

Research and Innovation: Measuring and Capturing the Benefits of Public Investment

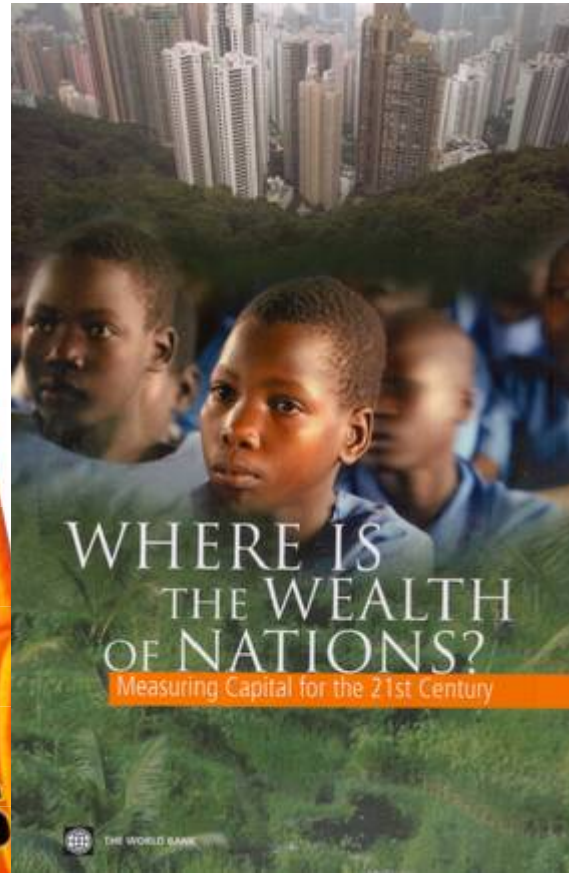


Patrick Cunningham
Chief Scientific Adviser to the Government

