

# Policies for raising Productivity

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Professor John Van Reenen  
Director, Centre for Economic Performance, LSE

# Roadmap

- Why do we care about productivity?
- How do we measure productivity?
- How does the UK (and EU) measure up to the US?
- What policies could boost UK productivity?
- Conclusions

# 1. Why productivity matters

- “*Productivity isn’t everything, but in the long run it is almost everything*” (Paul Krugman)
- Gordon Brown; Lisbon Agenda, Sapir Report
- Productivity growth drives growth of real wages
- Productivity growth can be used to finance government expenditure
- Productivity growth can *facilitate* redistribution
- Welfare effects from improved allocative efficiency swamped by benefits of improvements in productivity

# Downsides to productivity growth?

- Poverty? But absolute poverty tends to fall with growth and no clear relationship between productivity growth and inequality (Kuznets to Aghion)
- Happiness (Layard)

# 2. What is labour productivity?

Basic “welfare” measure

Choice?

$$\frac{GDP}{Population} = \frac{GDP}{hours} \times \frac{hours}{workers} \times \frac{workers}{population}$$

Labour productivity

Voluntary and involuntary.  
Unemployment and inactivity

\*US has higher GDP/pop than EU, but more similar GDP/hours  
This has changed a lot over time via catch up

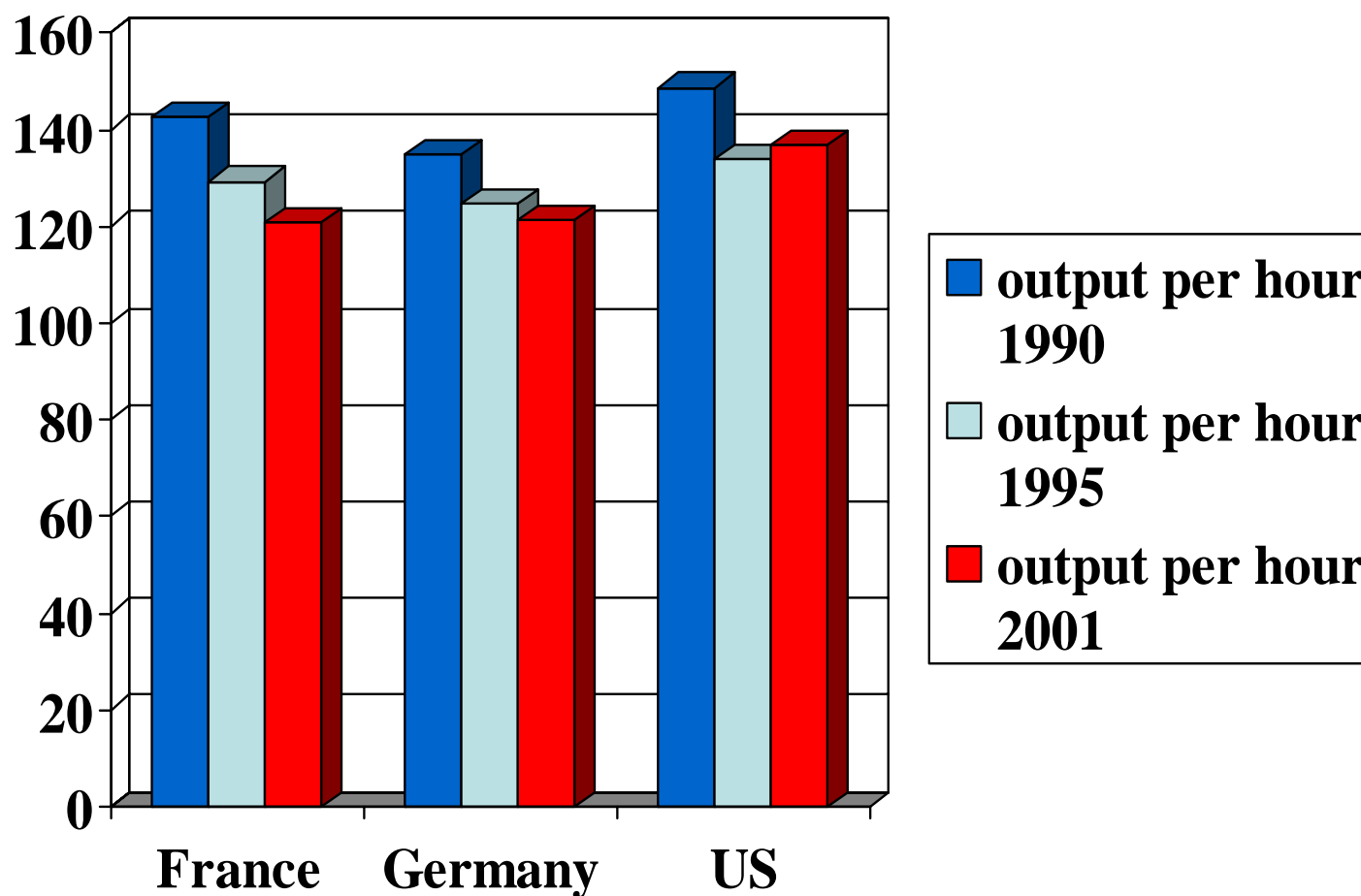
# Measuring Productivity

- From a “growth accounting” perspective
- Output per hour depends on:
  - Inputs per hour (physical and human capital, materials, energy, etc.)
  - “Total Factor Productivity” (technology, organisation, etc.) Also known as the “Solow residual” a “measure of our ignorance”

# 3. How does the UK measure up?

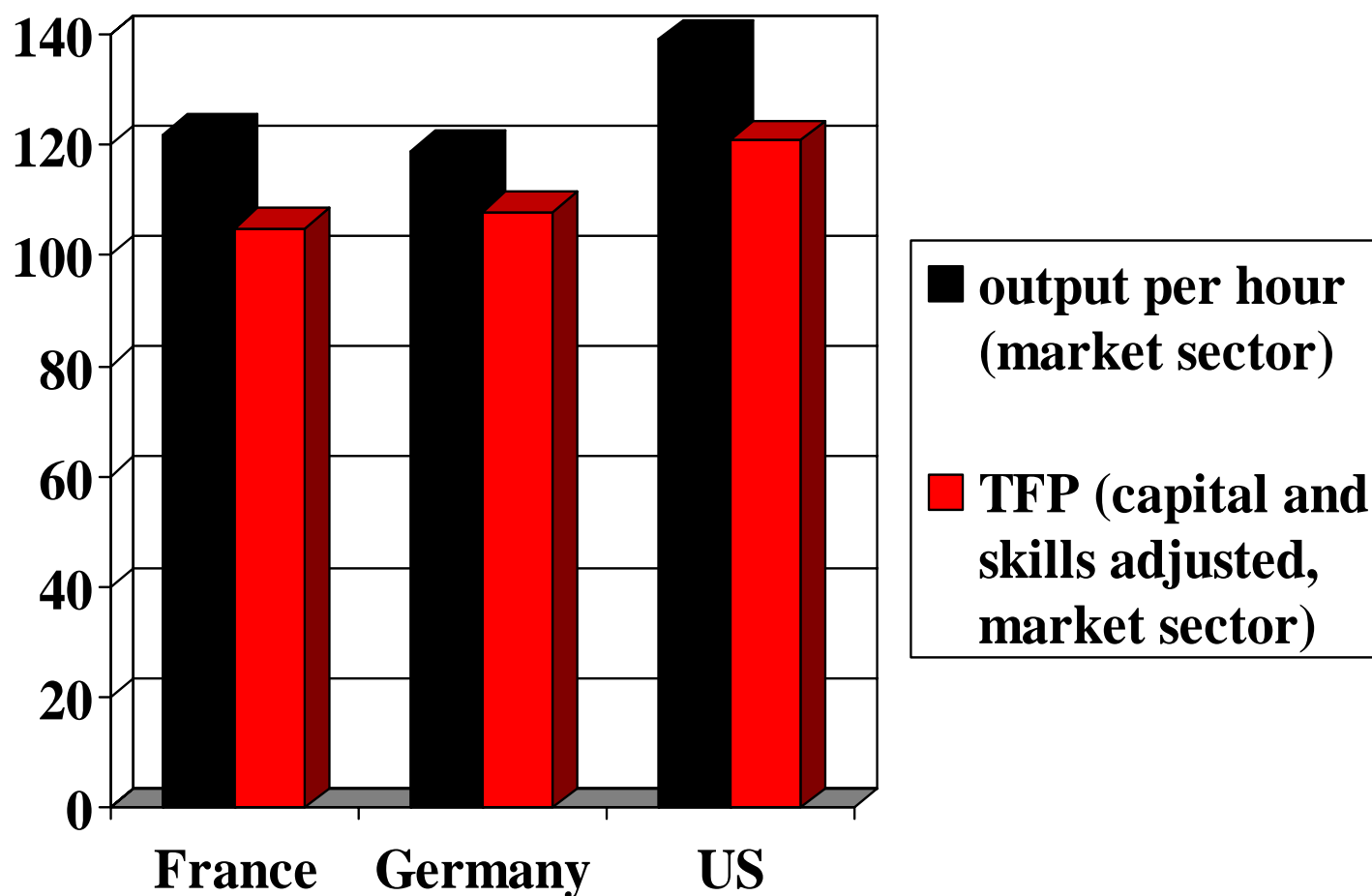
- The UK productivity gap with other countries
- The US productivity “miracle”

