

# **Global Productivity Trends: Good news or bad?**

**Kevin Fox**

**Presentation to the CAMA/Treasury Workshop on:  
Shaping the Next Decade: Economic trends in the Global Economy**

**Crawford School of Public Policy, ANU  
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# Questions

- Is the world confronting a long-term slow-down in productivity?
- Or will a new digital age revitalise global productivity growth and which countries will be on the frontier?



# Plan

## 1. Productivity Slowdown

## 2. The Innovation Debate

## 3. Mismeasurement Hypothesis

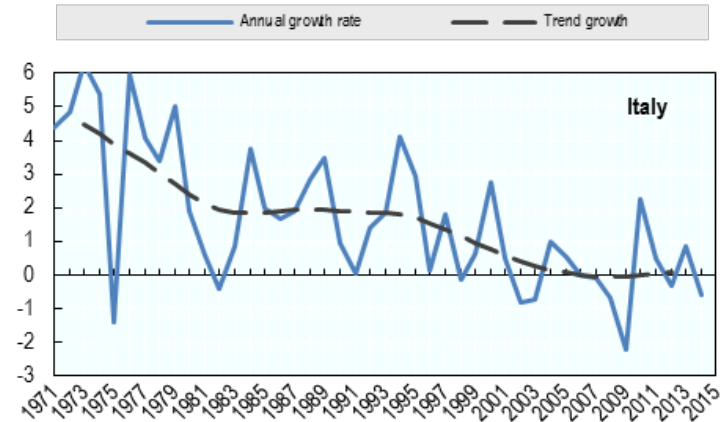
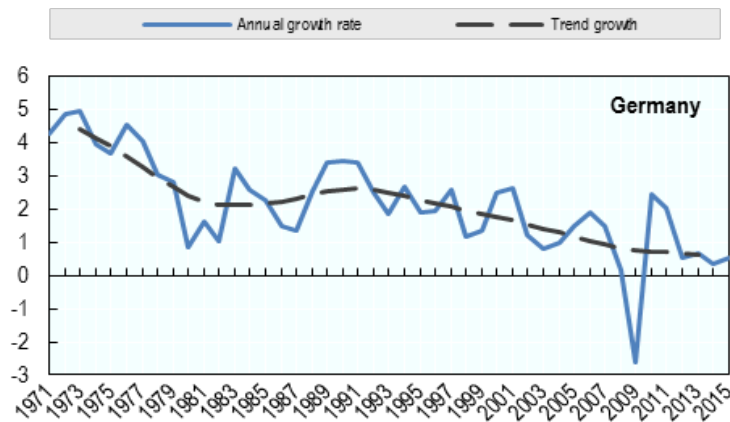
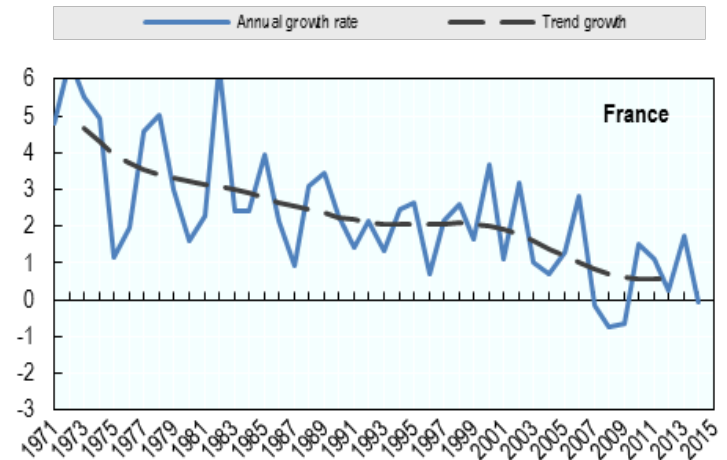
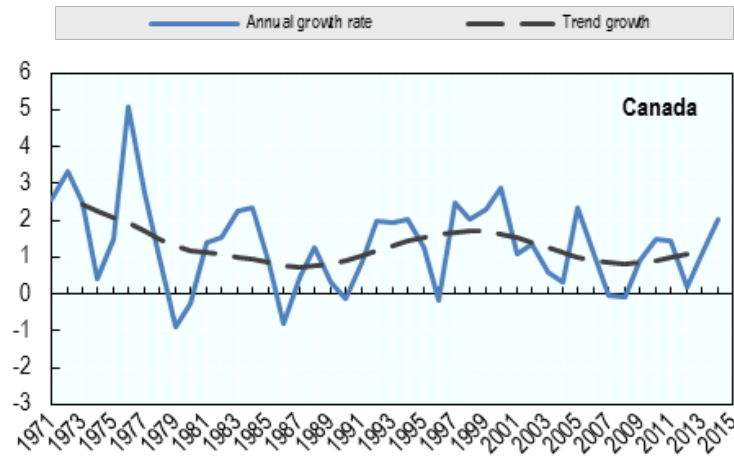
## 4. Intangibles and Productivity