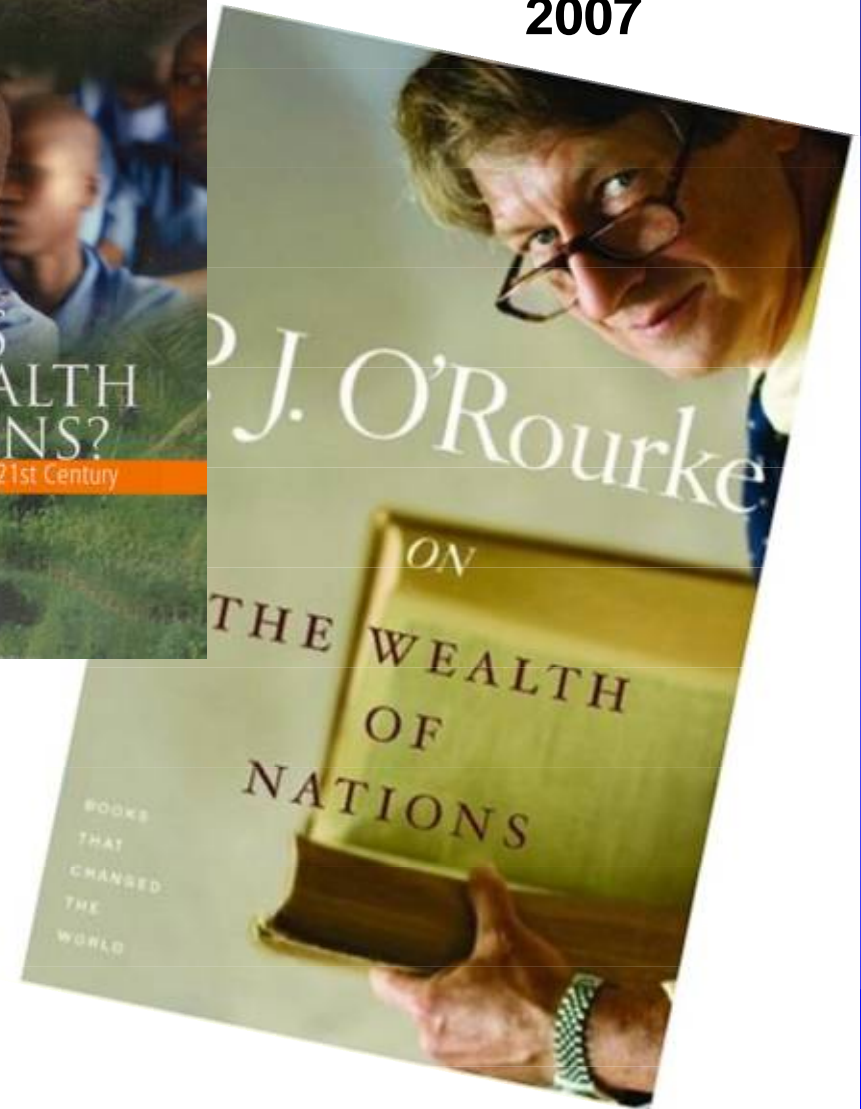
10th-13th June 2009

KU-Leuven

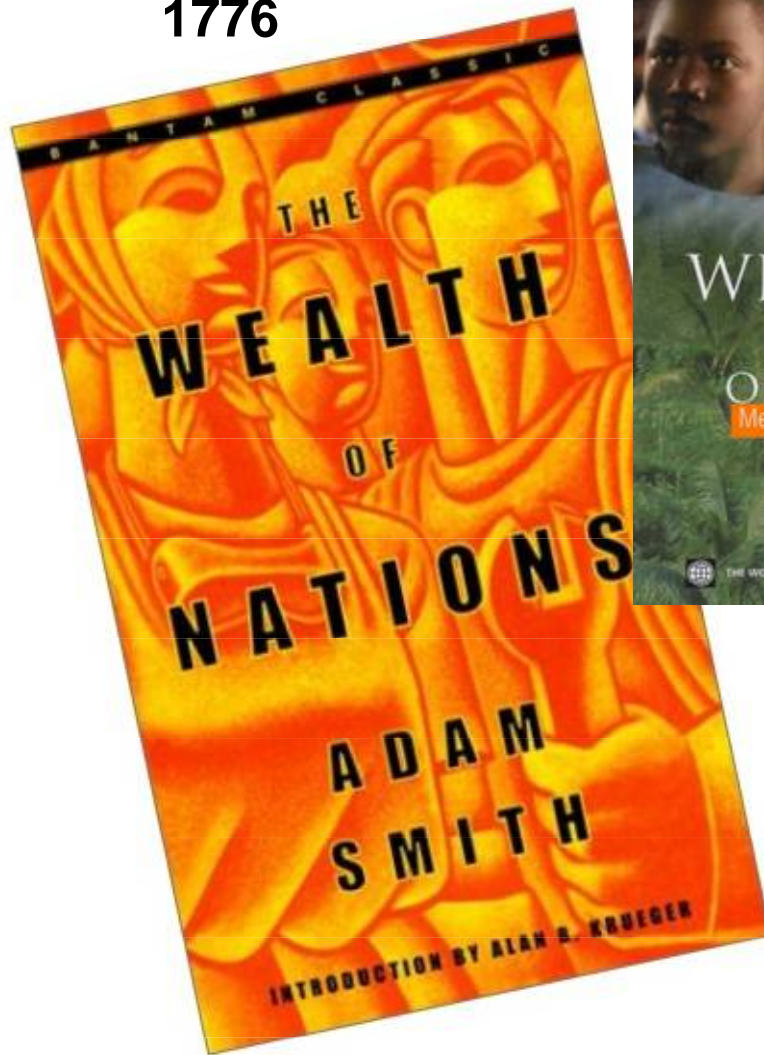
2006



2007



1776



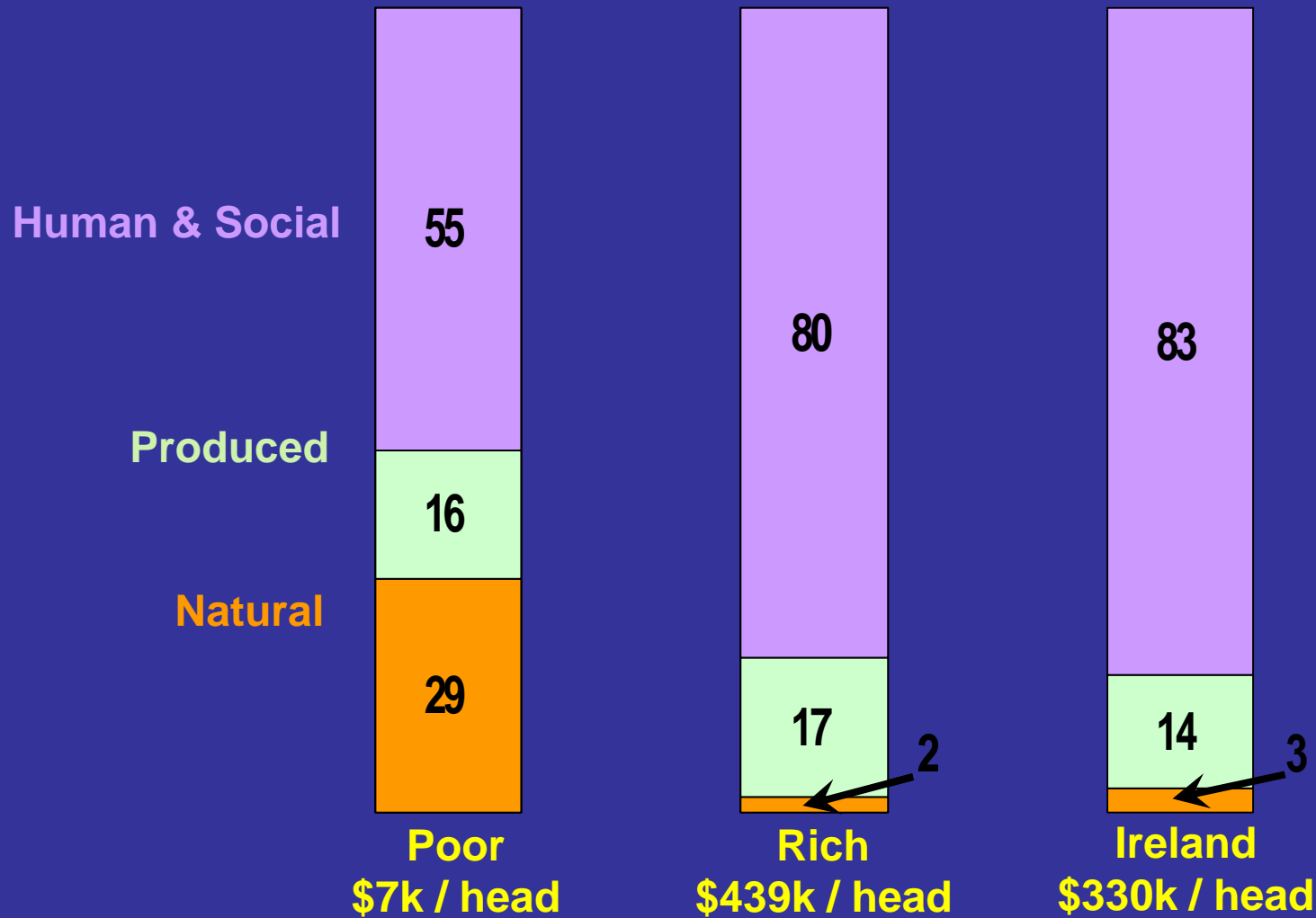
The Wealth of Nations: Capital per capita

