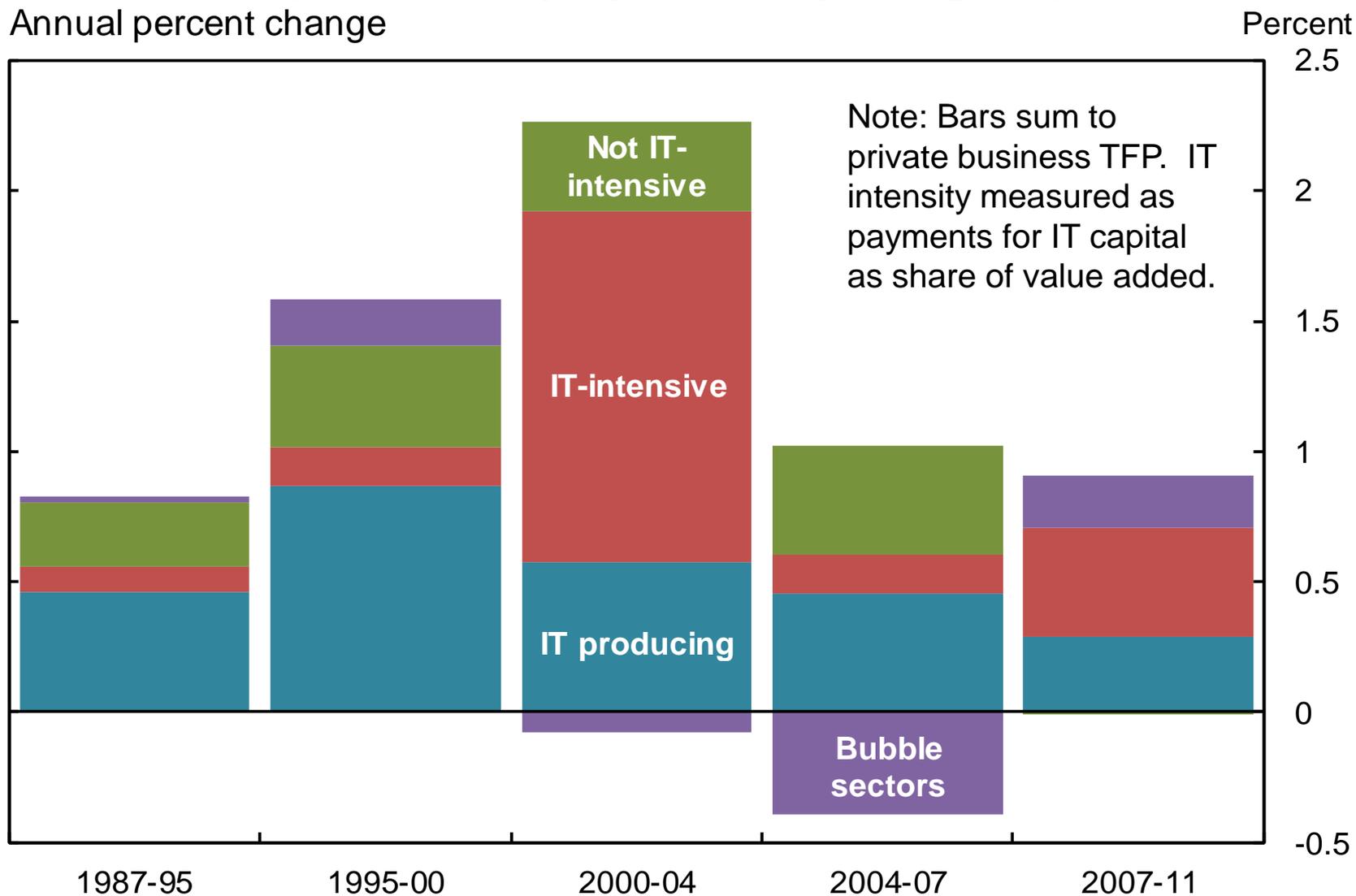
Cumulative growth since 1973Q1



IT-related innovation in U.S. slowed

Total factor productivity by industry subgroup

Annual percent change



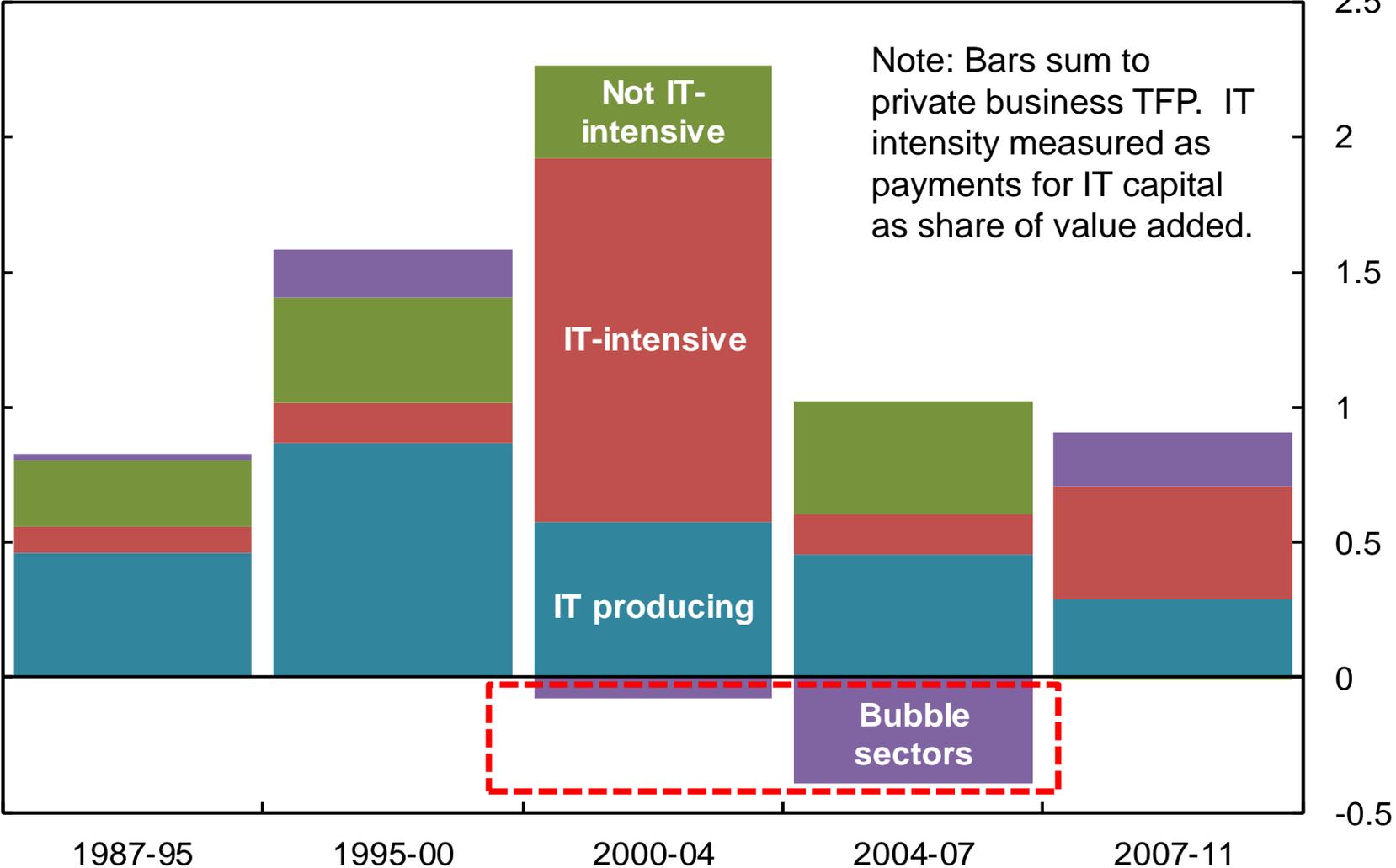
Source: Bureau of Labor Statistics, Fernald (2014a). Bubble sectors are construction, real estate, finance, mining, and agriculture.