## 5. Conclusions



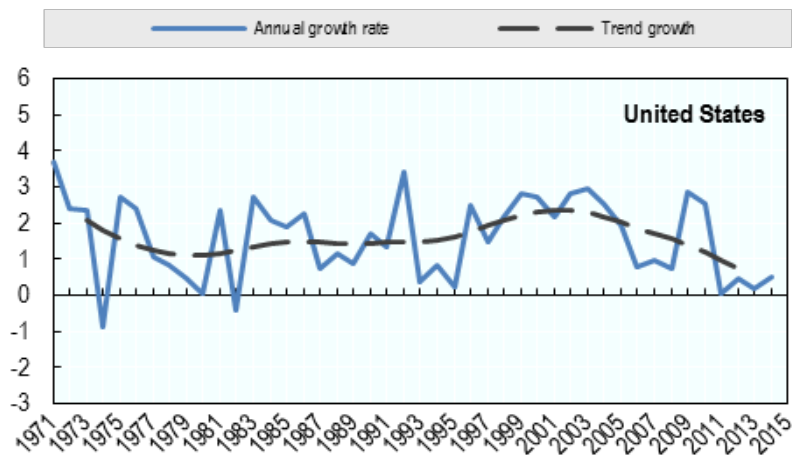
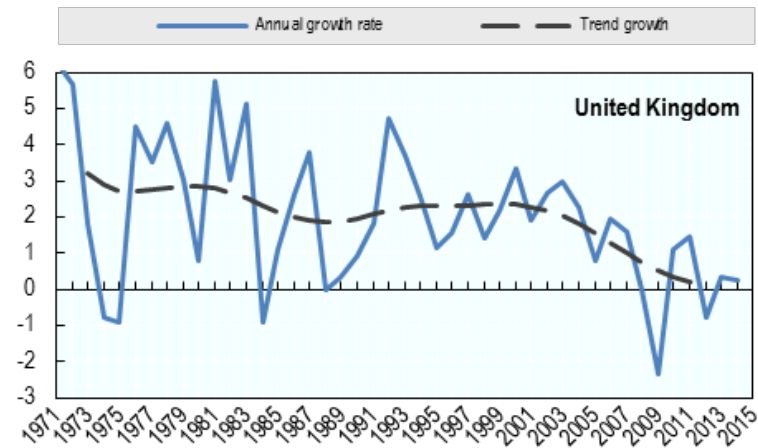
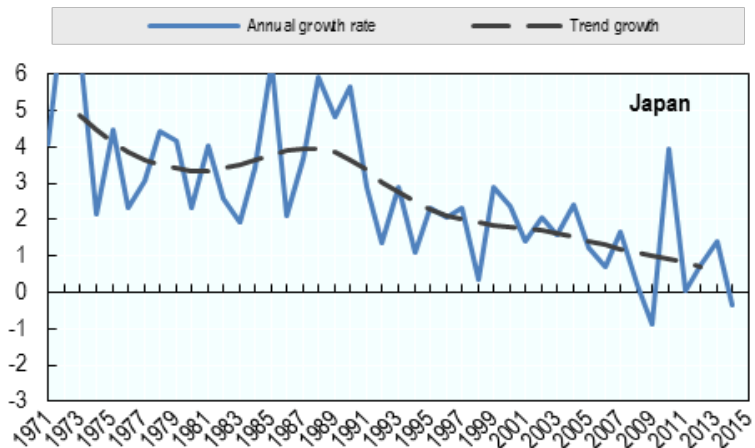
# Trend Labour Productivity Growth in G7 Countries