Rich: \$439k

Ireland: \$330k

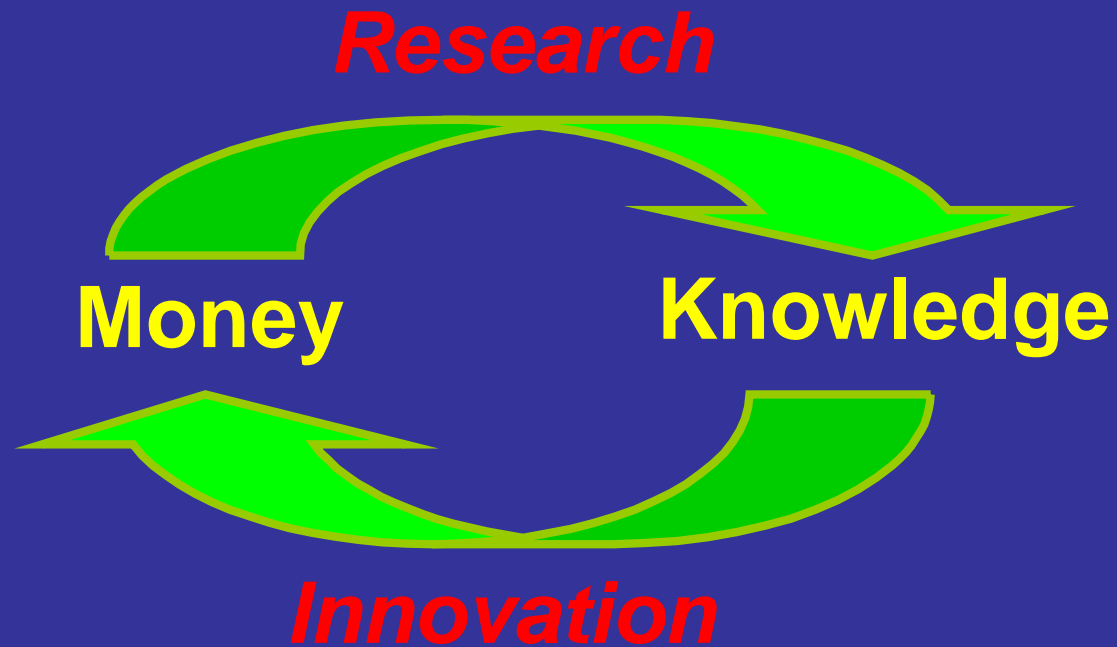
Poor: \$7k

The Wealth of Nations



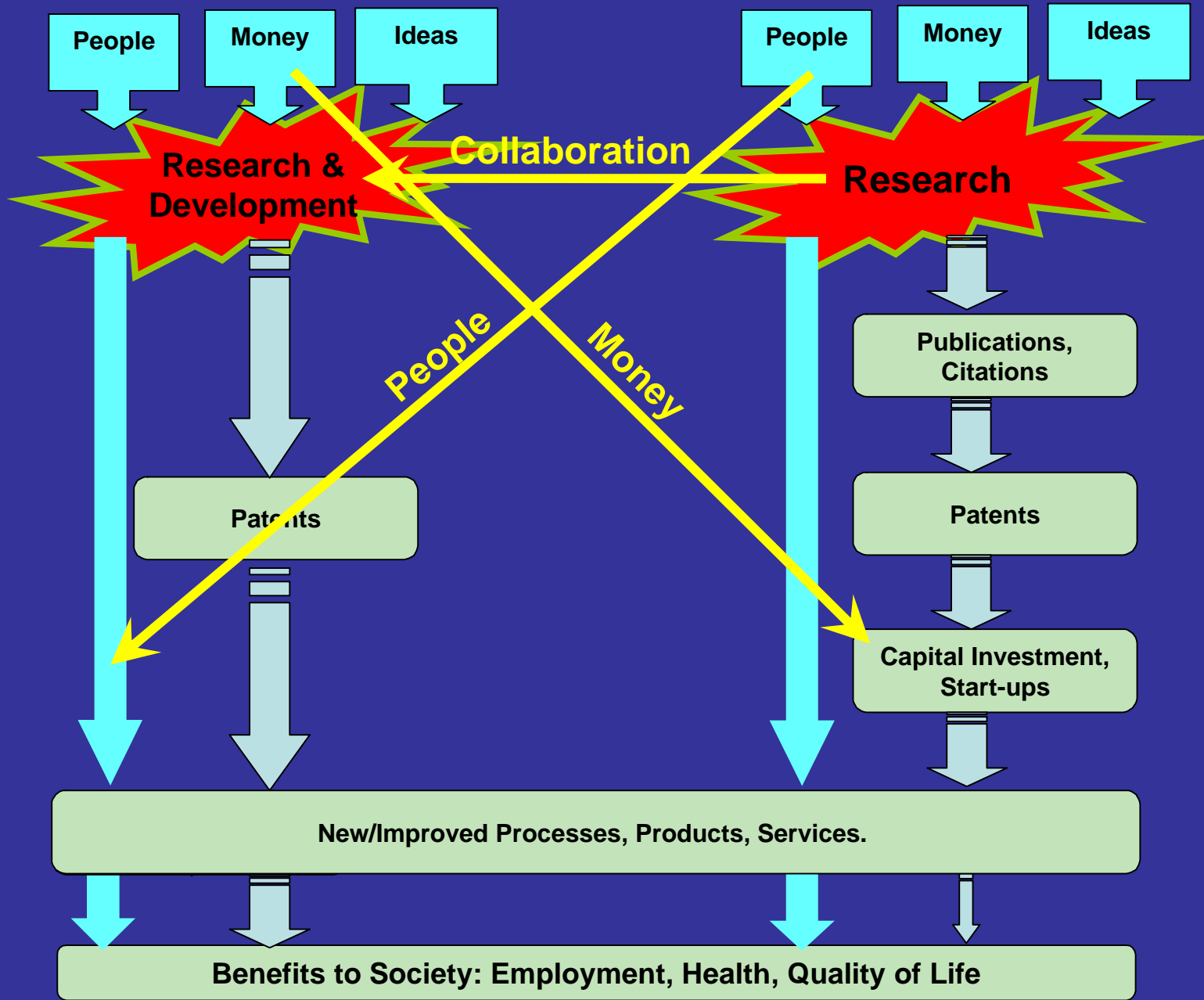
Source: *Where is the Wealth of Nations?* World Bank, 2006.

A Virtuous Circle



Business

Public



Metrics

OECD	Main Science and Technology Indicators (138 indicators) Science, Technology and Industry Scoreboard (88 indicators)	
World Bank	World Development Indicators (15 indicators) Knowledge Assessment Matrix (80 indicators)	
UNESCO	Science and Technology and Indicators (12 indicators)	
INHOLLAND	Intellectual Capital (38 indicators)	★
WEF	Lisbon Review (11 indicators)	★
EU	European Innovation Scoreboard (29 indicators)	★

The Intellectual Capital of the European Union

(38 indicators)

Centre for Research in
Intellectual Capital
INHOLLAND University
The Netherlands
2004

Ireland ranked 8th



Ireland ranked 11th

Lisbon Review 2008

(68 indicators)

World Economic Forum
Geneva
2008



European Innovation Scoreboard - *Inputs*

Human Resources

- S&E, SSH Primary Graduates
- S&E, SSH PhD Graduates
- Pop. with Tertiary Education
- Life-long Learning
- Youth Education Attainment

Finance & Support

- Public R&D Expenditure
- Venture Capital
- Private Credit
- Firms with Broadband

Firm Investments

- Business R&D Expenditure
- IT Expenditure
- Non-R&D Innovation Expenditure

Linkages & Entrepreneurship

- SMEs Innovating In-house
- Innovative SMEs Collaborating
- Firm Renewal
- Public-Private Co-publications

Throughputs

- EPO Patents
- Community Trademarks
- Community Designs
- Technology Balance of Payments

