

# Facing the future – The Nuffield Conference

24<sup>th</sup> March 2010

Will Hutton

Executive Vice Chair – The Work Foundation

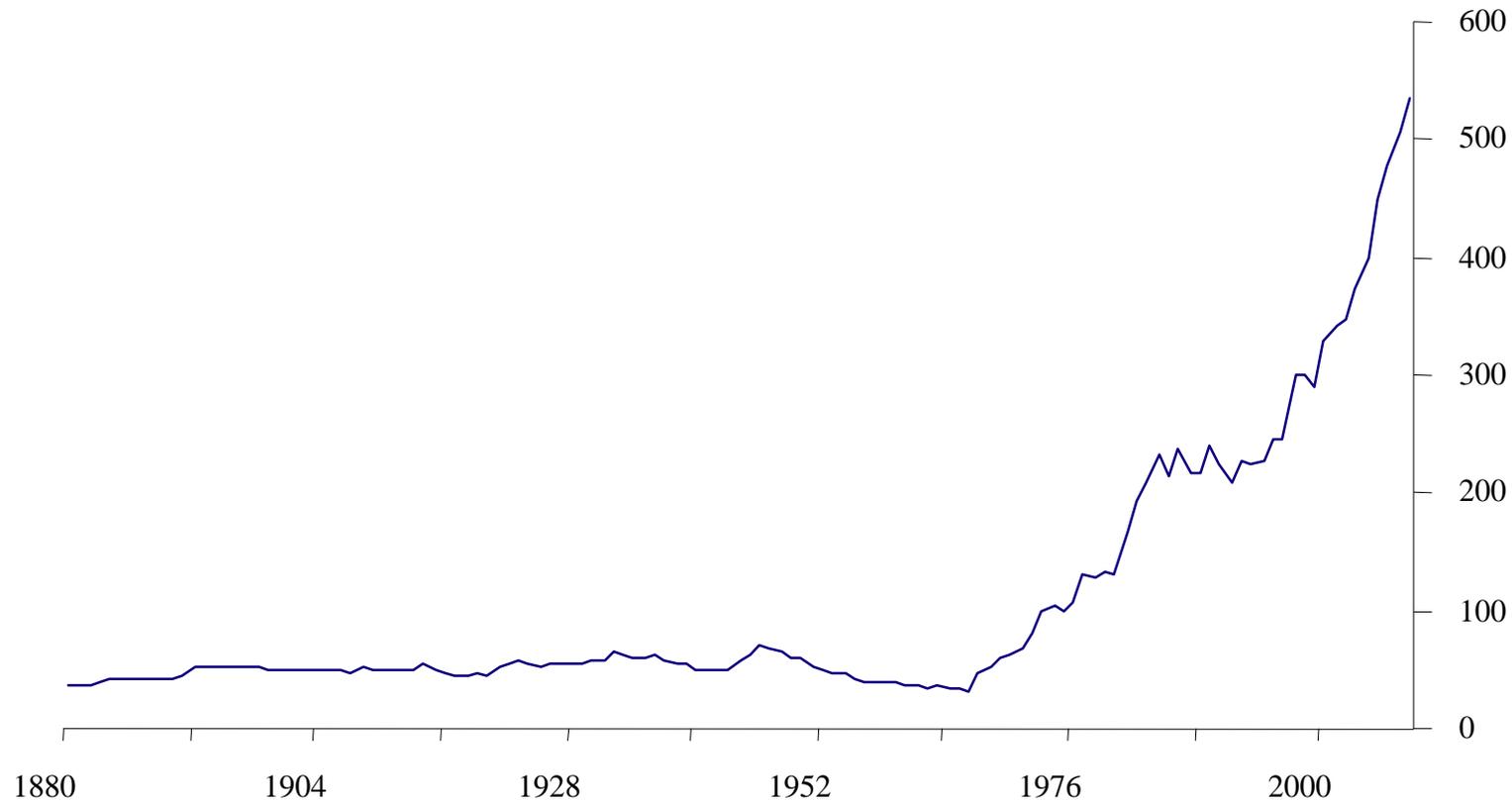


# The rise of “ unproductive entrepreneurship”



Size of UK banking sector

Banking sector assets (per cent of GDP)