# UK Productivity Gap, 1990-2001, Market Sector (UK=100)



Source: O'Mahony (2004)

# UK Productivity Gap, 1999 (UK=100)



Source: O'Mahony and de Boer (2002)

# UK Productivity Gap

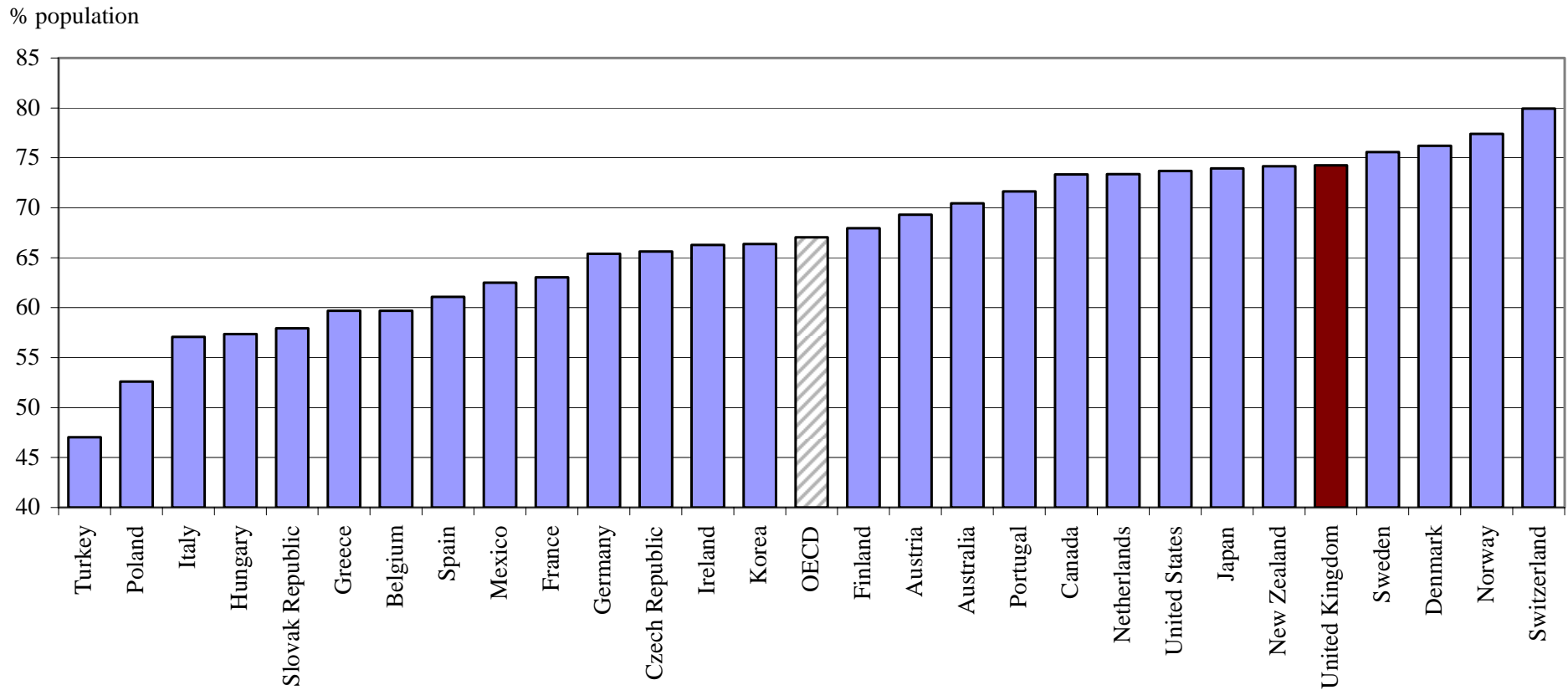
- Gap with Germany and France mainly due to lower human and fixed capital inputs
- Disguised in figures on output per person because UK workers work 16% more hours per year than Germans (extra 2 months a year)
- EU position flattered because lower employment rates (more unemployment)
  - but gap still existed in early 1990s when UK unemployment higher.
  - and US example of high employment and high prod
- The gap with US still large in TFP terms
- Major policy question how to bridge the gap

# Digression on UK Labour Market

- Strong performance in recent years compared to large European economies (e.g. France, Germany)
- Unemployment has stayed low and employment rates improved
- Problem areas
  - Inactivity/disability
  - Geographical concentration
  - Inequality
  - Decline in inter-generation mobility