European Innovation Scoreboard - *Outputs*

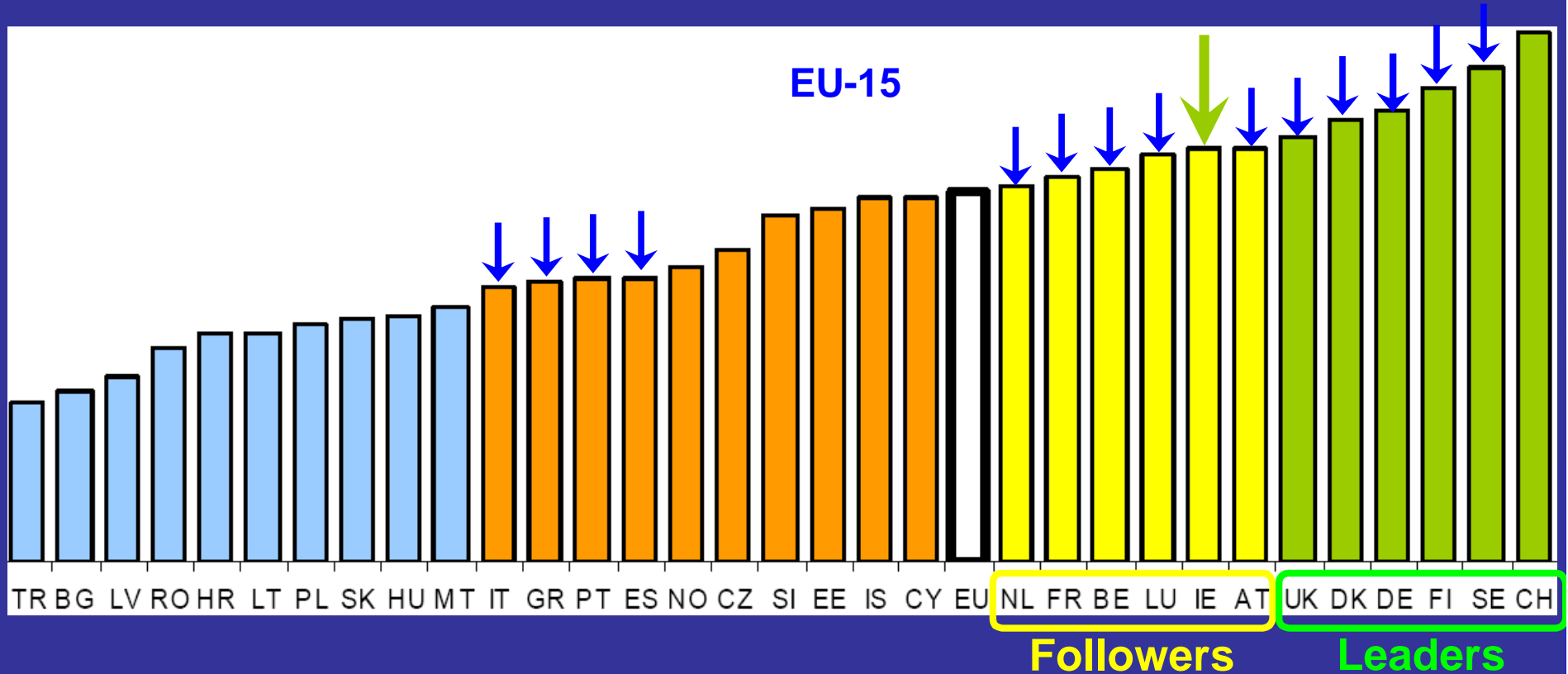
Innovators

- SME Product / Process Innovation
- SME Marketing / Organ. Innovation
- Resource Efficiency Innovators

Economic Effects

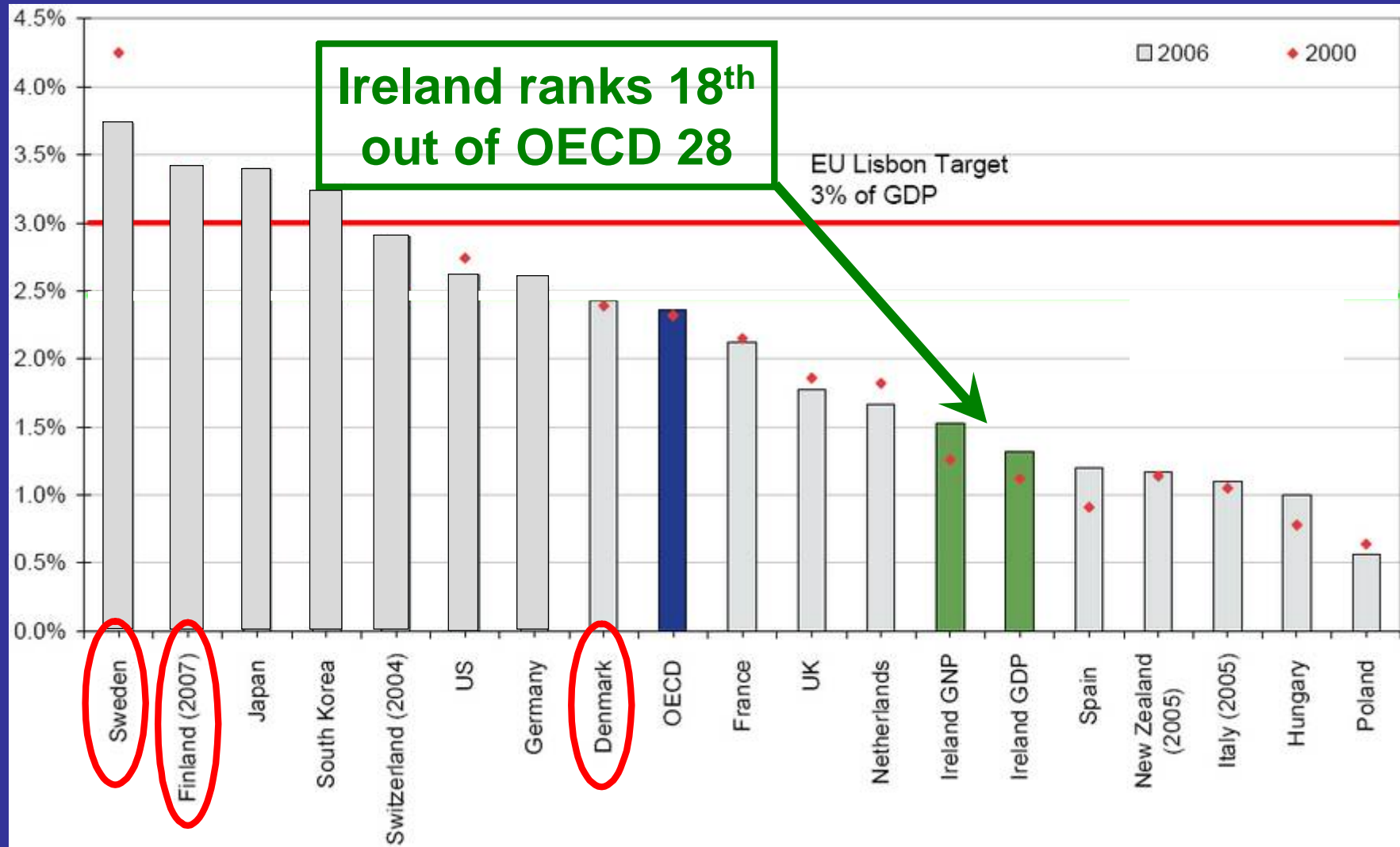
- High-tech *Manuf.* Employment
- Knowledge-Intensive *Serv.* Employment
- High-tech *Manuf.* Exports
- Knowledge-Intensive *Serv.* Exports
- New-to-market Sales
- New-to-firm Sales

Summary Innovation Index 2008 (29 Indicators)