Average Annual Rate, OECD Productivity Compendium 2016



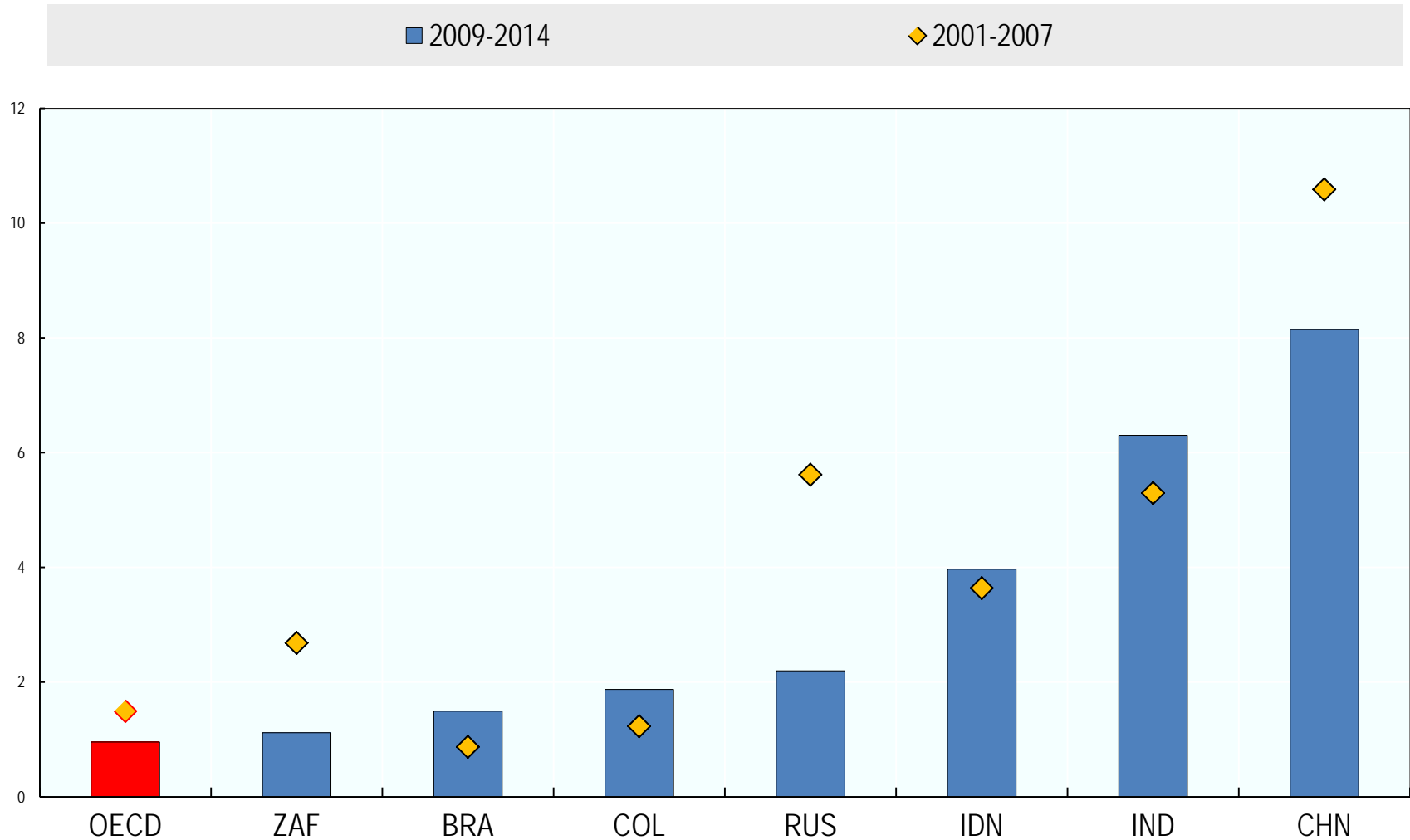