# UK labour utilisation has improved and is now relatively high

Employment Rate, 2003



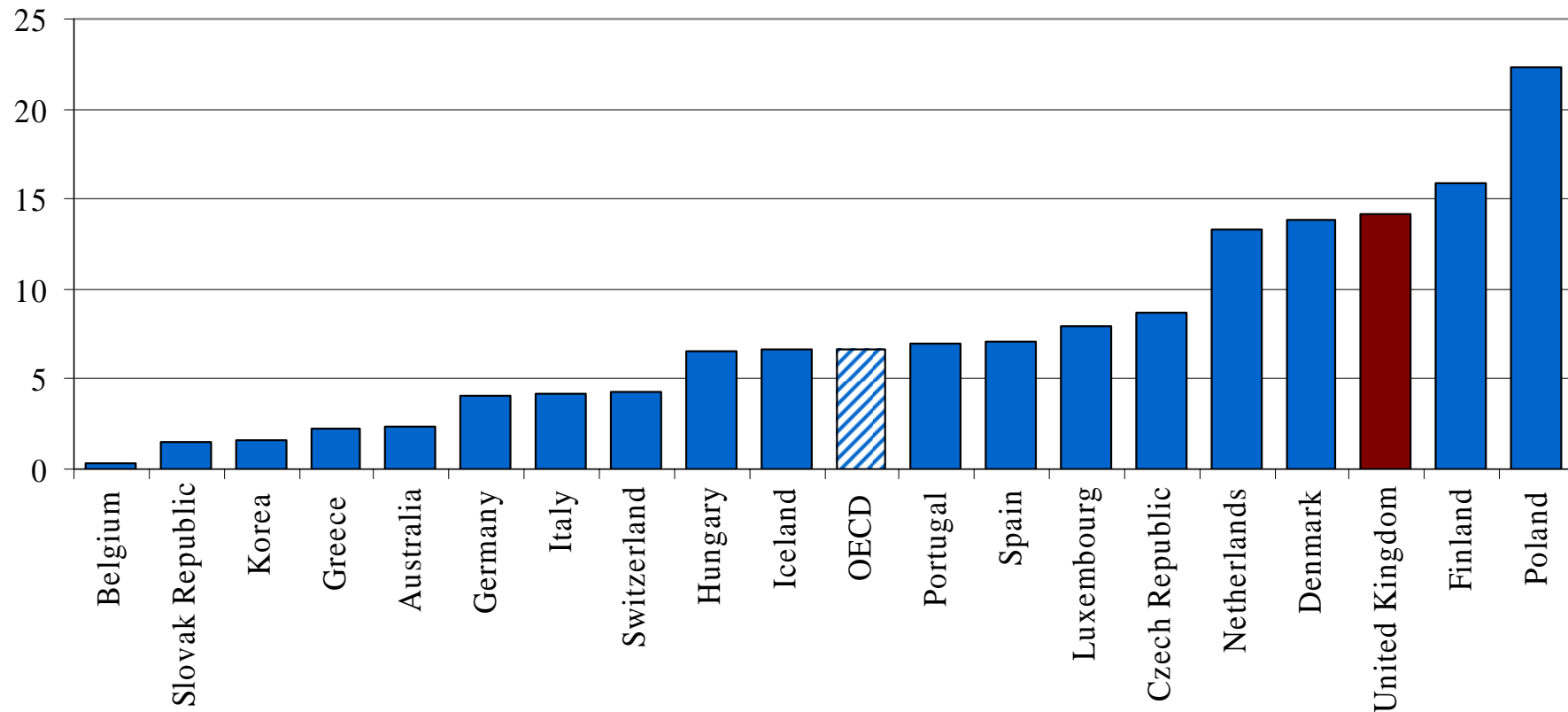
Source: OECD Labour Force Statistics.

# A large proportion of the UK's older workers are inactive due to illness or disability

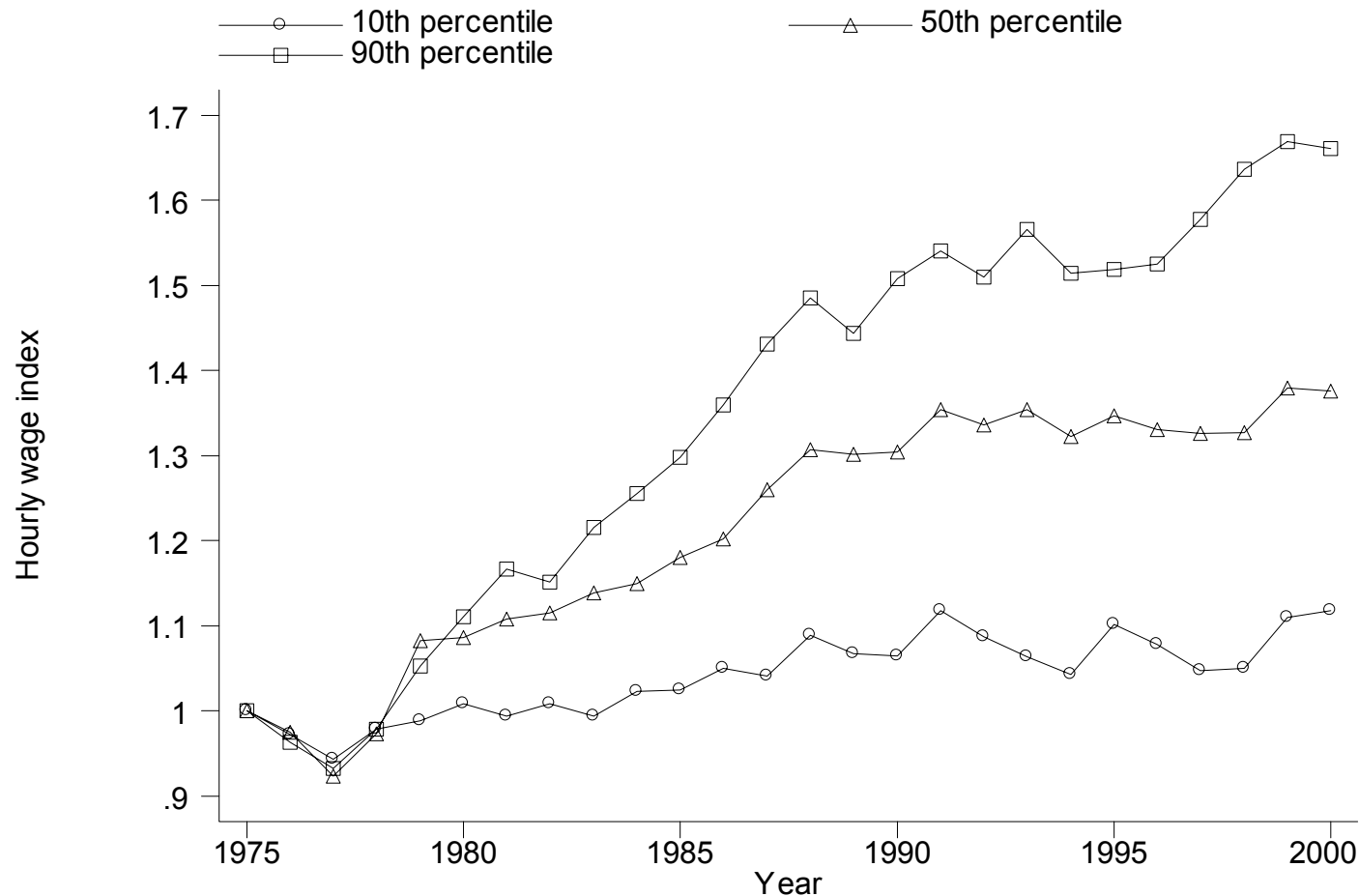
## Inactivity of older workers due to illness or disability