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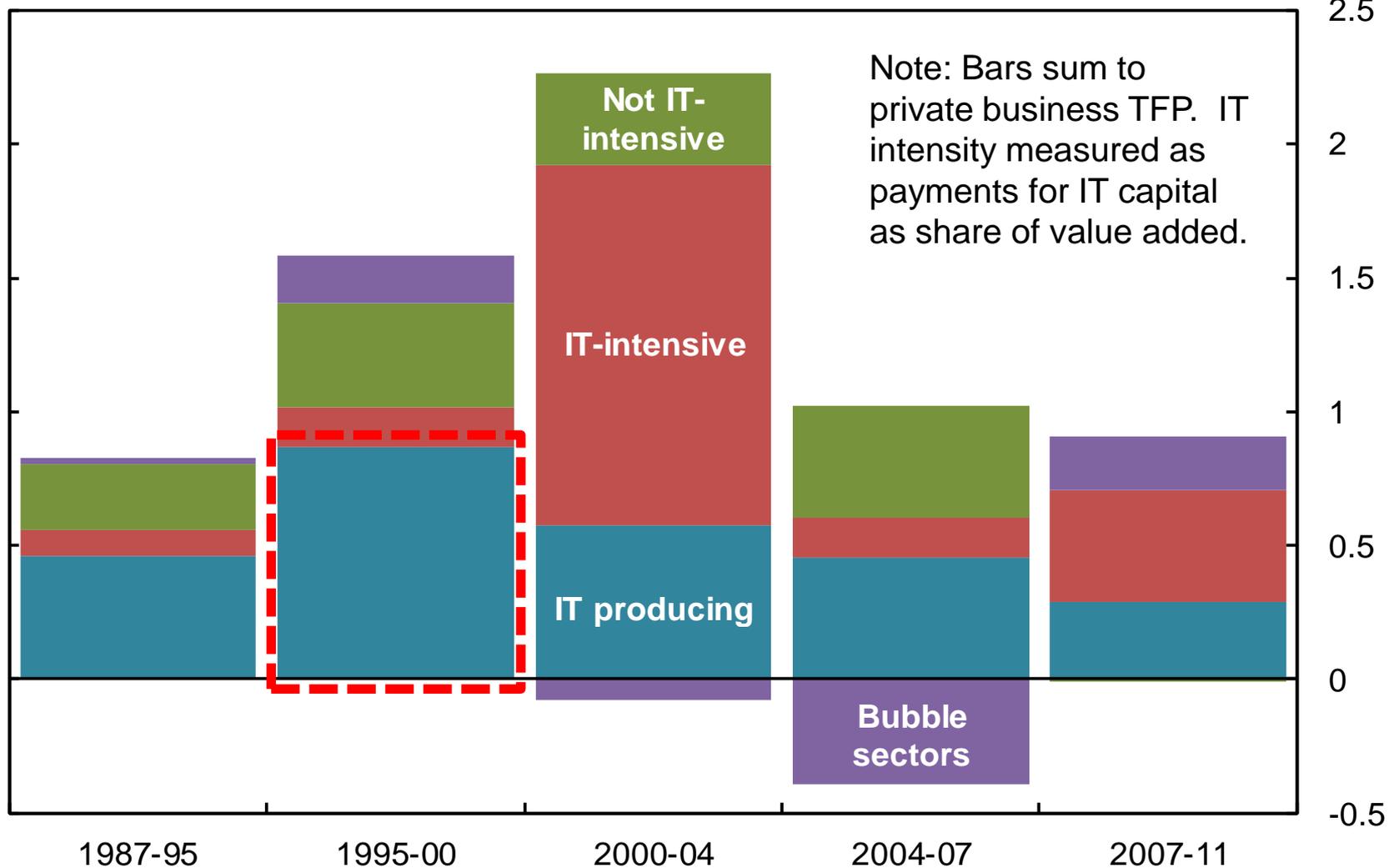
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