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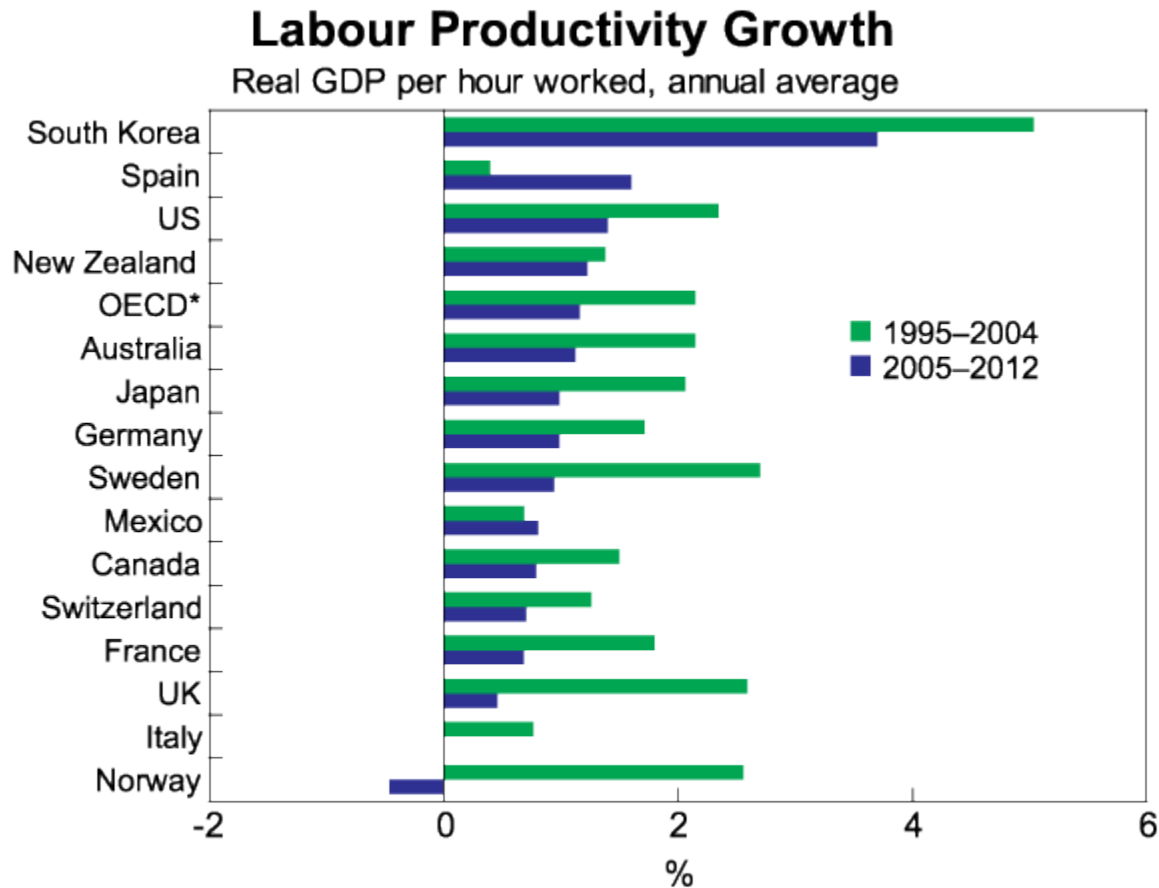