Persons aged 50 - 64 years, 2000

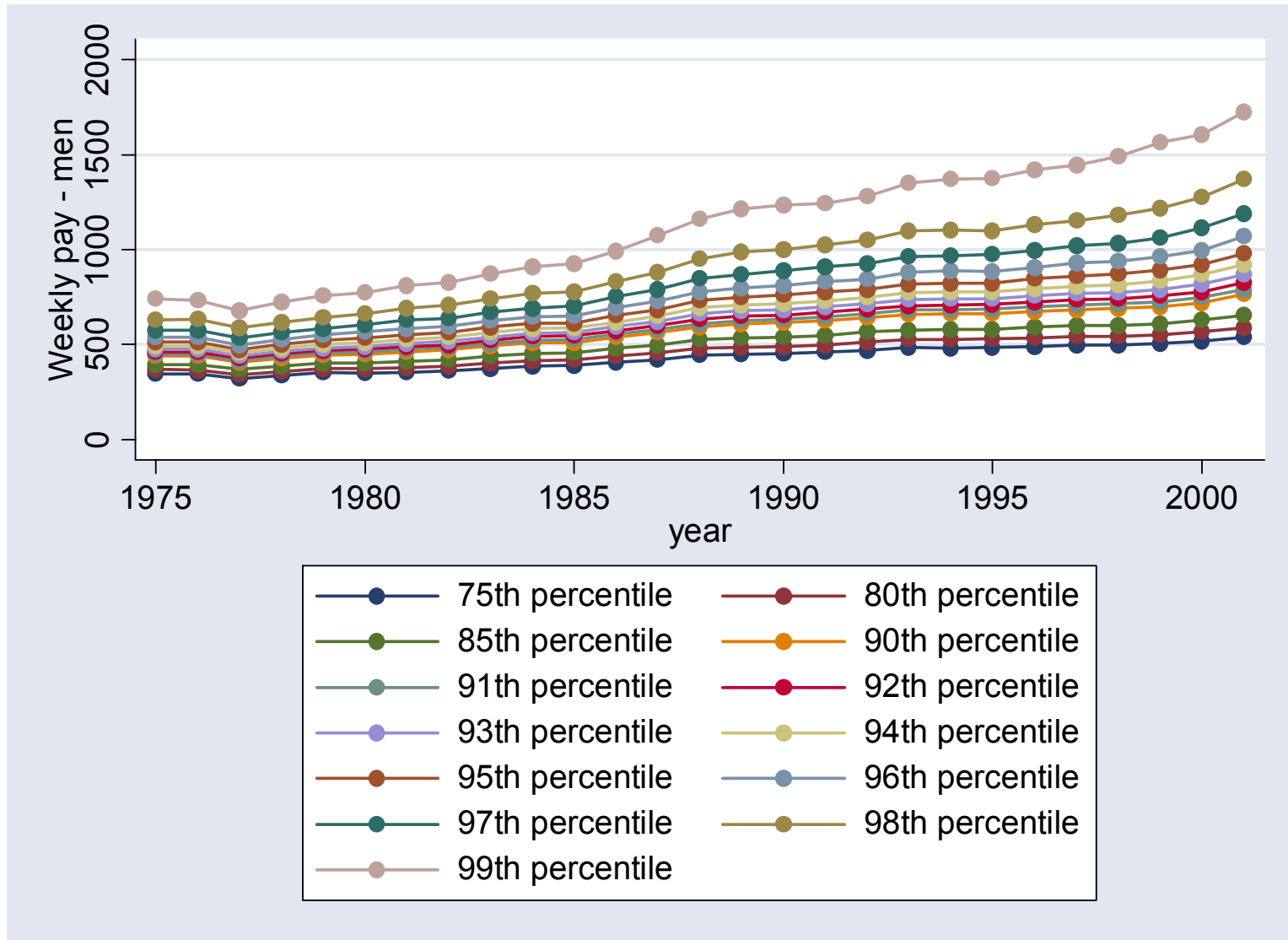
% population aged 50-64



# Male Real Wage Inequality, (UK Family Expenditure Survey)



# The Top Pulling Away in the 1990s



# Changes in Employment Shares by Education

## Employment Shares by Education

	<i>Per cent</i>					
	<i>1975</i>	<i>1980</i>	<i>1985</i>	<i>1990</i>	<i>1995</i>	<i>1998</i>
<i>Men</i>						
Degree or higher	5.8	8.2	12.1	12.5	15.5	16.3
Higher vocational	4.7	6.8	10.5	11.4	11.7	12.1
Teaching and nursing	1.2	1.3	1.4	1.2	1.3	2.0
Low/Intermediate	38.3	41.2	40.7	47.9	50.7	50.7
No qualifications	50.2	42.6	35.4	27.1	20.7	18.9
<i>Women</i>						
Degree or higher	2.2	3.6	6.2	7.5	10.8	12.5
Higher vocational	0.7	1.3	2.0	2.9	3.8	2.7
Teaching and nursing	5.8	6.8	8.4	7.9	7.4	7.7
Low/Intermediate	33.1	39.6	46.5	52.1	54.3	53.7
No qualifications	58.3	48.8	36.8	29.6	23.6	23.3

Source: Calculated from General Household Surveys. For 1975 through 1995, statistics are based on three pooled years, with the central year reported in the table.

# OECD Productivity trends

- Golden Age (1950-1974) Fast productivity growth throughout OECD recovery from war. EU catches up with US (diffusion from the frontier),
- .....but UK catches up more slowly than France and Germany
- Slowdown (1974-1995). All countries experience slowdown in productivity growth following OPEC Oil Shock. US hit the worst. UK has improvement post 1979. Some catch up with France/Germany
- Rebound (1995-? ). US productivity growth bounces back. A mixed picture in other countries: most of OECD does not experience this rebound

# What caused the US rebound?

- Sectors which had the biggest rebound where either intensive in producing *Information and Communication Technologies* (ICT) such as computers and semi-conductors OR were intensive in using ICT (such as retail, wholesale and finance)
- Little rebound outside these ICT sectors

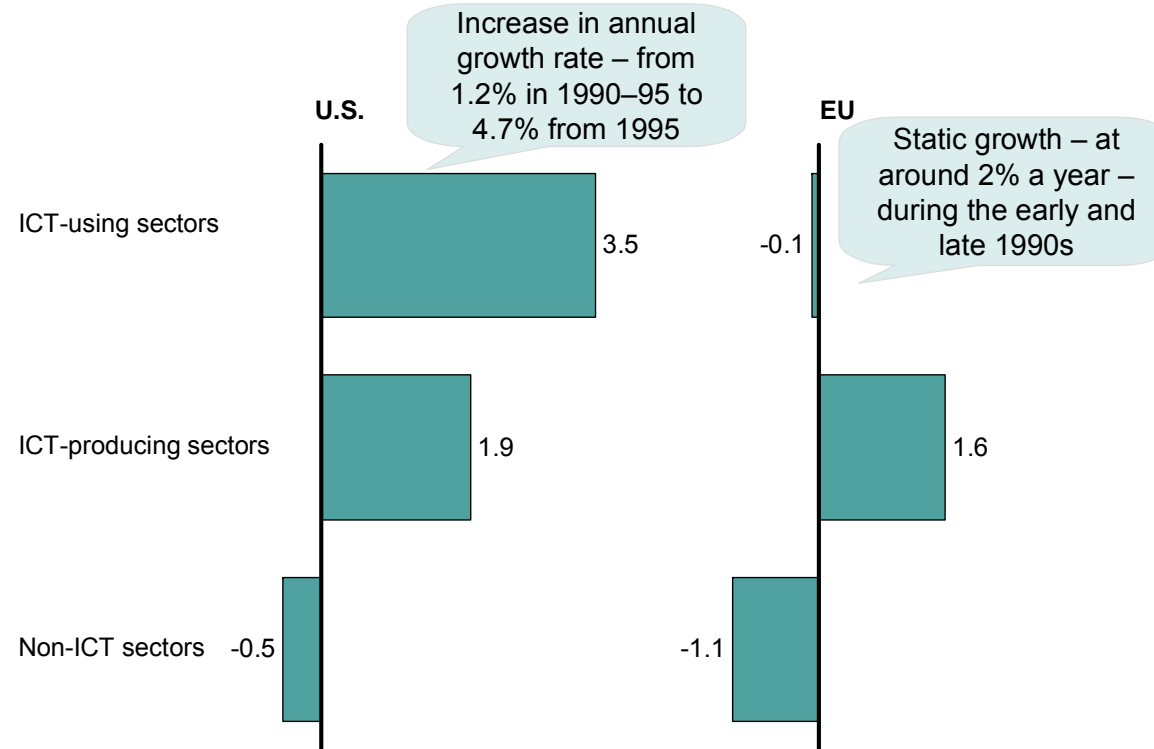
# EU/US comparison

- Van Ark et al (2003) US productivity growth accelerates 1.1% to 2.5% whereas EU growth decelerates 1.9% to 1.4%
- Main difference is in ICT using industries – in US acceleration from 1.9% to 5.4% whereas in EU increase from 1.1% to 1.4%
- In ICT producing sectors not such a big difference: US rose 8.1 to 10.1 and EU rose 6.7 to 8.7. But this sector's share of GDP 7.3 in US and 5.9 in EU, so makes a bigger contribution in US
- UK's position post 1995 pretty good – productivity growth rates not far below the USA – and much better than EU average. Particular strong in ICT using sectors.