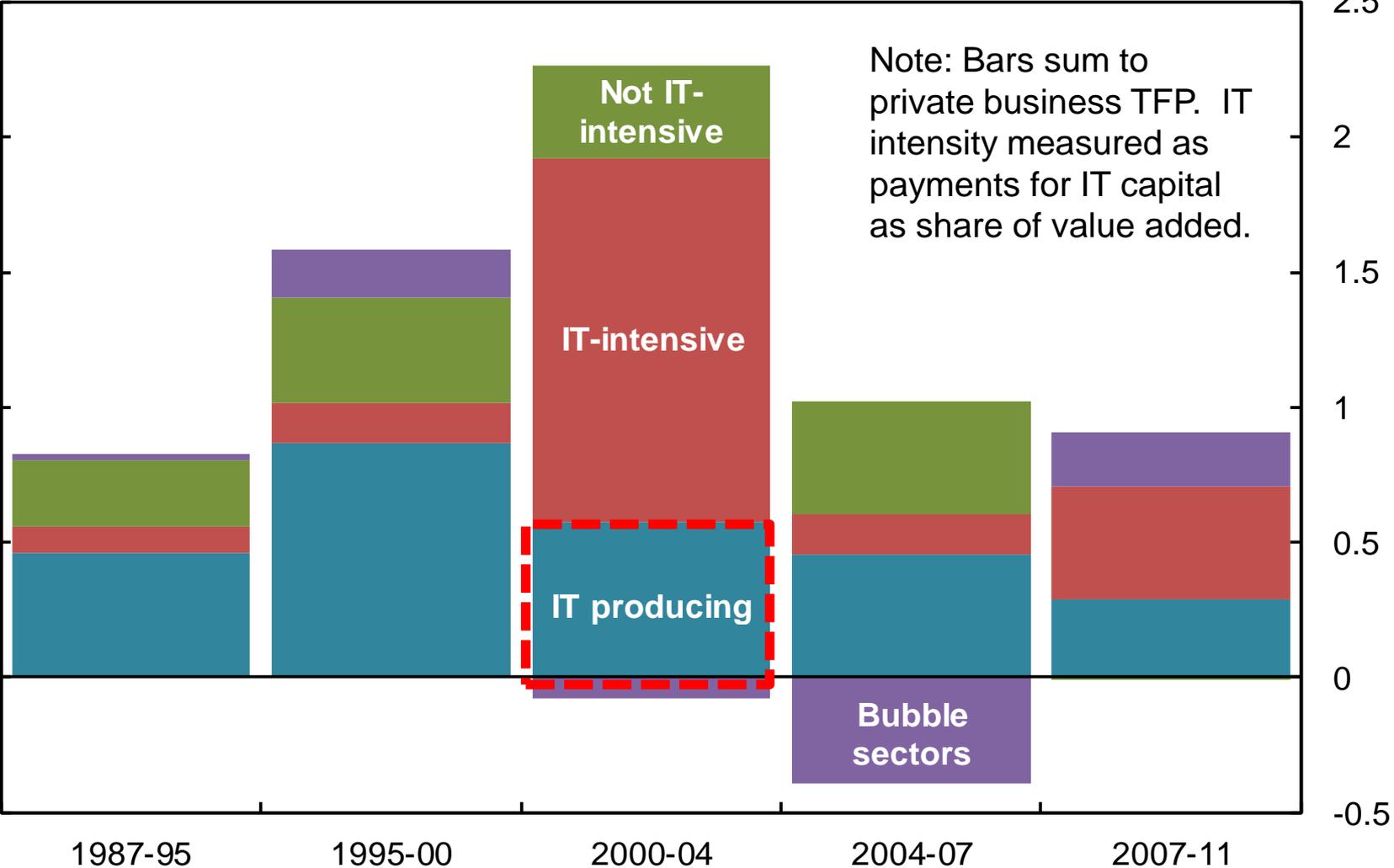
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