# Labour productivity growth in emerging economies

GDP per person employed, percentage change at annual rate, OECD Productivity Compendium 2016



# International Productivity Performance



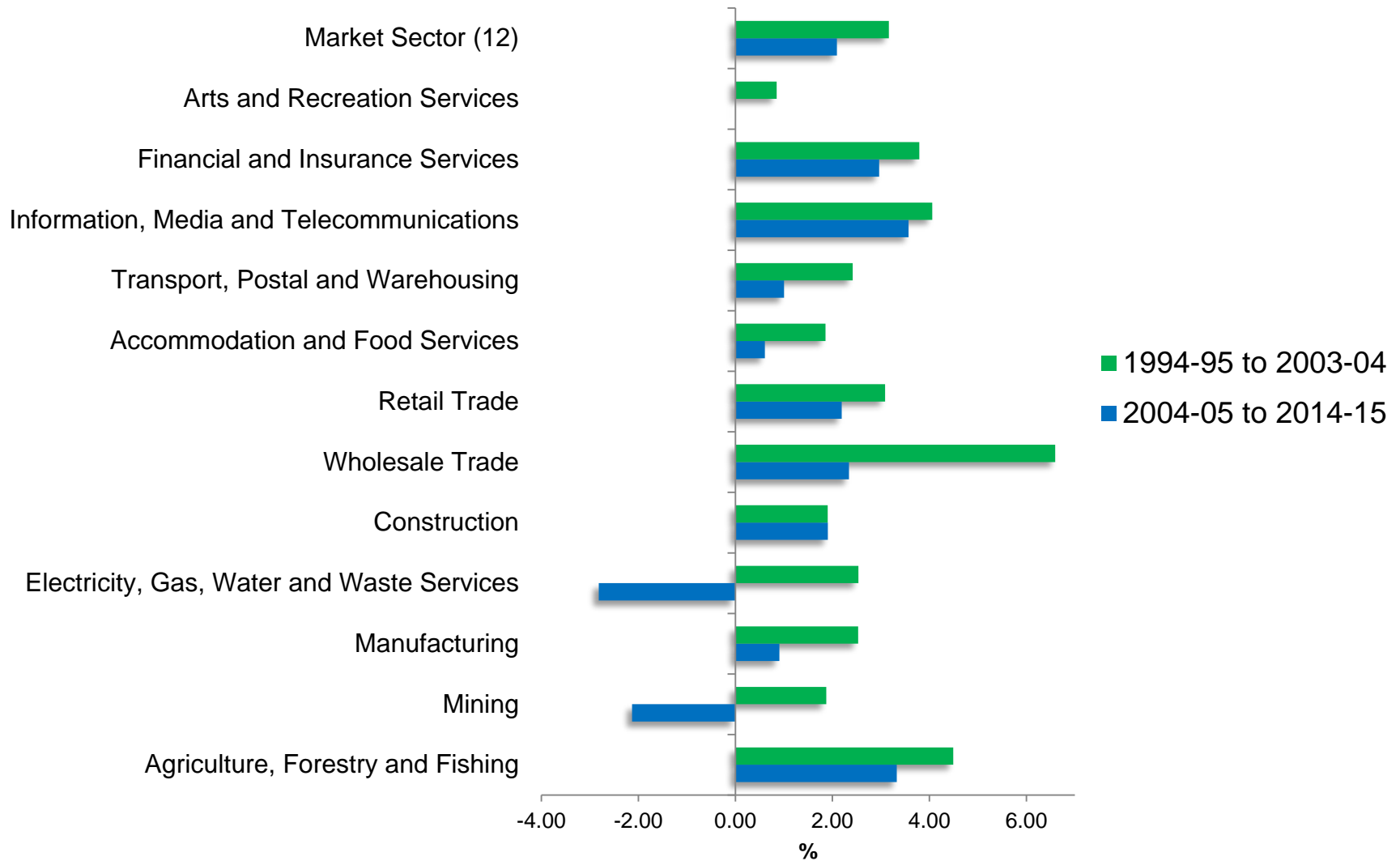
\* 1995-2004 period estimated based on 28 out of 34 countries