# The EU/US comparison

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**Change in annual growth in output per hour from 1990–95 to 1995–2001**  
%



Source: O'Mahoney and Van Ark, 2003

3

# EU/US comparison 1990/95 vs. 1995-2000

- UK's position post 1995 pretty good – productivity growth rates not far below the USA – and much better than EU average.
- Particular strong in ICT using sectors.

# EU/US questions

- Why has EU not benefited when ICT available throughout OECD?
  - Measurement
  - Time (diffusion path)
  - US environment (geography, regulations, culture, competition, etc.)
  - US firms are better managed/organised?
  - Problem of making organisational changes when introducing new technologies (role of competition, regulation, managerial ability, etc.)
- Some evidence that US establishments in UK more highly productive because they have higher returns to IT (Bloom, Sadun, VR, 2005)
- Evidence that US firms are better managed – even when they are in UK or other EU countries (Bloom and Van Reenen, 2005)

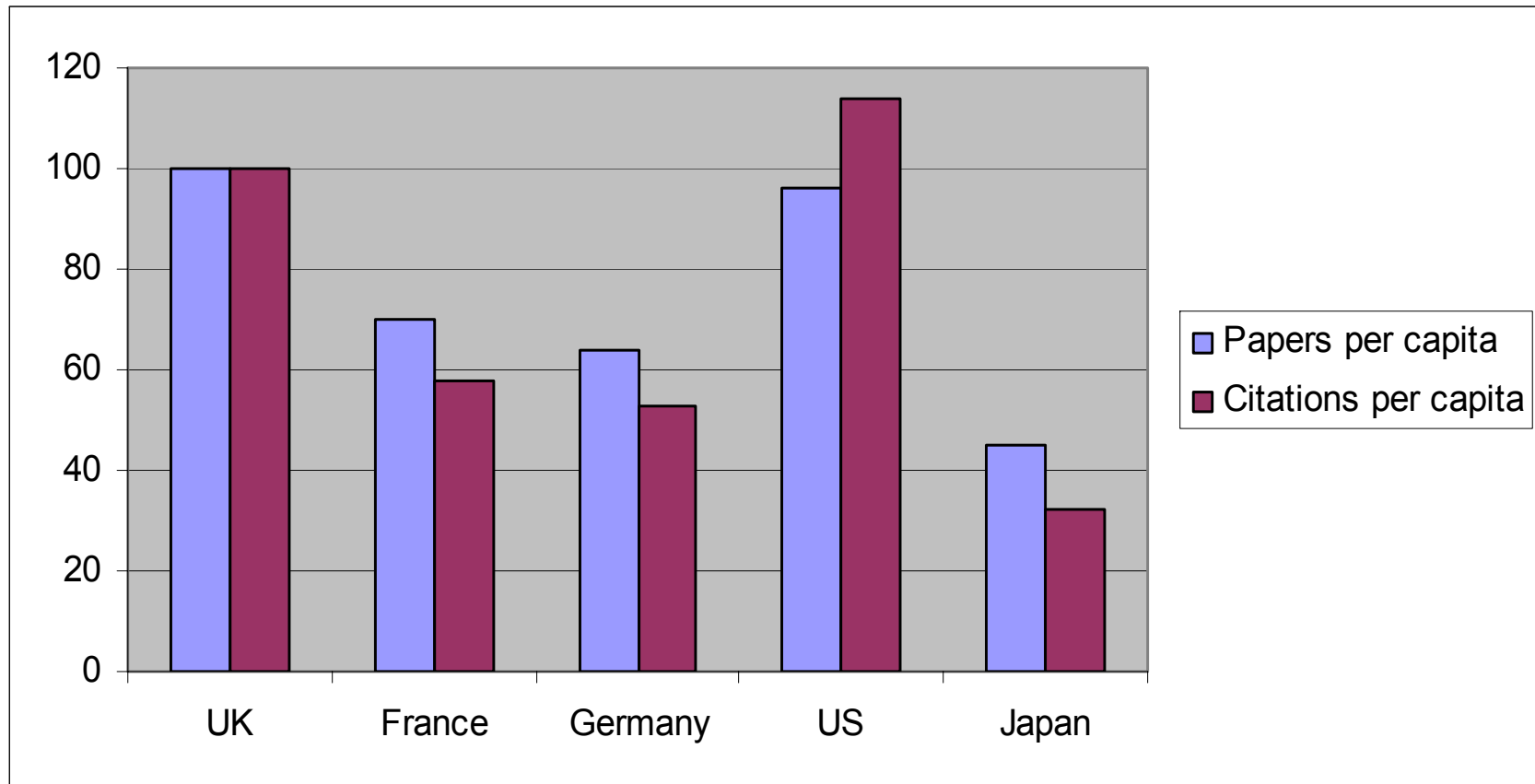
# 4. Policies to Raise Productivity

- Human capital
- Innovation (e.g. R&D)
- Competition/Regulation
- management
- What not to do
- Capital investment