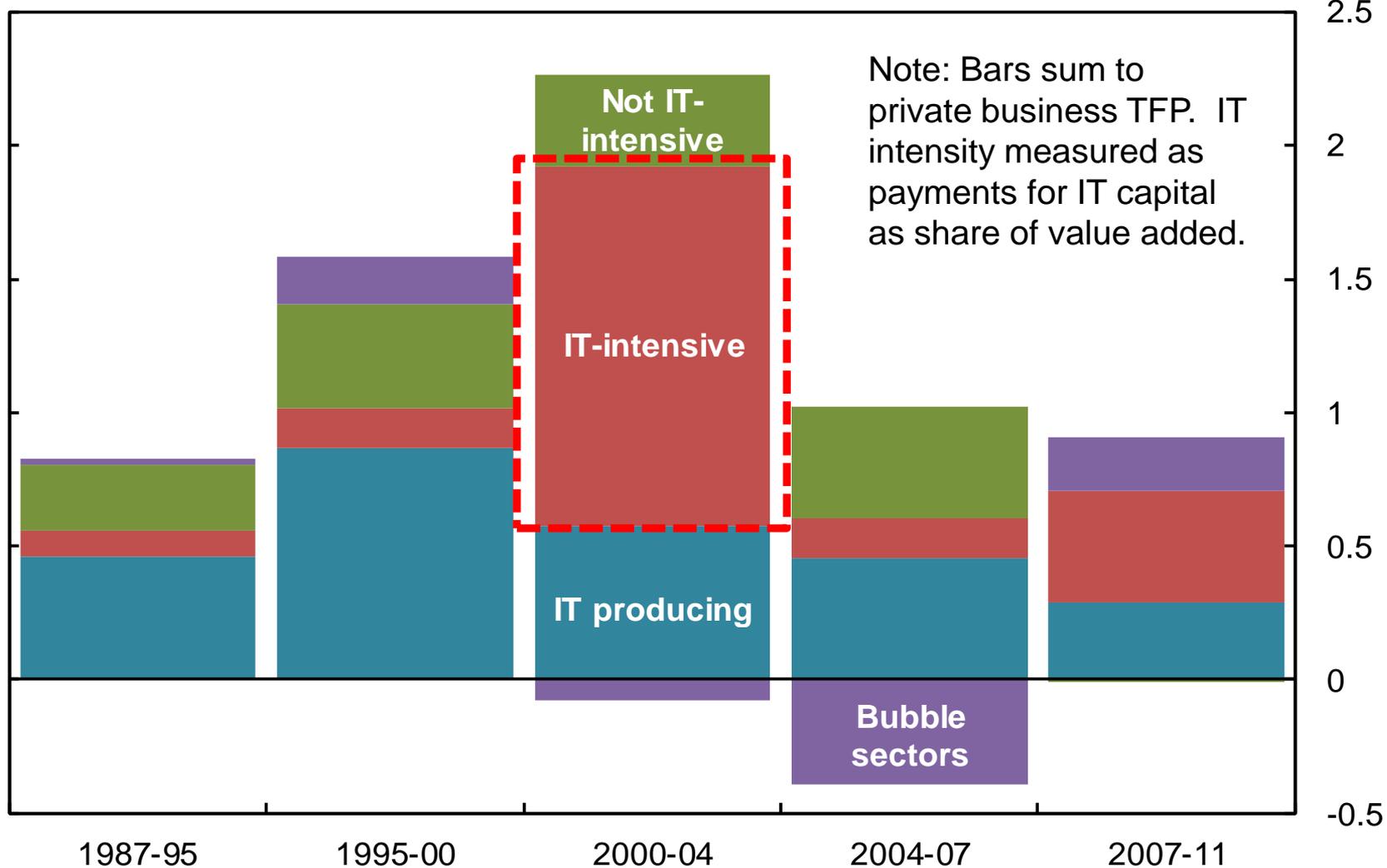
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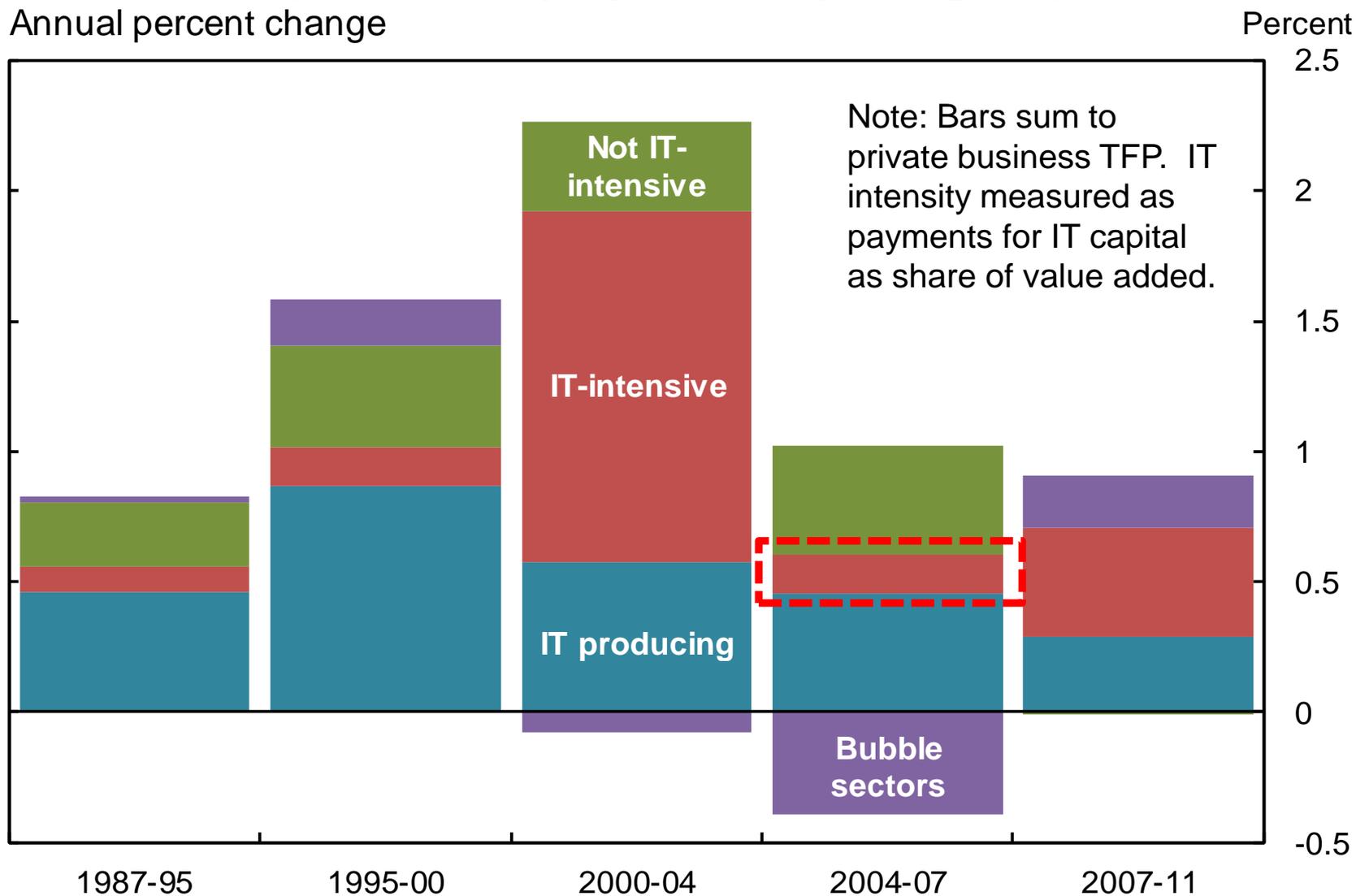