Sources: IMF; OECD; RBA

From a speech by Dr. Phillip Lowe, Deputy Governor, Reserve Bank of Australia: "Demographics, Productivity and Innovation,"  
The Sydney Institute, Sydney, 12 March 2014. <http://www.rba.gov.au/speeches/2014/sp-dg-120314.html>

# Australian Labour Productivity Growth Slowdown

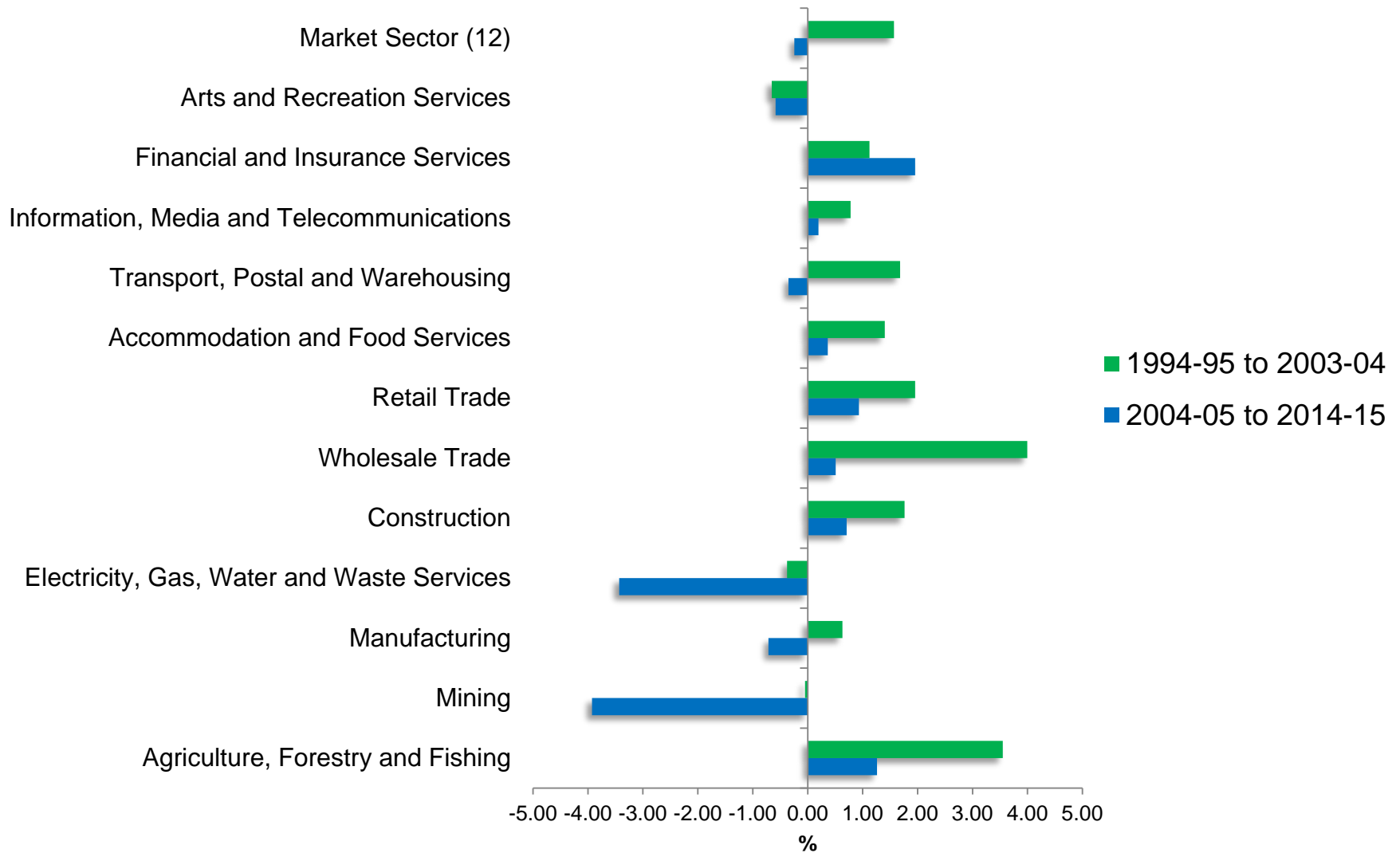
Hours Worked Basis, Market Sector, Annual Averages