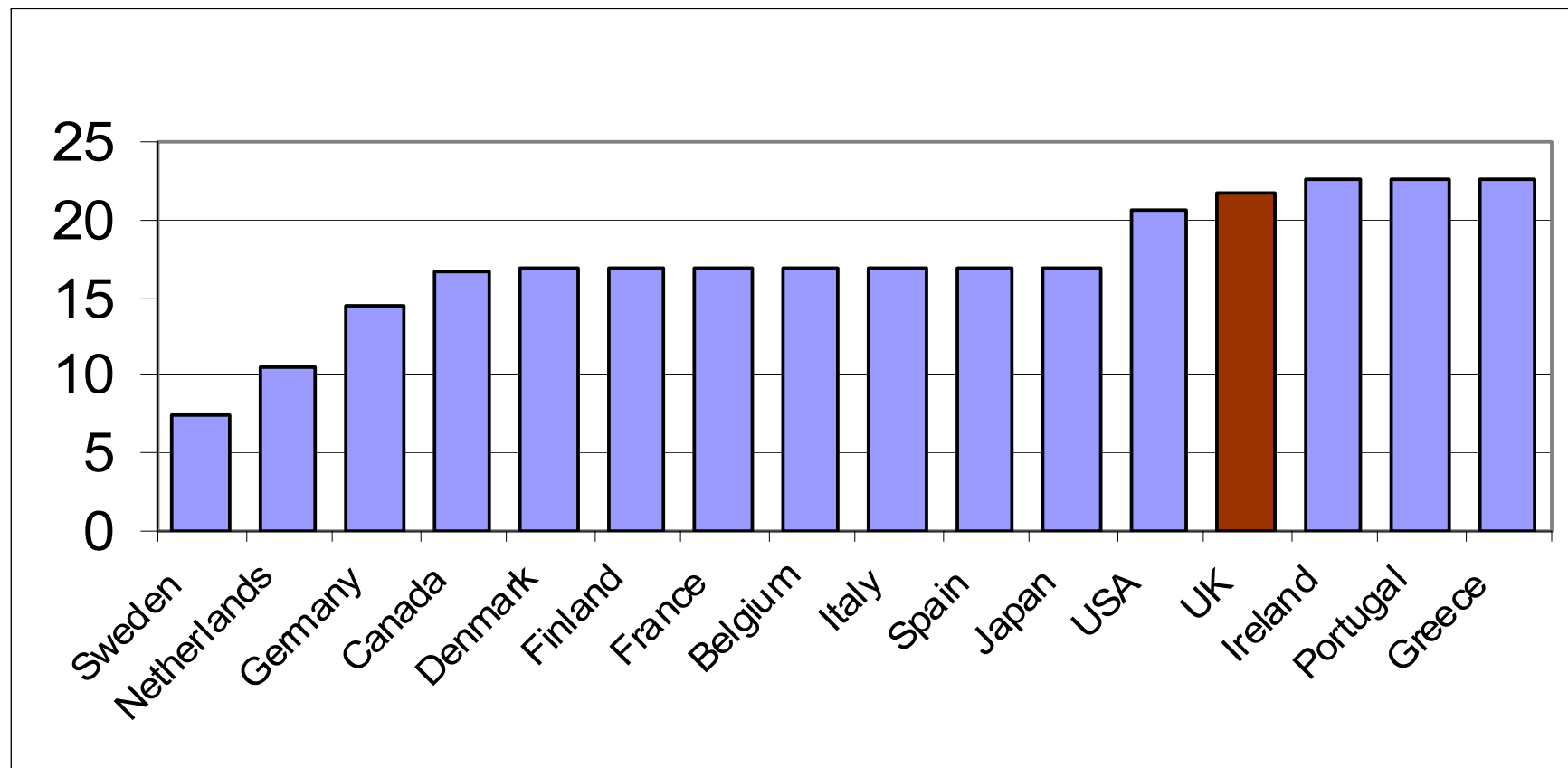
# 4i. Human Capital: UK Position

- UK educational system does well at the top but poorly at the bottom
- Elite science traditionally strong (although may now be falling behind)
- Basic Skills in UK very poor - a reason for low productivity and poverty
- Poor intermediate technical skills- training & FE problems (Prais, NIESR)

# Indices of Science Base, (1981-94 average)



# Functionally illiterate (% aged 16-65, 1995)



# Basic Skills

	% of Adults Below IALS Level 2					
	Numeracy			Literacy		
	Age 16-25	Age 26-35	Age 36-45	Age 16-25	Age 26-35	Age 36-45
Belgium (Flanders)	7	9	17	8	12	20
Switzerland (German)	7	13	19	7	17	24
Netherlands	8	7	10	8	6	9
Sweden	5	4	7	4	5	7
Germany	4	5	6	9	12	14
Ireland	8	20	23	16	16	21
<b>Britain</b>	<b>22</b>	<b>20</b>	<b>19</b>	<b>17</b>	<b>18</b>	<b>17</b>
USA	26	20	18	23	20	19

# Education

- Basic skills – IALS, PISA, PIRLS.
- Primary literacy/numeracy hour – evidence from Machin and McNally (2004) that this was cost effective way to improve standards – important aspect of ensuring next generation of adults do not suffer from basic skills problems faced by current generation of adults
- Lifelong learning – reaching low skilled via benefit system (e.g. New Deal)

# Human Capital Policies

## Inequality:

- i) Demand shifts against less skilled → basic skills
- ii) Top moving away → ultimately tax/benefit system is mechanism for redistribution, hence why so much resistance to discussions on tax rises?

## Education:

- i) Wide dispersion of basic skills → literacy and numeracy strategies
- ii) Widening disparities in secondary schools → early interventions that persist
- iii) Post-compulsory – EMA, access to HE and incentives for widening participation

## Inactivity:

- i) Long term → skills issue
- ii) Shorter term – Using benefit system to help people acquire basic skills

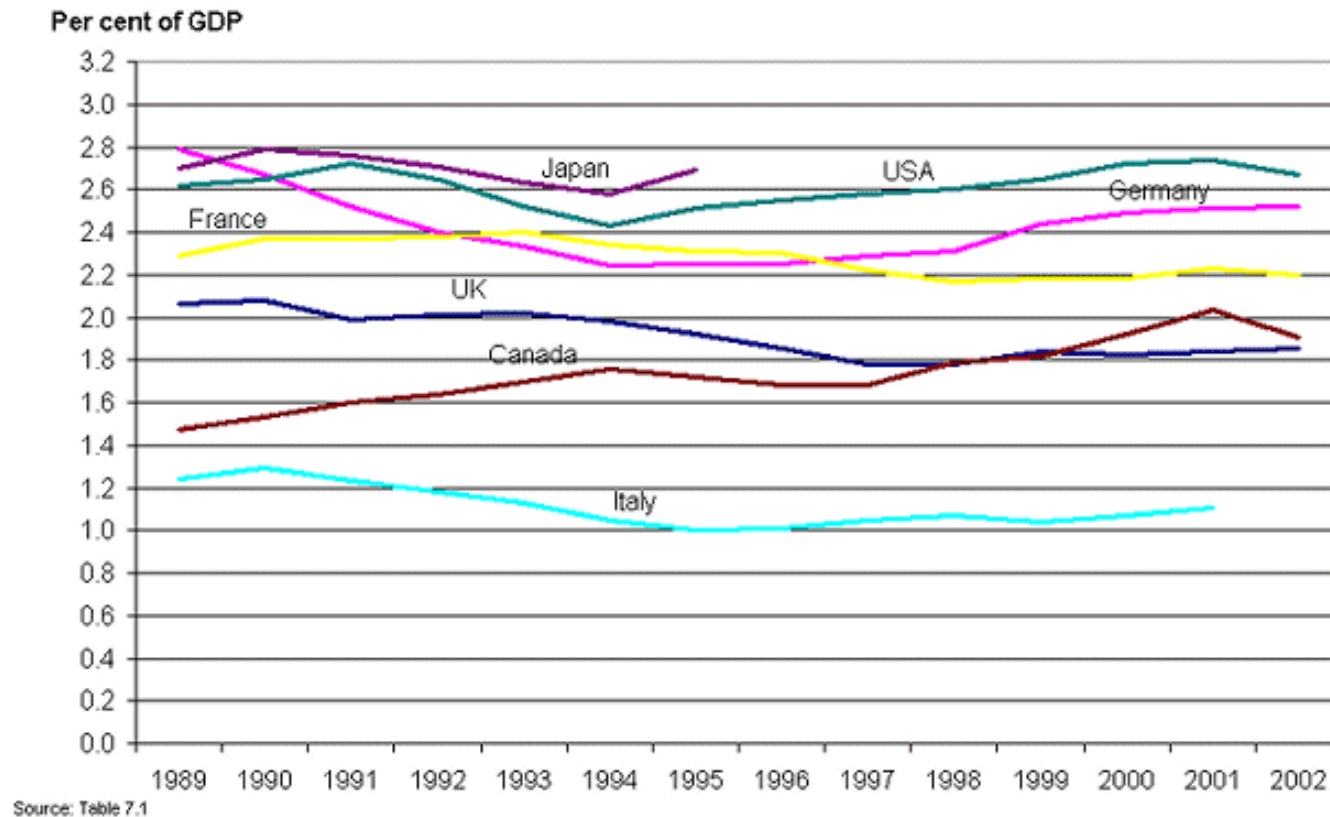
# 4ii. Innovation

- R&D intensity has stagnated since 1981 and fallen behind other countries (Not just de-industrialization: within sector)
- Patent performance poor
- Innovation weaker
- ....But traditional strength in elite science (maybe declining)