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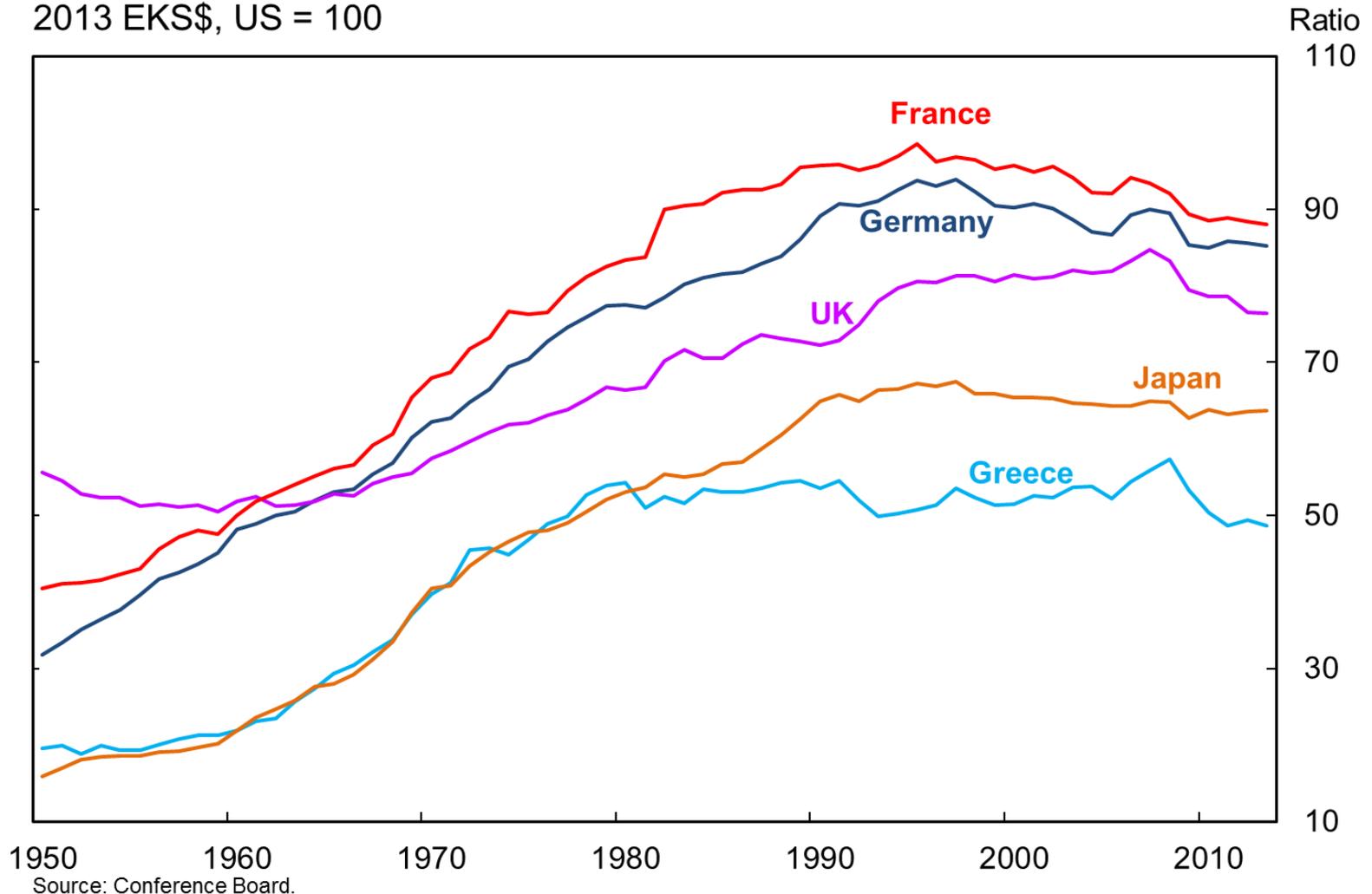