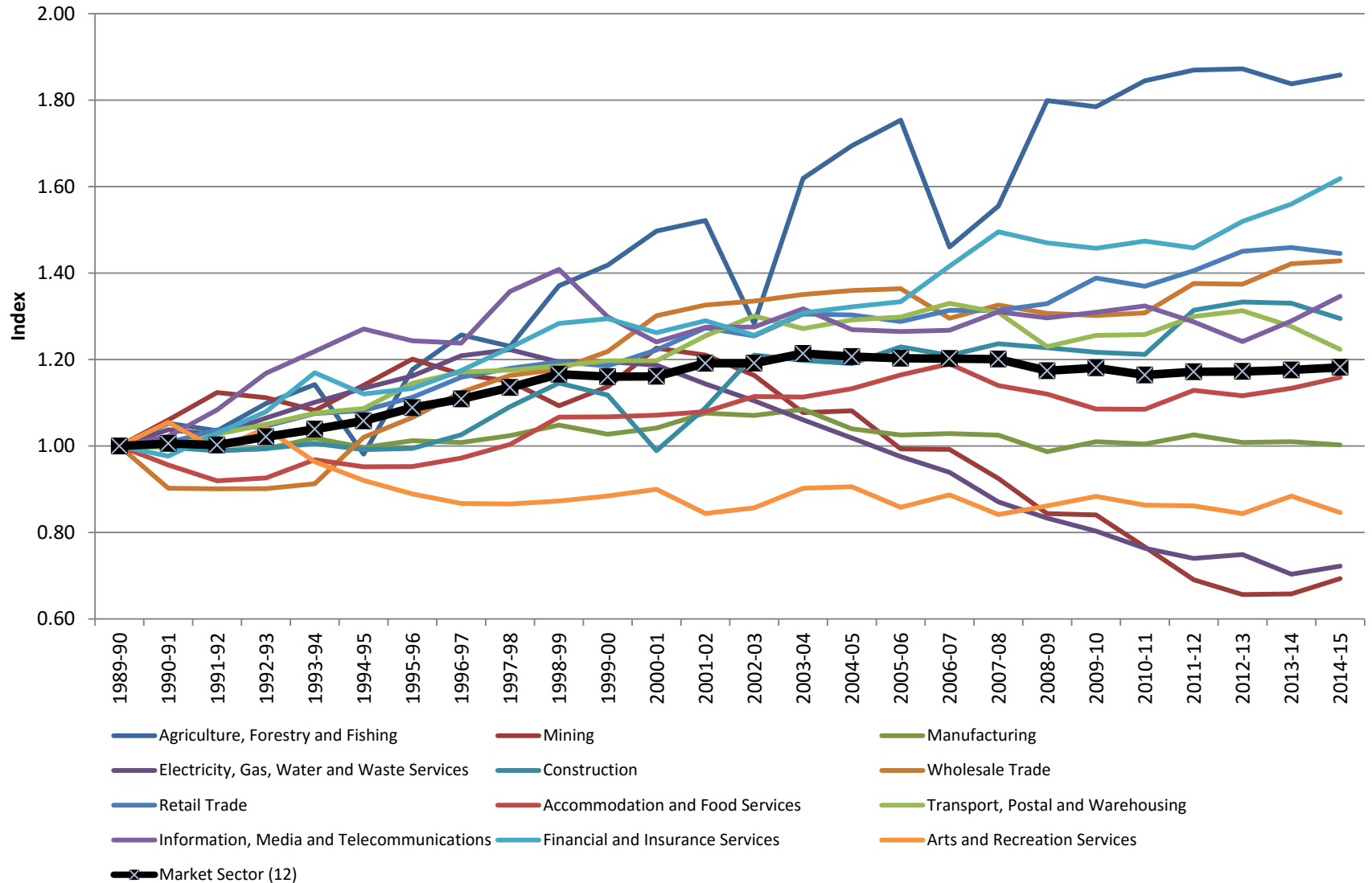


# Australian Multifactor Productivity Slowdown

## Market Sector, Annual Averages



# Market Sector Cumulative Multifactor Productivity Indexes



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1. Productivity

2. The Innovation Debate

3. Mismeasurement Hypothesis

4. Intangibles and Productivity

5. Conclusions



*“Everything that can be invented has been invented.”*

(Attributed to) Charles H. Duell, Commissioner of US patent office, 1899.



# Innovation and Economic Growth

Robert Gordon: “Why Innovation Won’t Save Us” (Wall Street Journal, 22-23 Dec. 2012)

## -Drying up of big breakthroughs:

- *Can economic growth be saved by Google’s driverless car?*
- *I am not forecasting an end to innovation, just a decline in the usefulness of future inventions in comparison with the great inventions of the past.*



# Innovation and Economic Growth

*But what about the evidence of a decline in “inventiveness” ....?*

*I interpret most of the proffered evidence as reflecting the impact of **reduced aggregate demand and less favourable economic prospects** for inventive activity in the late 1970s, rather than as the result of technological springs running dry.*

Griliches (1988): “Productivity Puzzles and R&D: Another Nonexplanation,” *Journal of Economic Perspectives* 2(4), 9 – 21.



# “The History of Technological Anxiety and the Future of Economic Growth: Is This Time Different?”

Joel Mokyr, Chris Vickers, and Nicolas L. Ziebarth (2015), *Journal of Economic Perspectives* 29(3), 31–50.

Alvin Hansen’s 1938 book *Full Recovery or Stagnation?*

*“Hansen drew on the macroeconomic ideas of John Maynard Keynes in fearing that economic growth was over, with population growth and technological innovation exhausted.”*



# Plan

1. Productivity Slowdown
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## A typical view from industry:

*“I don’t believe for a second the idea by economists who say that productivity does not grow any more. It is just badly measured! We are witnessing a tremendous increase in the quality of services at decreasing costs. A Google search that costs nothing would have been invoiced dearly twenty five years ago. If that is not productivity, what is?”*

**Henri de Castries, Chief Executive AXA Assurance, *Les Echos* 31 August 2015 (Quoted by Paul Schreyer, OECD)**

## And if that wasn't enough....

Charlie Bean:

*“statistics have failed to keep pace with the impact of digital technology”*

Hal Varian (Google):

*“There's a lack of appreciation for what's happening in Silicon Valley, because we don't have a good way to measure it.”*

The Wall Street Journal (2015): Silicon Valley Doesn't Believe U.S. Productivity is Down



# Chad Syverson (2016) “Challenges to Mismeasurement Explanations for the U.S. Productivity Slowdown”

NBER Working Paper No. 21974

- The productivity slowdown has occurred in dozens of countries, and its size is unrelated to measures of the countries’ consumption or production intensities of information and communication technologies
- Estimates from the existing research literature of the surplus created by internet-linked digital technologies fall far short of the “missing output” resulting from the productivity growth slowdown. The largest—by some distance—is less than one-third of the purportedly mismeasured GDP.



# Byrne, Reinsdorf, Fernald “Does the United States have a Productivity Slowdown or a Measurement Problem?”

Federal Reserve Bank of San Francisco Working Paper 2016-03.