# UK R&D stagnant over medium run

## R&D to GDP 1989-2002, G7

Figure 7.1 Trends in gross domestic expenditure on R&D (GERD) in G7 countries as per cent of GDP



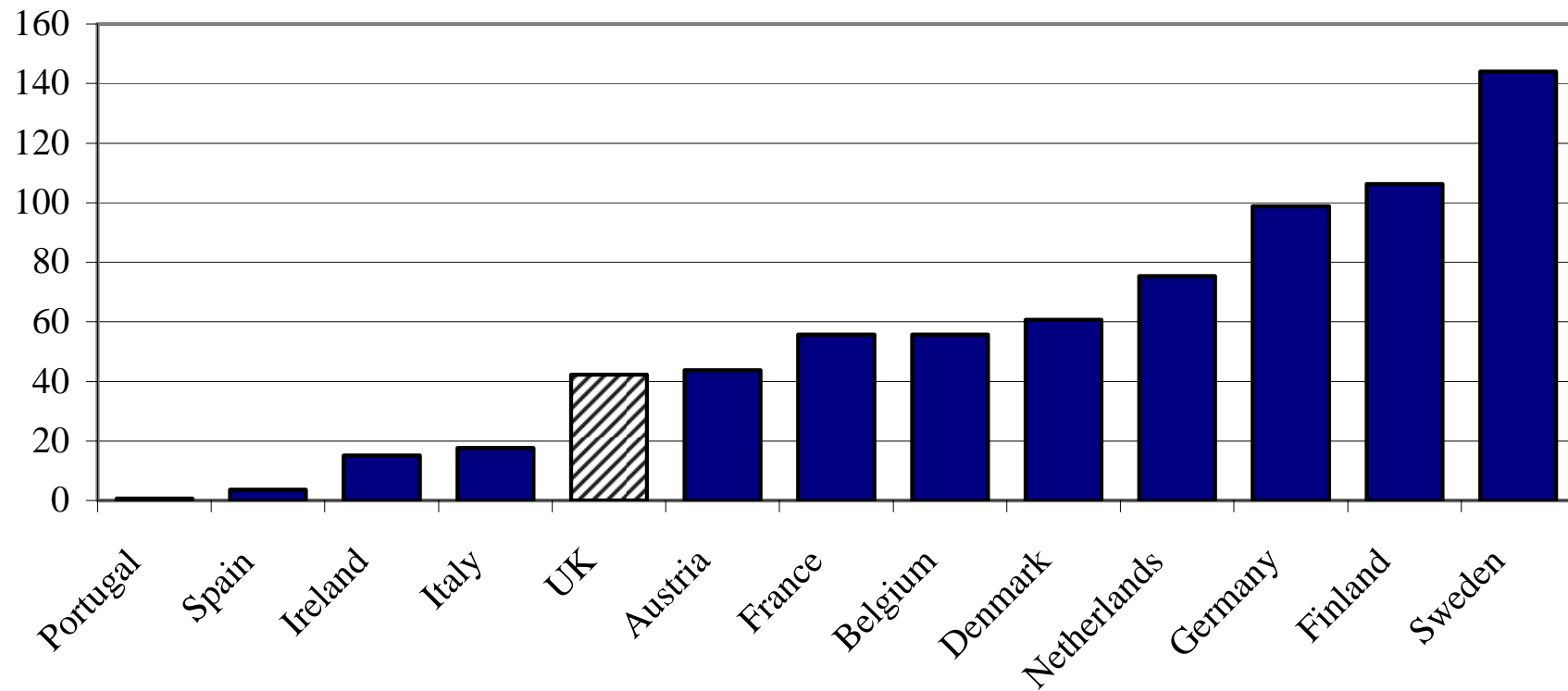
Source: SET, 2004;

<http://www.ost.gov.uk/setstats/7a.htm>

# UK major patents per person

Per working-age  
population,  
per million

## Triadic patents



Note: Data for 1995-1999.

# R&D tax credits

- Many other countries with R&D tax credits
- UK followed many other countries and adopted in 2000, first for SMEs now for all firms
- Cost in 2003 about £430m
- Evidence that R&D reacts to changes in its user cost
- But still need to evaluate and do a proper cost benefit

# Problems with R&D tax credit

- Cost - SME credit only £150m
- Complexity: Incremental vs. absolute
- relabelling
- slow response
- all R&D subsidies increases wages of (high income) R&D workers (Goolsbee, 1999)

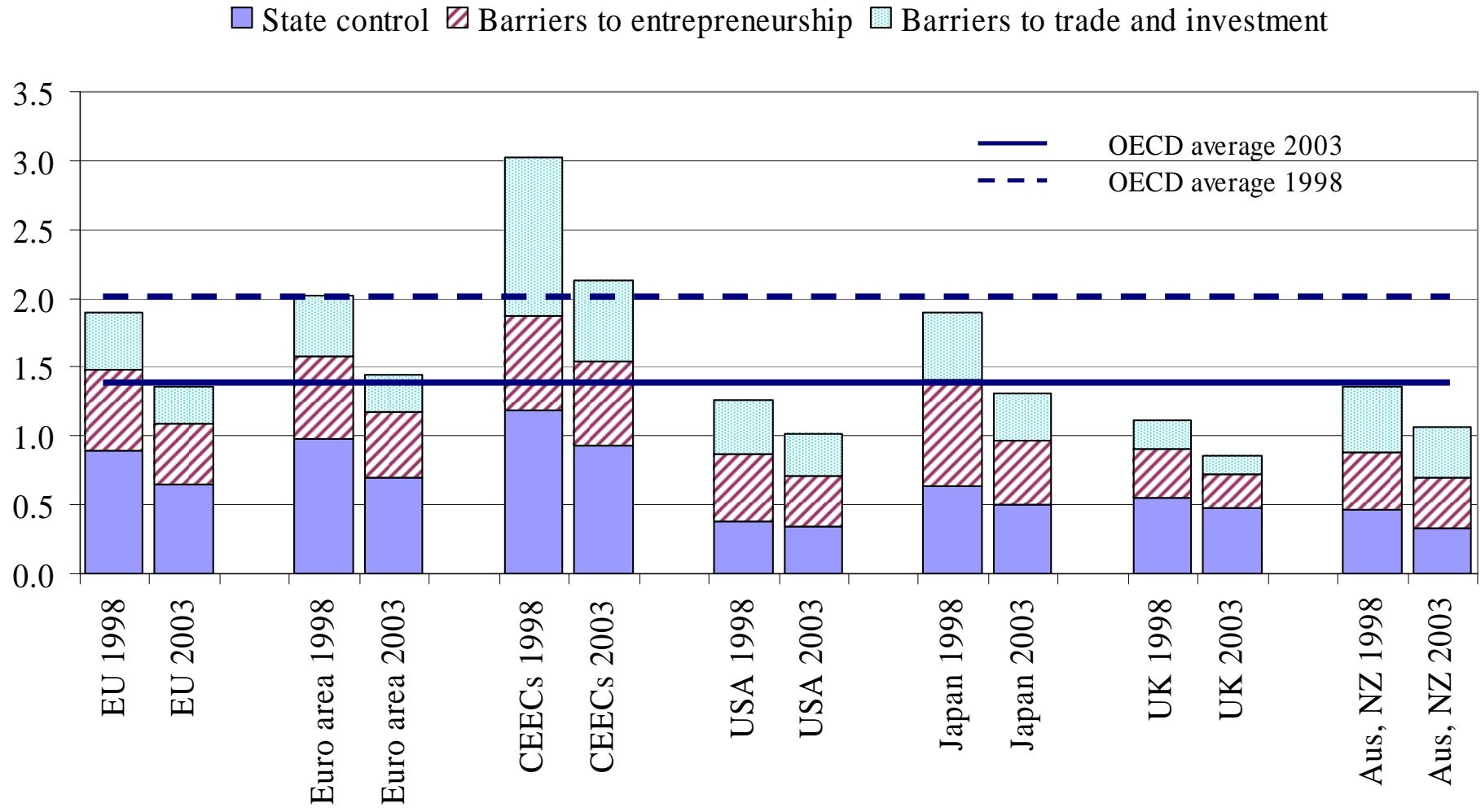
# Other Innovation Policies

- Policy evaluation widespread in education or labour market programs
- Existing evaluations of DTI schemes non-existent or poor
- *Example:* Small Business Scheme and LINKS – Conservatives plan to abolish, but no real evidence that it works or doesn't work (cf. New Deal where plenty of evidence that it does work!)
- University-business linkages (Lambert)