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Why not Continental Europe? Reorganization more difficult

GDP per hour relative to the U.S.

2013 EKS\$, US = 100

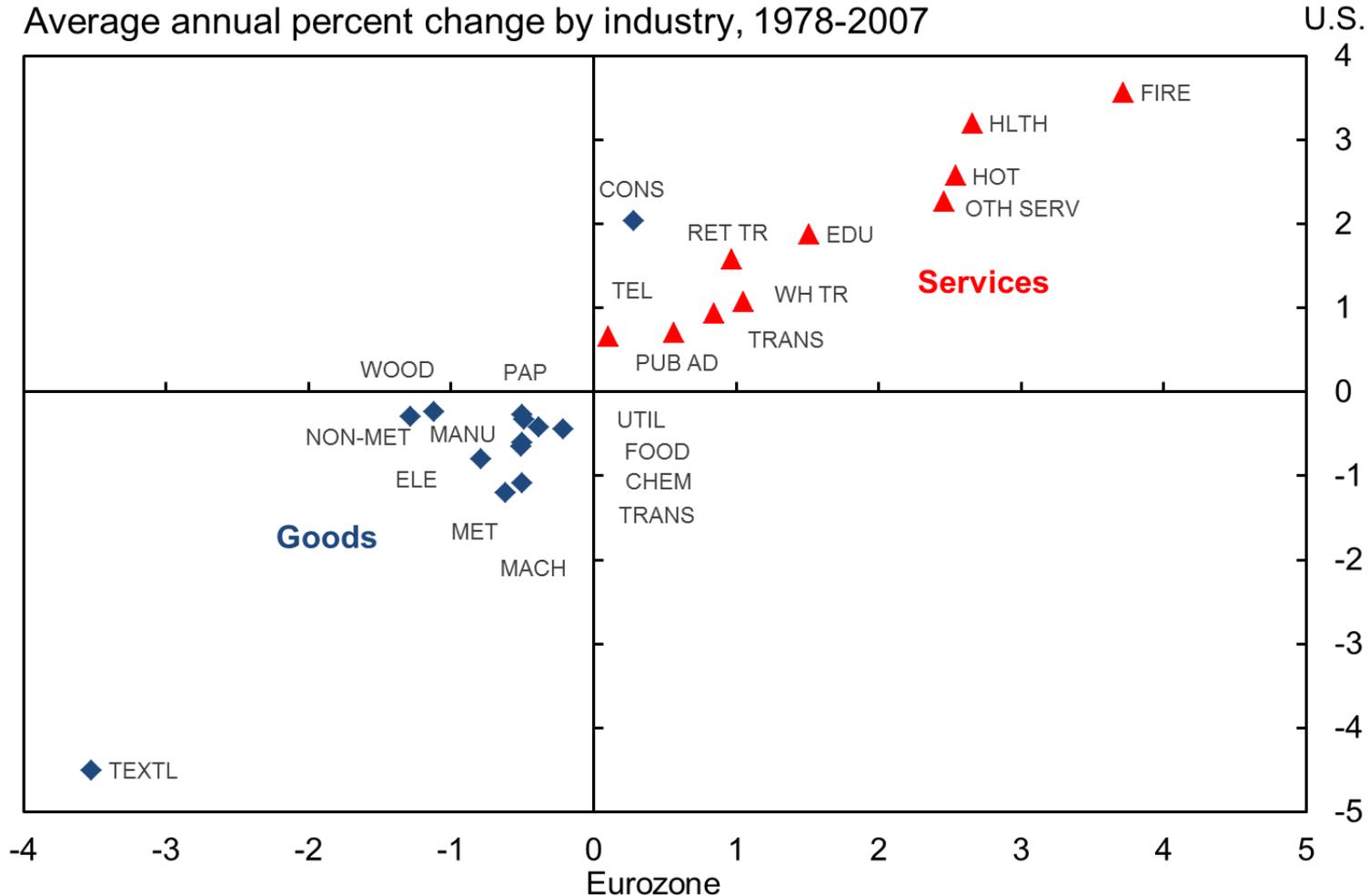


Structural change will happen

Similar structural change across regions

Employment, Eurozone vs. U.S.