- **Mismeasurement of IT hardware is significant prior to the slowdown** and because the domestic production of these products has fallen, the quantitative effect on productivity is larger in the 1995-2004 period than since....**adjustments make the slowdown in labor productivity worse.**
- Many of the tremendous consumer benefits from smartphones, Google searches, and Facebook are, conceptually, non-market: Consumers are more productive in using their nonmarket time to produce services they value. **These benefits raise consumer well-being but do not imply that market-sector production functions are shifting out more rapidly than measured.**



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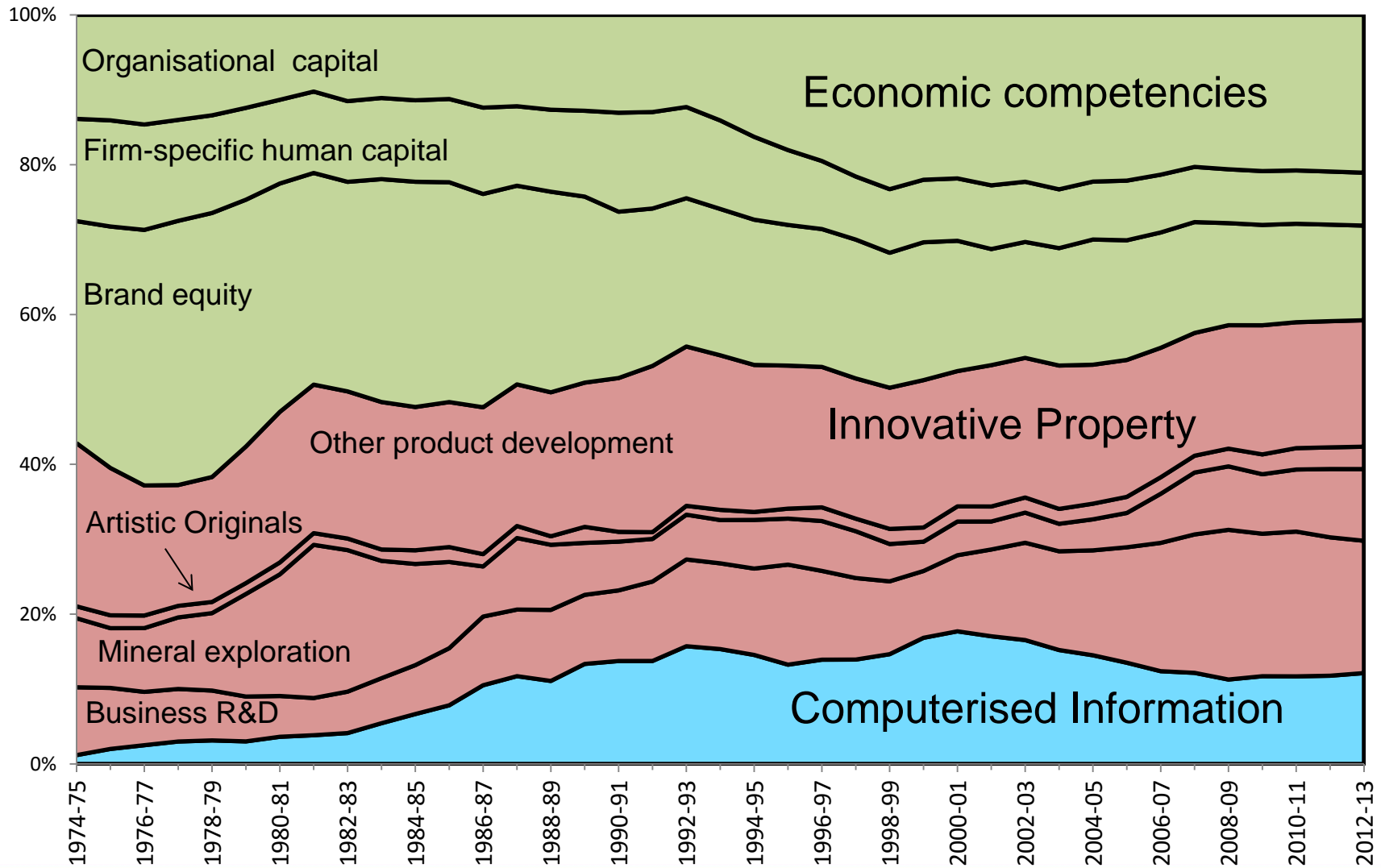
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# Intangible (Elnasri and Fox, 2015)



## Overall Conclusions

- Is the world confronting a long-term slow-down in productivity?
  - *Yes, so far. Measurement is a problem, but not THE problem.*
- Or will a new digital age revitalise global productivity growth and which countries will be on the frontier?
  - *Many reasons for optimism based on history, and the nature of current innovation.*
  - *Which countries are on the frontier may depend on the sector.*



## Amara's Law\*

*“We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run.”*

\*Named after systems engineer Roy Amara, former president of Institute for the Future