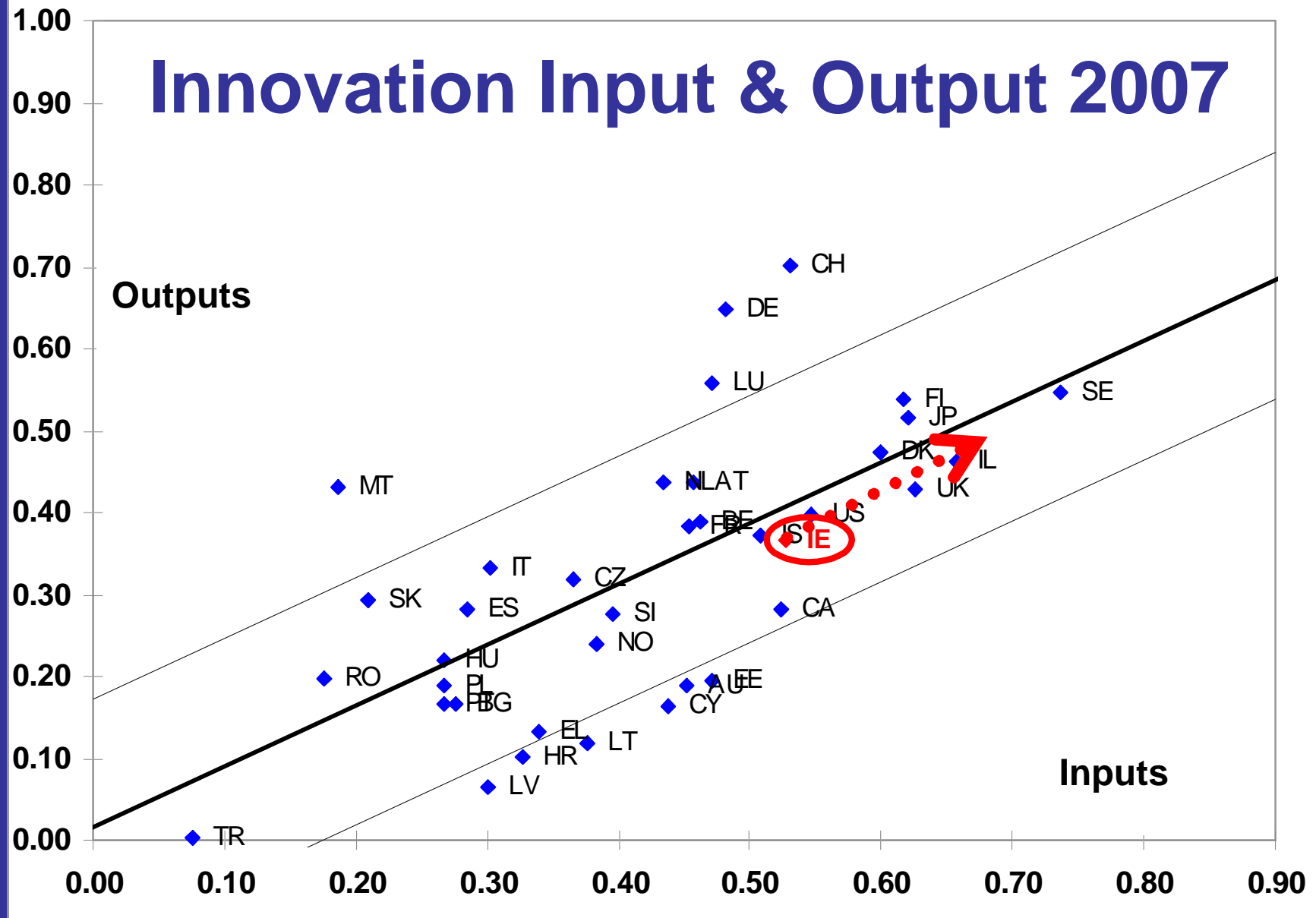
Source: European Innovation Scoreboard 2008 (Jan 2009)

Gross Domestic Expenditure on R&D as % GDP (2006)



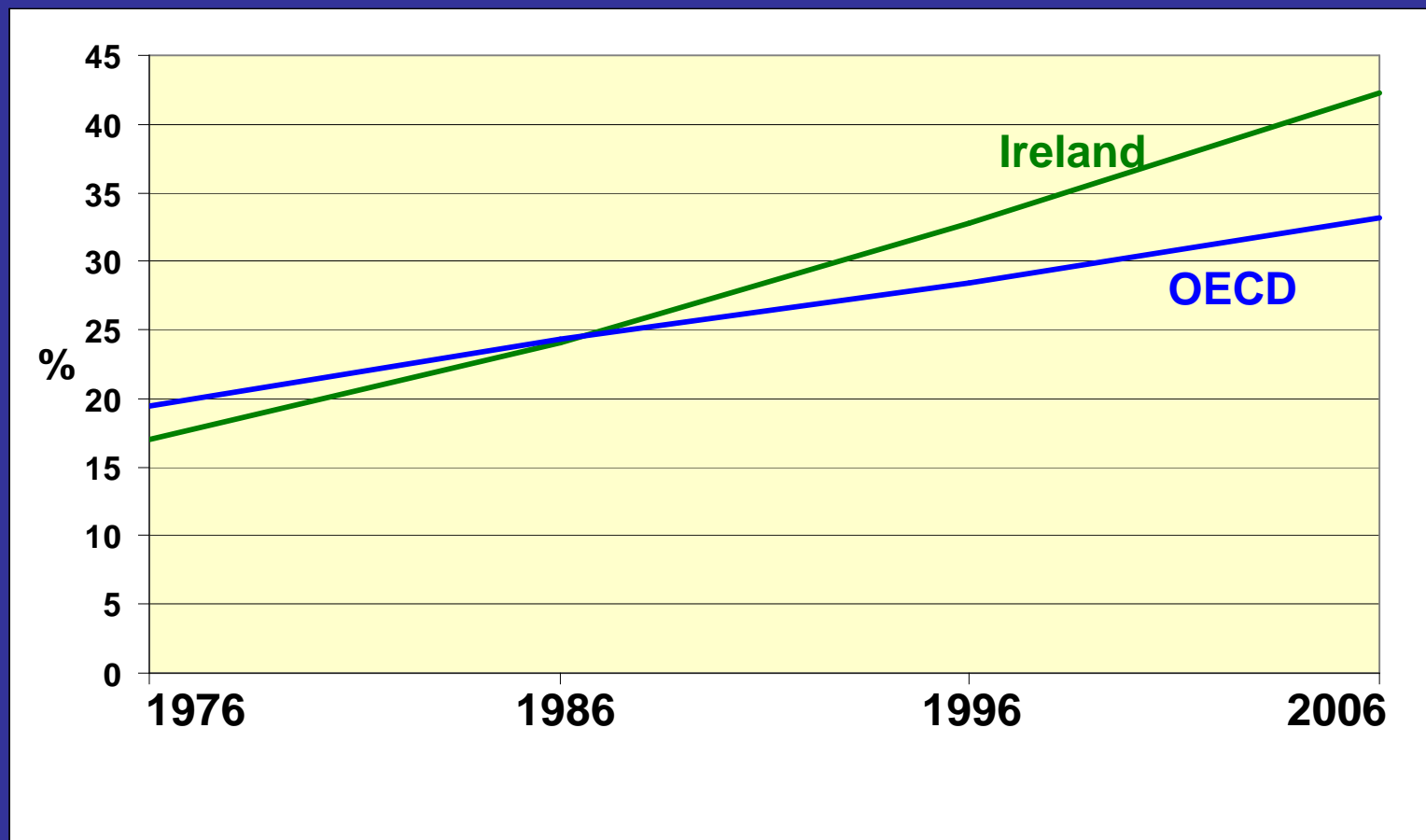
Source: Annual Competitiveness Report, NCC, 2009