Average annual percent change by industry, 1978-2007



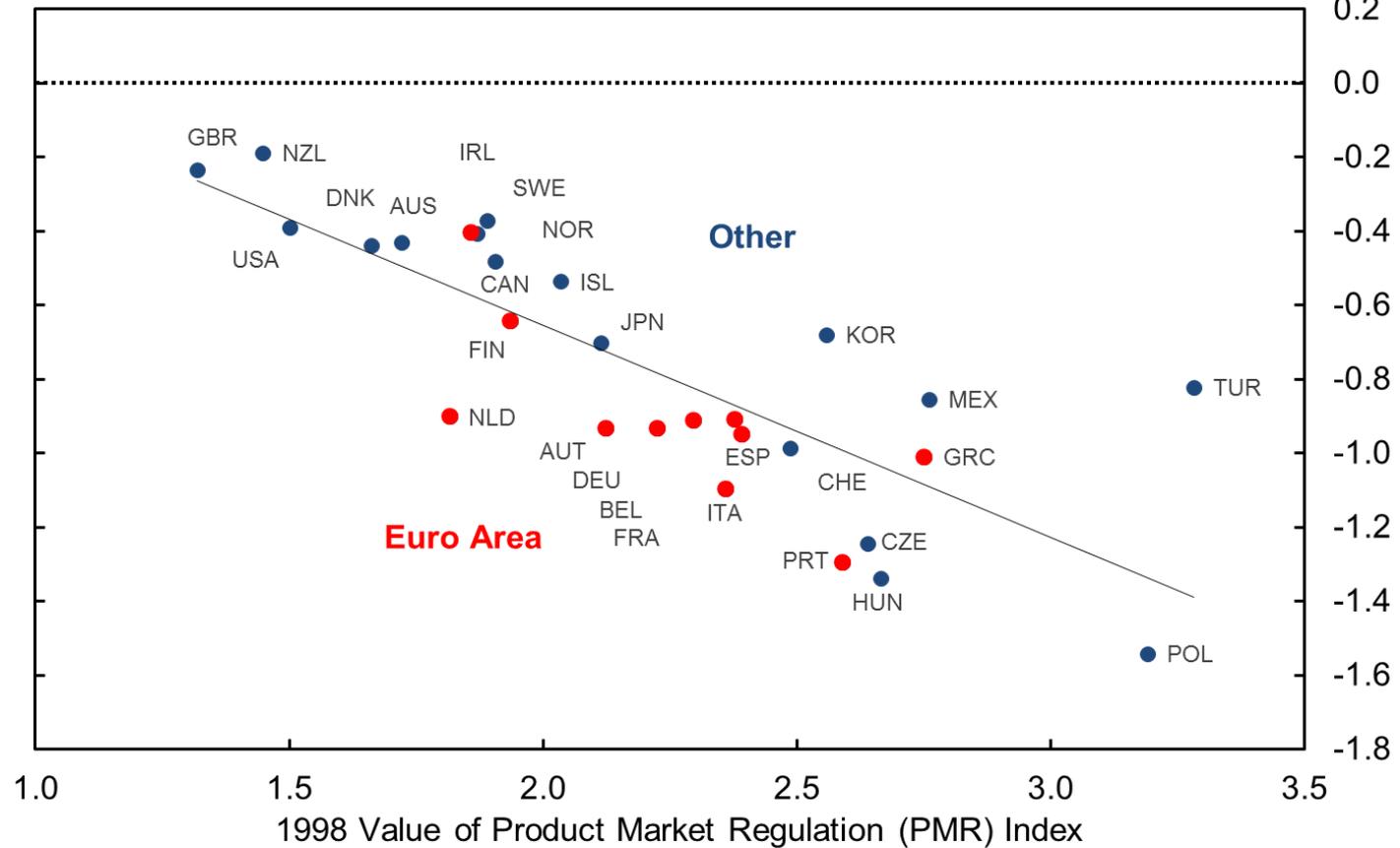
Source: EUKLEMS. Euro area is "Euroex" aggregate: AUT, BEL, ESP, FIN, FRA, GER, ITA and NLD. Industries cover the non-mining, non-agricultural economy

Convergence: Reforms have been happening

Product market regulation

Index, lower value means lower burden

Change in PMR
1998-2013



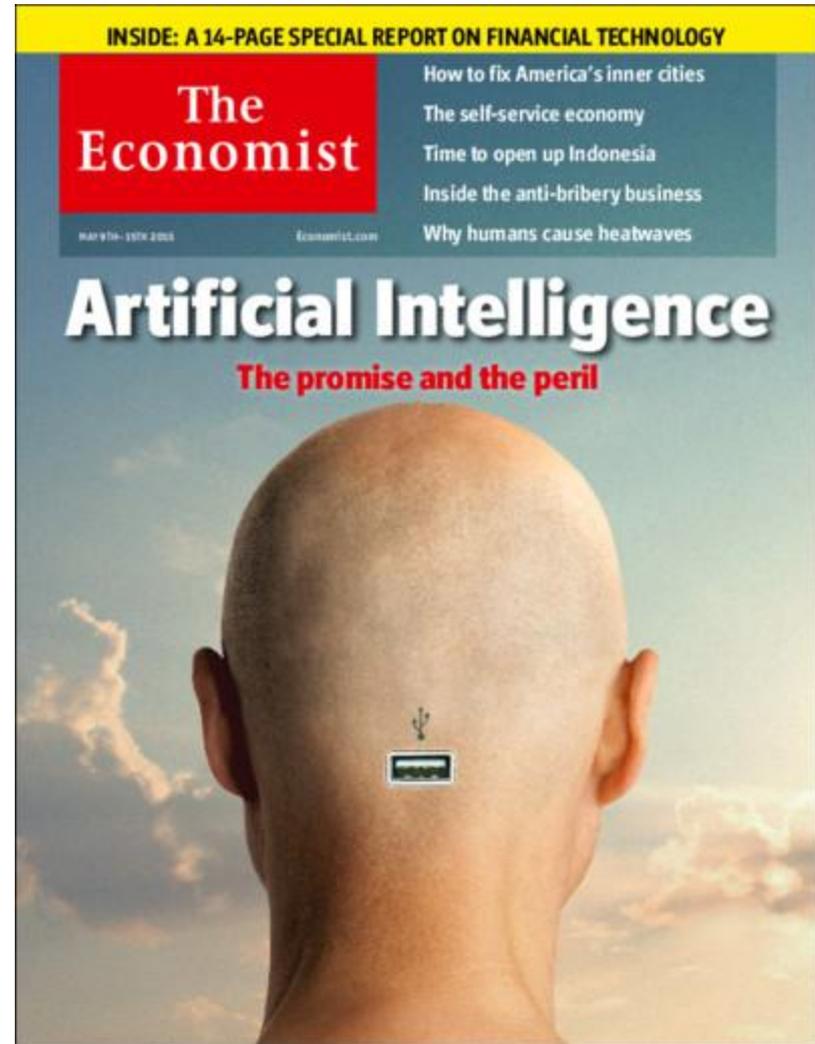
Source: OECD and Fatás (2015). USA is difference between 1998 and 2008.