# 4iii. Competition and Regulation

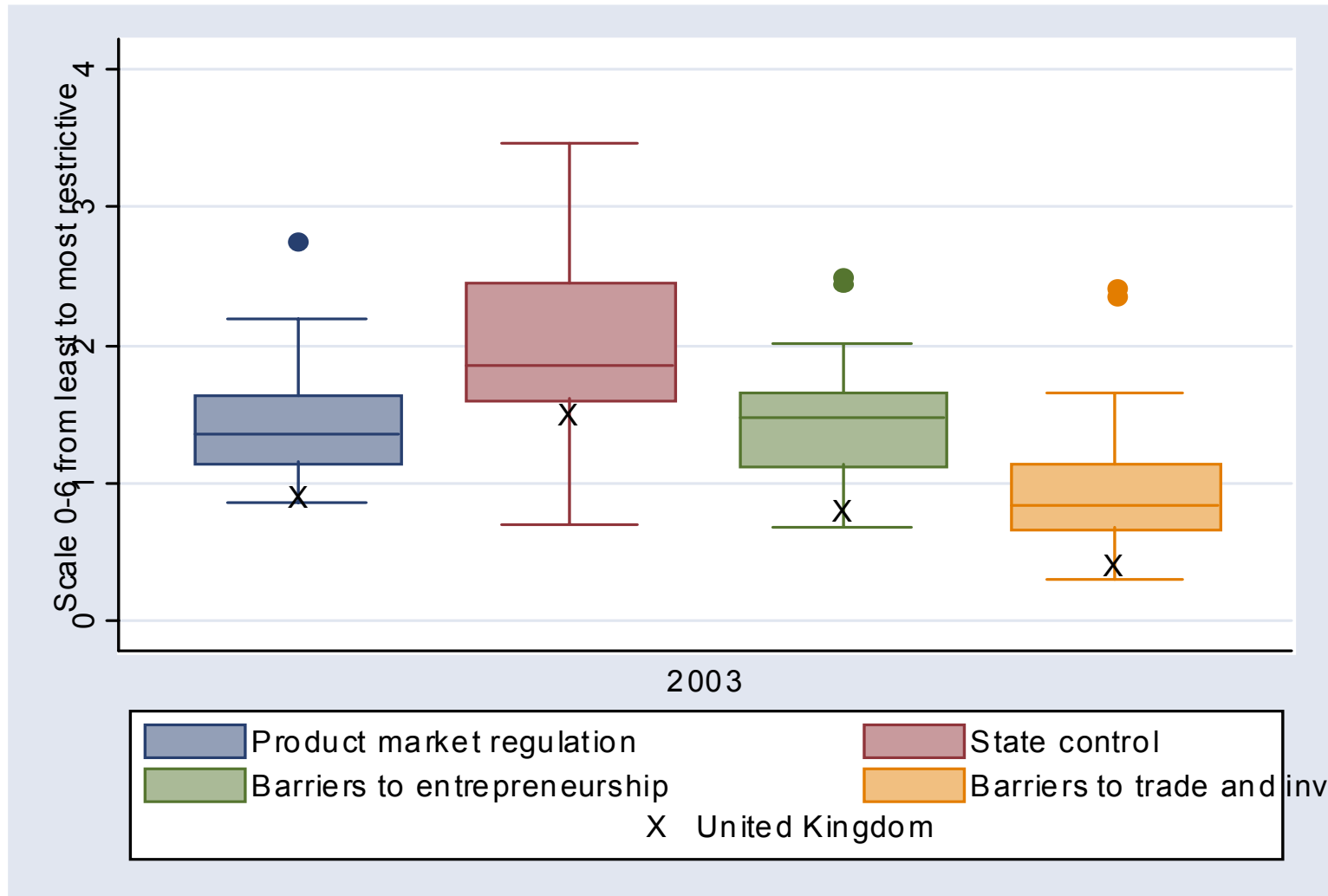
- Important driver of innovation and productivity (e.g. Blundell, Griffith, Van Rens, 1999)
- UK has strengthened competition policy (OFT, CC) particularly with Oxford and LBS Economics professors
- But UK position seems strong on OECD Indicators

# The UK remains the economy with the least restrictive Product Market Regulations



# ...the UK ranks favourably in all major regulatory domains

Indicators of regulation in OECD countries, 2003



The horizontal line in the middle of the box is the median value of the indicator OECD wide. The edges of the box are the 1st and 3rd quartile of the cross-country distribution. The two whiskers are the extreme values and the dots represent outliers. The 'X' shows the values for the United Kingdom.

# Caveats

- These are regulations “on paper” but are these regulations enforced in other countries?
- Burdens are increasing (labour market regulation like NMW, WFTC, Working Hours Directive...)
- Some sectors with lower competition (retail? professional services? Banking?)
- But trade offs – planning regulation because we live on a small crowded island

# 4iv. Management

- Are we a nation of David Brents?
- Not much concrete evidence but LSE/McKinsey Survey finds that UK does score badly on measures of management best practice (US most advanced, but even France and Germany ahead of UK)
- Management skills/education?
- A feature of manufacturing?

# 4v. What NOT to do

- Large state-directed “grand projet”
- Aggressive attempts to “repatriate” R&D from US (Griffith, Harrison, Van Reenen, 2004)
- Create greater uncertainty through tinkering with small tax schemes. Evidence that investment responses retarded by micro-uncertainty (on the increase in US and UK as macro-uncertainty has declined). Slows down reallocation which drives aggregate productivity
- Use R&D policy as a way of creating equality between regions of the country: need to concentrate resources where they can be best used
- Encourage every region to be a “cluster” (e.g. RDA race to be biotech cluster)
- Large subsidies to investing in ICT – the level of spending much less important than how it is spent (interaction with management)

# Conclusions

- UK continues to have a longstanding productivity gap with US (and France/Germany)
- Some improvement in recent years at closing the gap with EU – and has kept up with US even in the “miracle” period post 1995
- Policies to address the gap:
  - Human capital (“double whammy” on productivity and inequality; “policy complementarity”)
  - R&D/innovation
  - Competition
- Need for evaluation
- .....although long-term nature of evaluation must be recognised

# Further reading

- Easy introduction to the debates
- [http://cep.lse.ac.uk/people/vanreenen/papers/productivity\\_mindthegap.pdf](http://cep.lse.ac.uk/people/vanreenen/papers/productivity_mindthegap.pdf)
- GRVR papers: <http://cep.lse.ac.uk/pubs/download/dp0509.pdf>;  
<http://cep.lse.ac.uk/pubs/download/dp0458.pdf>
- Card and Freeman chapter in “Premier League” book (NBER WP 8801)