Innovation Input & Output 2007



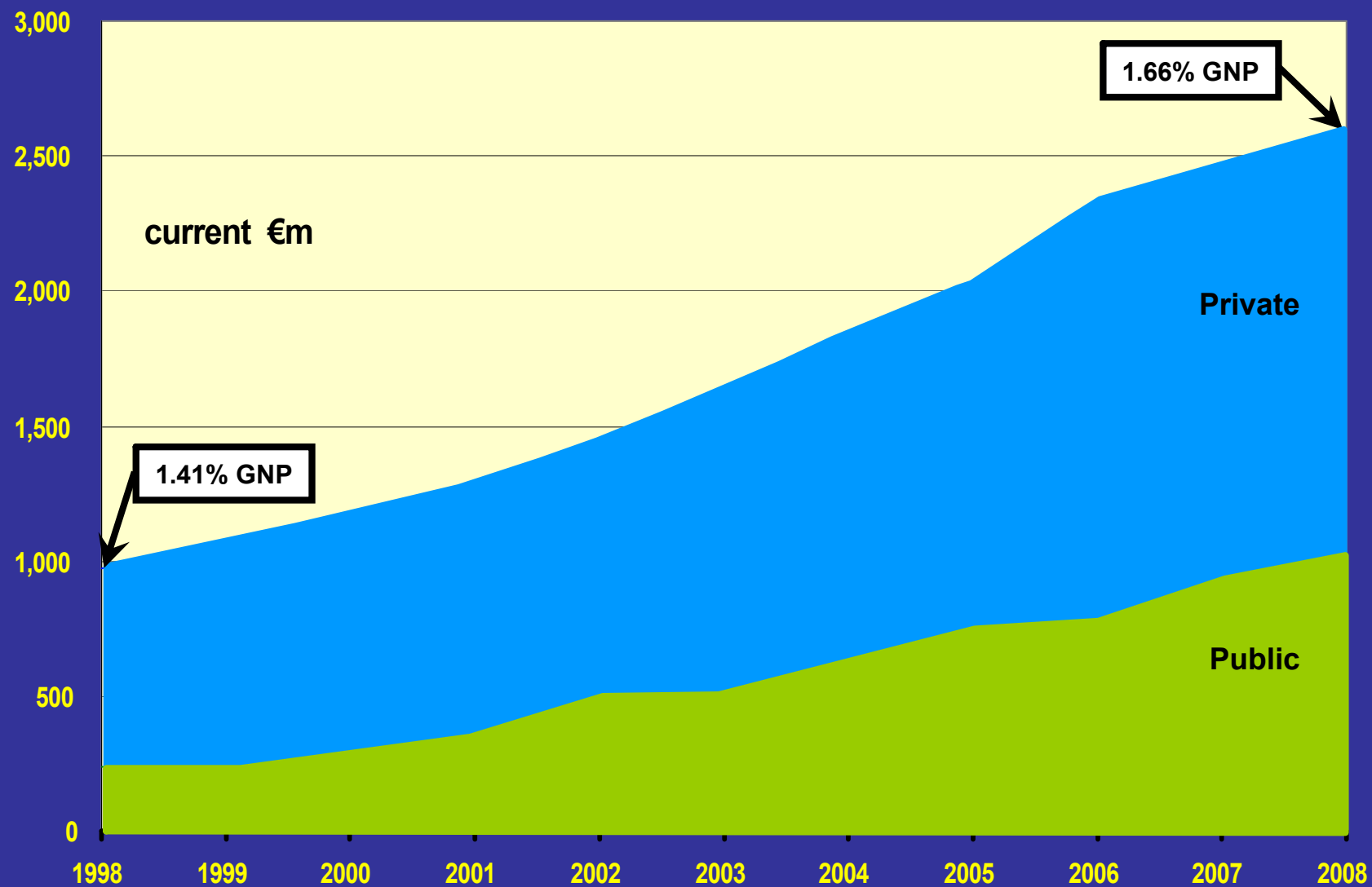
Unpublished (UNU-MERIT, Maastricht University)

% of 25-34 Age Group with Tertiary Education



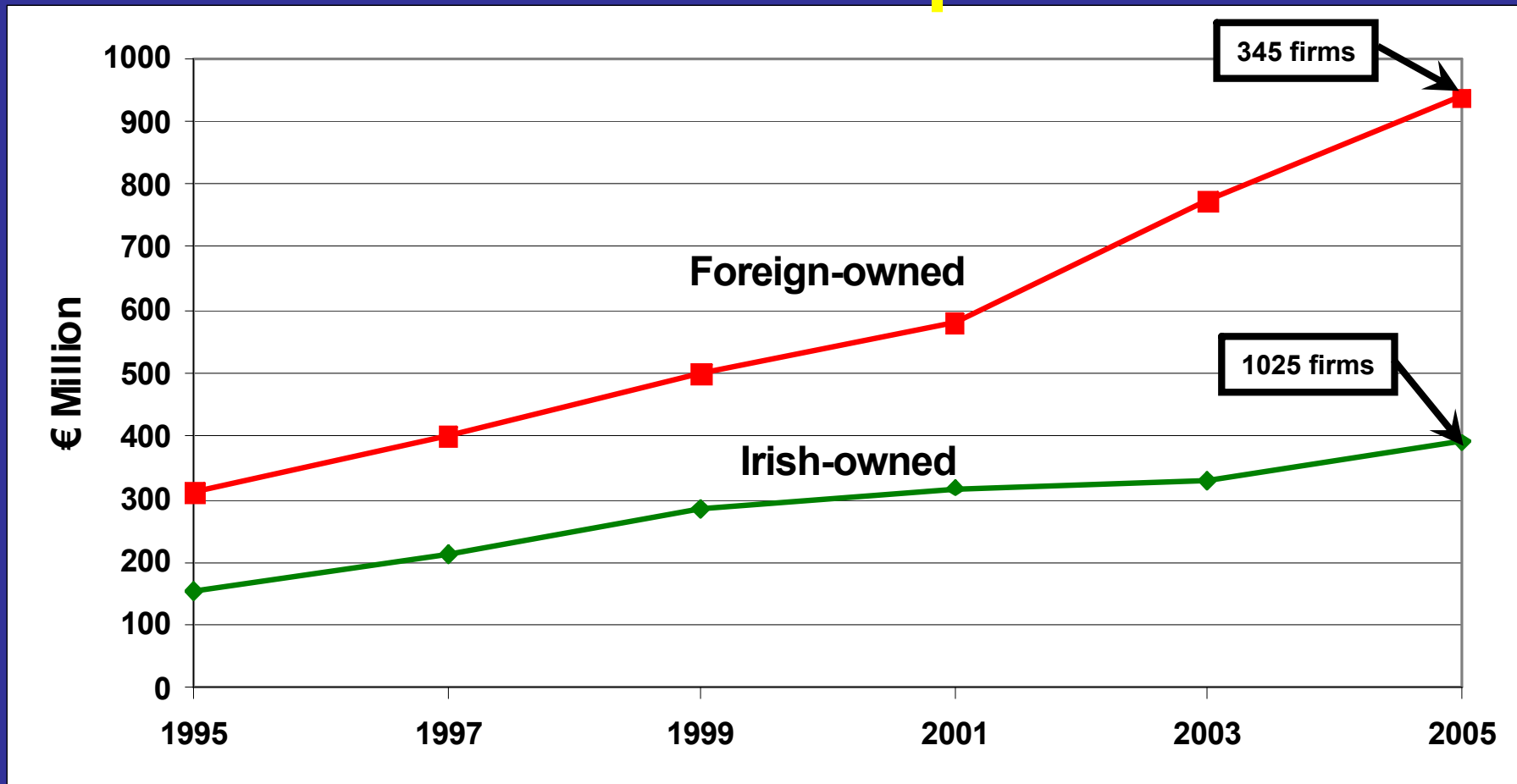
Source: *Education at a Glance*, OECD, 2008.