Greater Improvement →

Greater regulation →

Future innovation highly uncertain

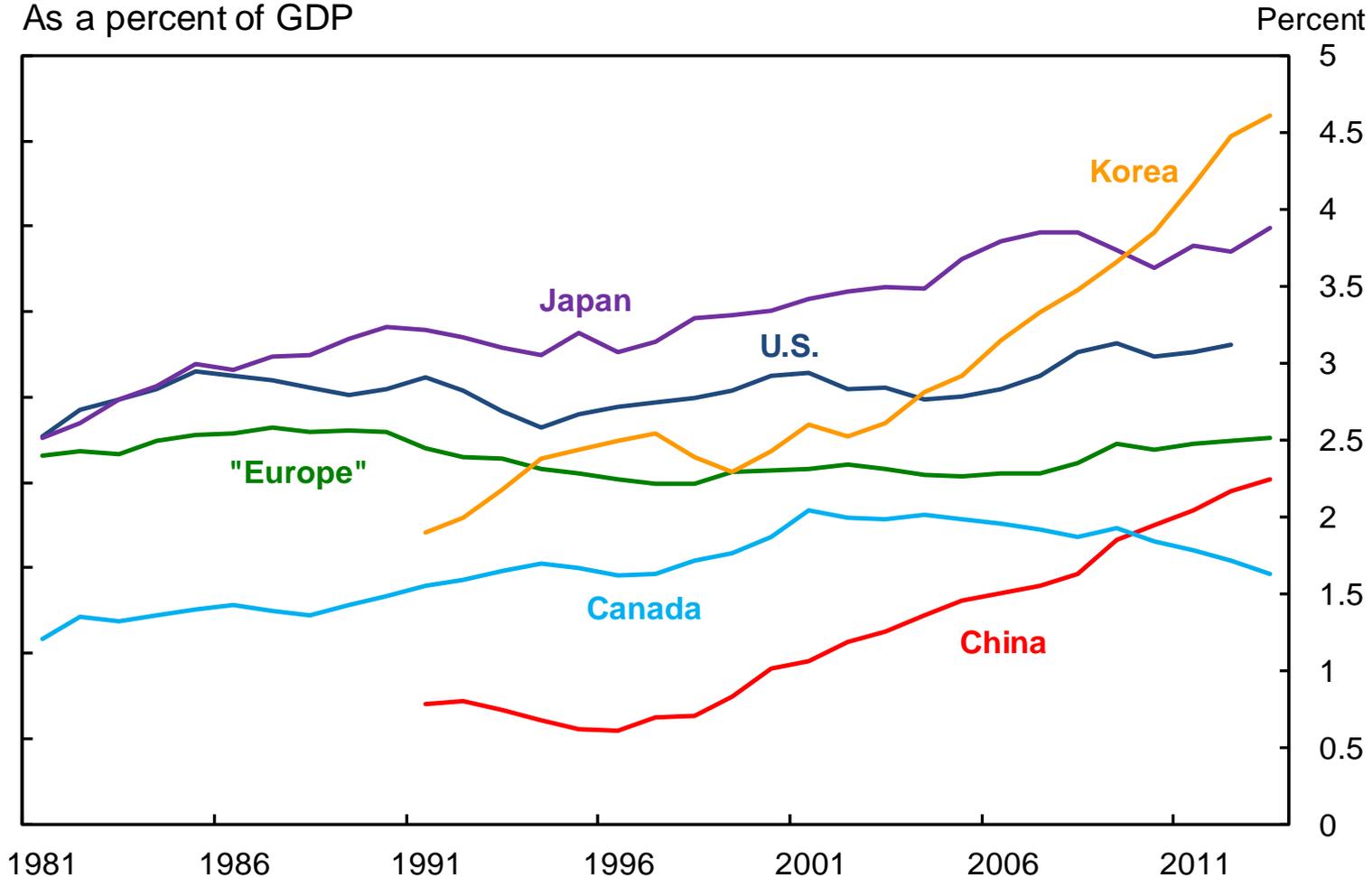
Robots, driverless cars, and artificial intelligence



China, India, etc. closer to research frontier

R&D expenditures

As a percent of GDP



Source: OECD. "Europe" is an unweighted average of France, Germany, and U.K.

Conclusion: Thought-provoking paper

- Innovation has a global and local dimension
 - Frontier growth slowed prior to the Great Recession
- Uncertainty about the future pace is high
- Structural change is going to happen
 - reforms are necessary to be ready, and gain the benefits