Investment in R&D (GERD)



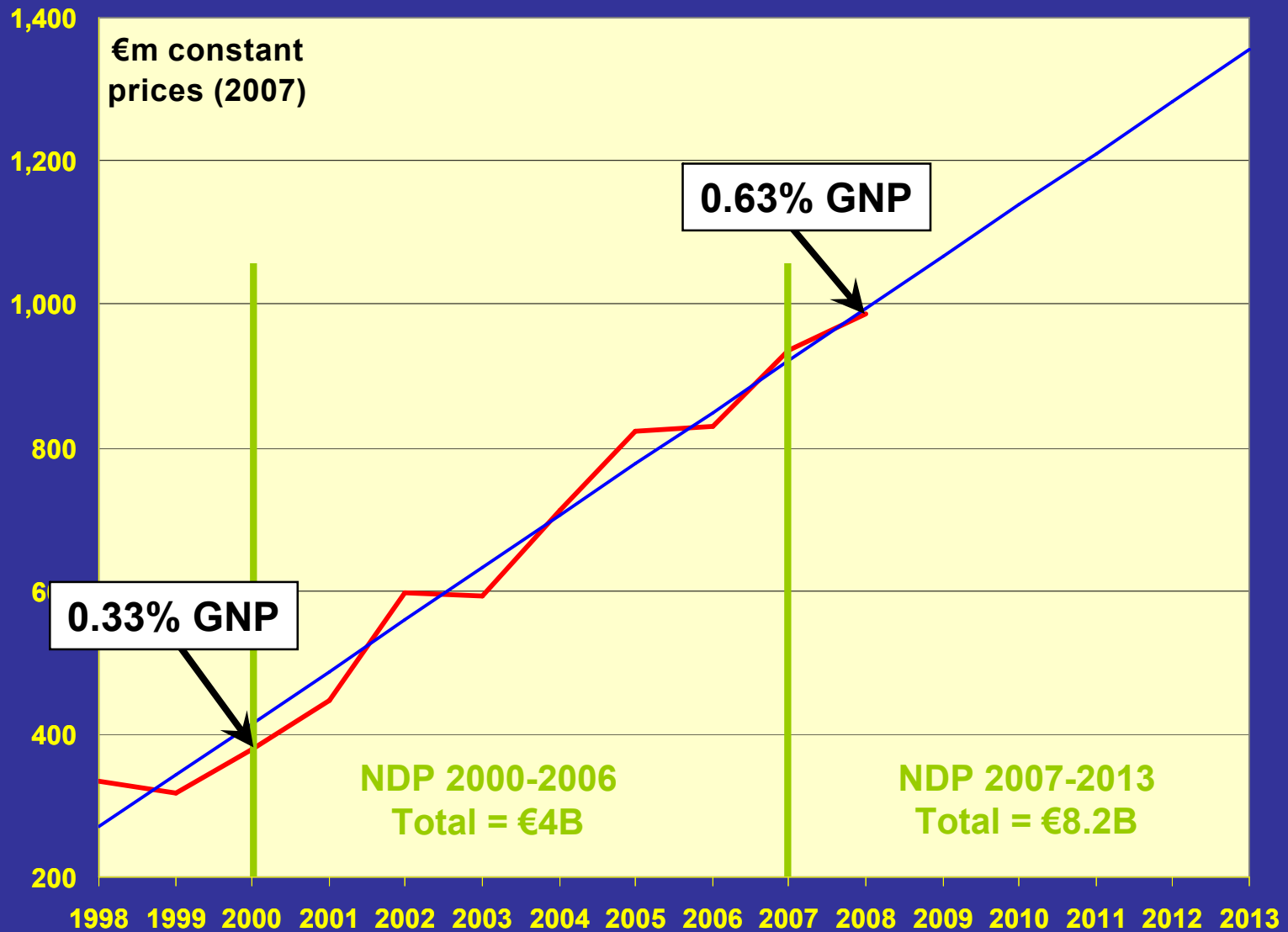
Source: derived from Forfás data

R&D in the Business Sector by Ownership



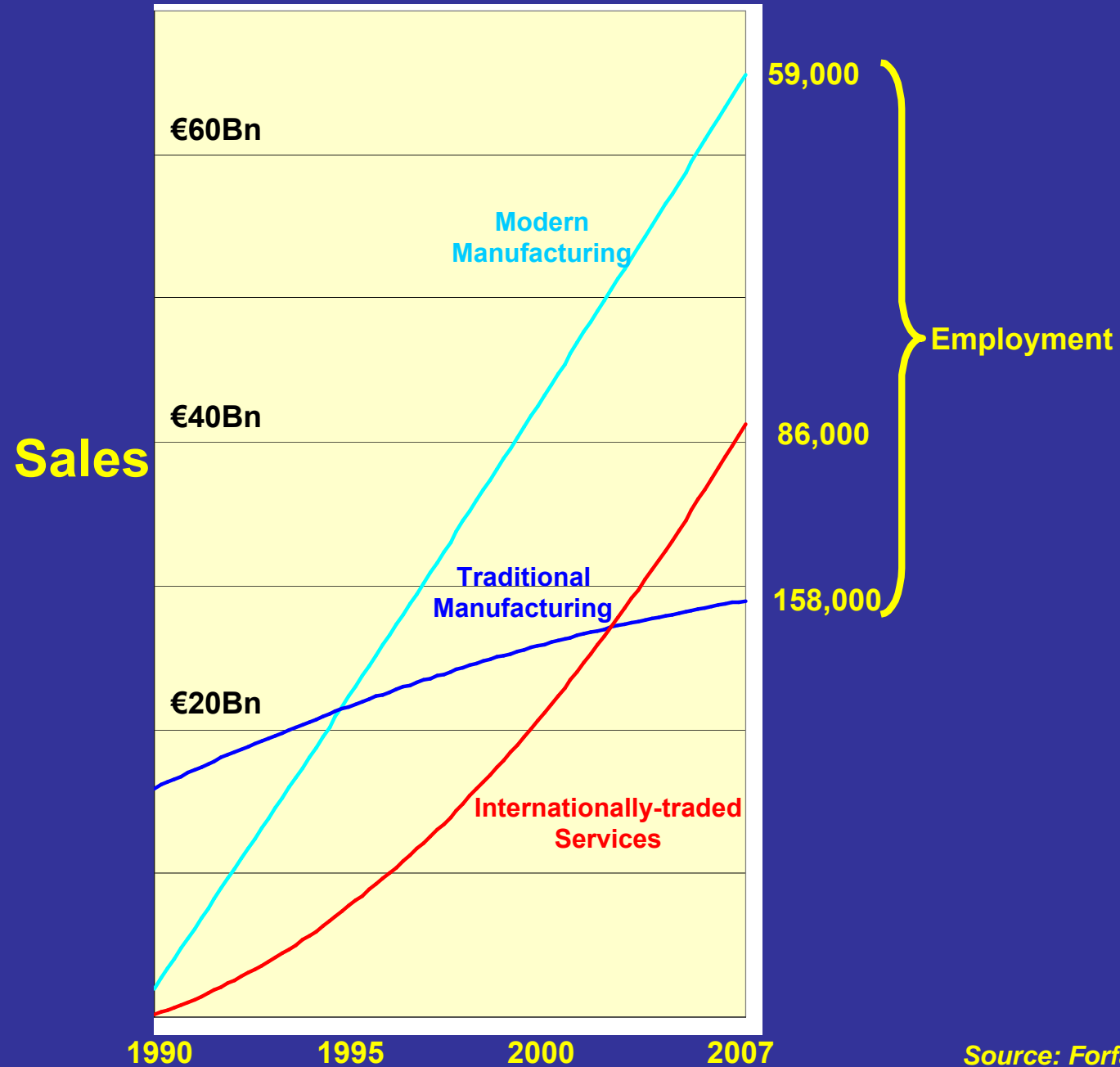
Source: Forfás.

Public Investment in R&D

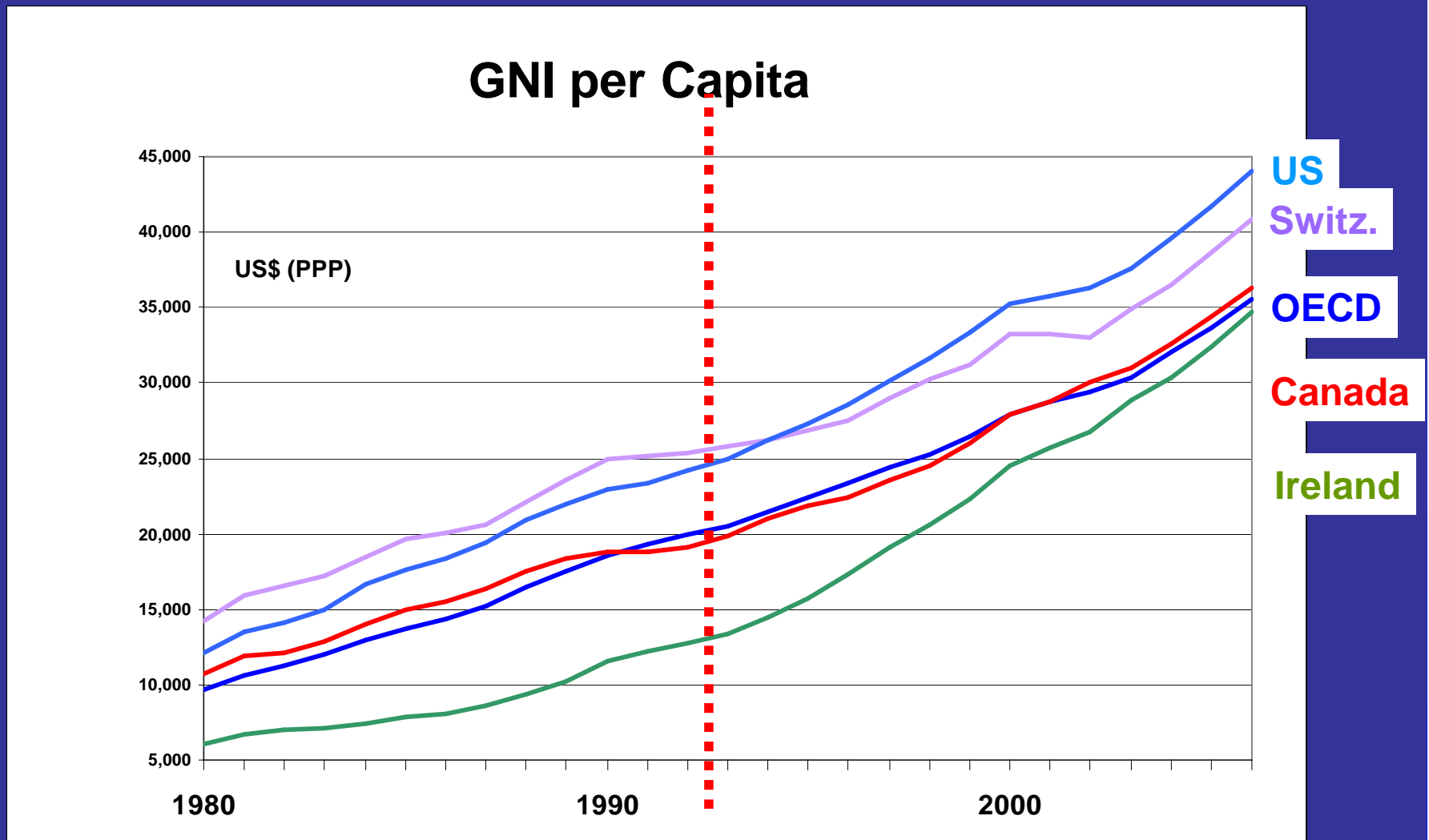


Source: derived from Forfás data

Transformation of Industrial Base



Converging Wealth: Ireland and other advanced economies



Source: World Development Indicators, World Bank, 2008.

John Holdren

Presidential Science Adviser

“between 50 and 85 percent of the growth of the U.S. economy over the past half-century -- and two-thirds of our productivity gains in recent decades -- are directly attributable to scientific and technological advances.”

Testimony to Congressional Committee, February 2009

President Obama

“We will devote more than 3 percent of our GDP to research and development.”

Addressing the National Academy Of Sciences, April 2009

Dublin: European City of Science 2012

See www.esof2012dublin.eu