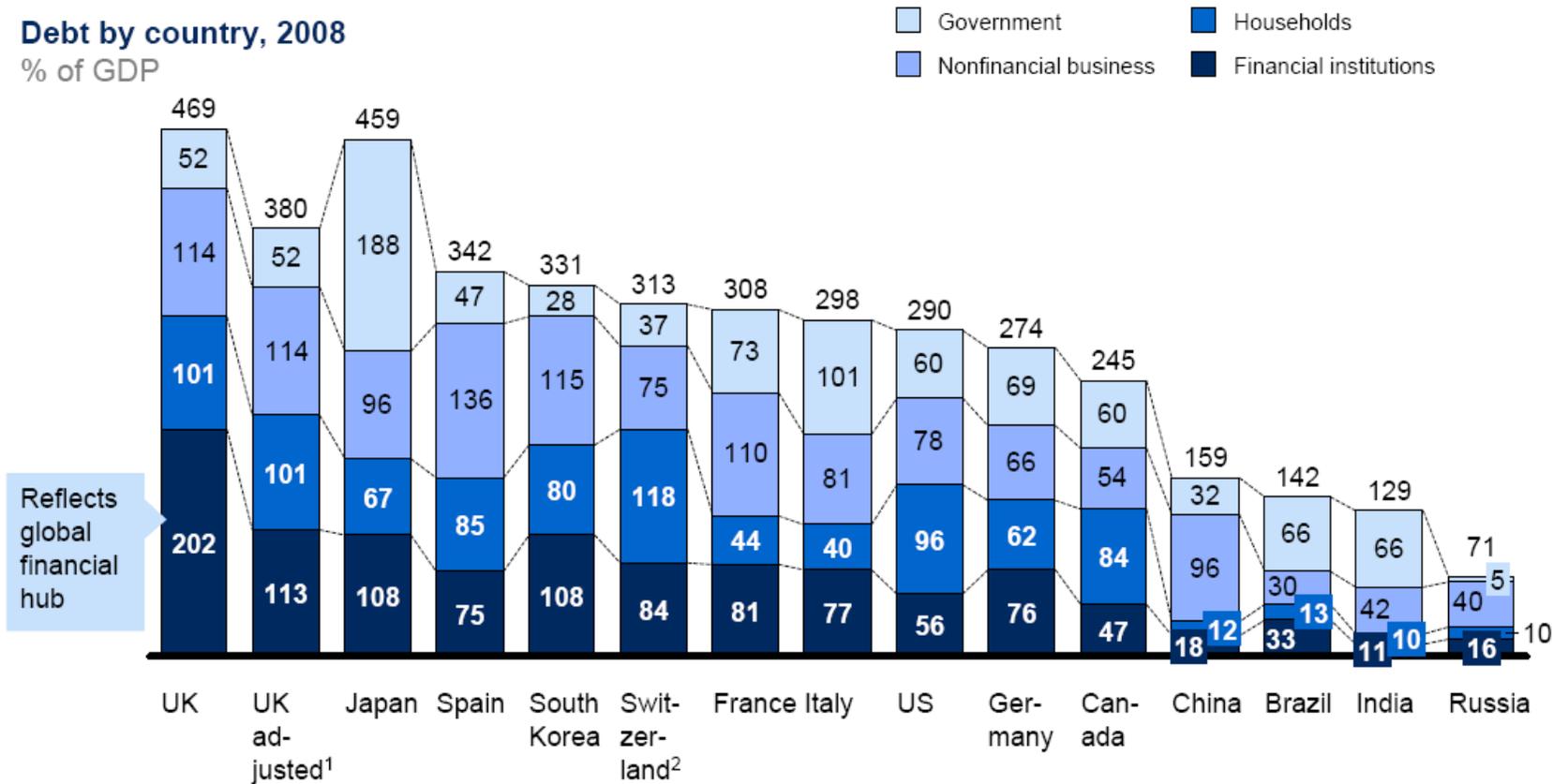


Source: Sheppard, D. K. (1971) and Bank of England.

# Britain is private debt capital of the world



**Debt by country, 2008**  
% of GDP



Compound annual growth rate of debt in local currency, %	
2000-08	10.2
	0.3
	14.5
	10.8
	4.5
	7.7
	6.3
	8.1
	2.5
	6.1
	15.1
	15.1
	16.5
	31.6

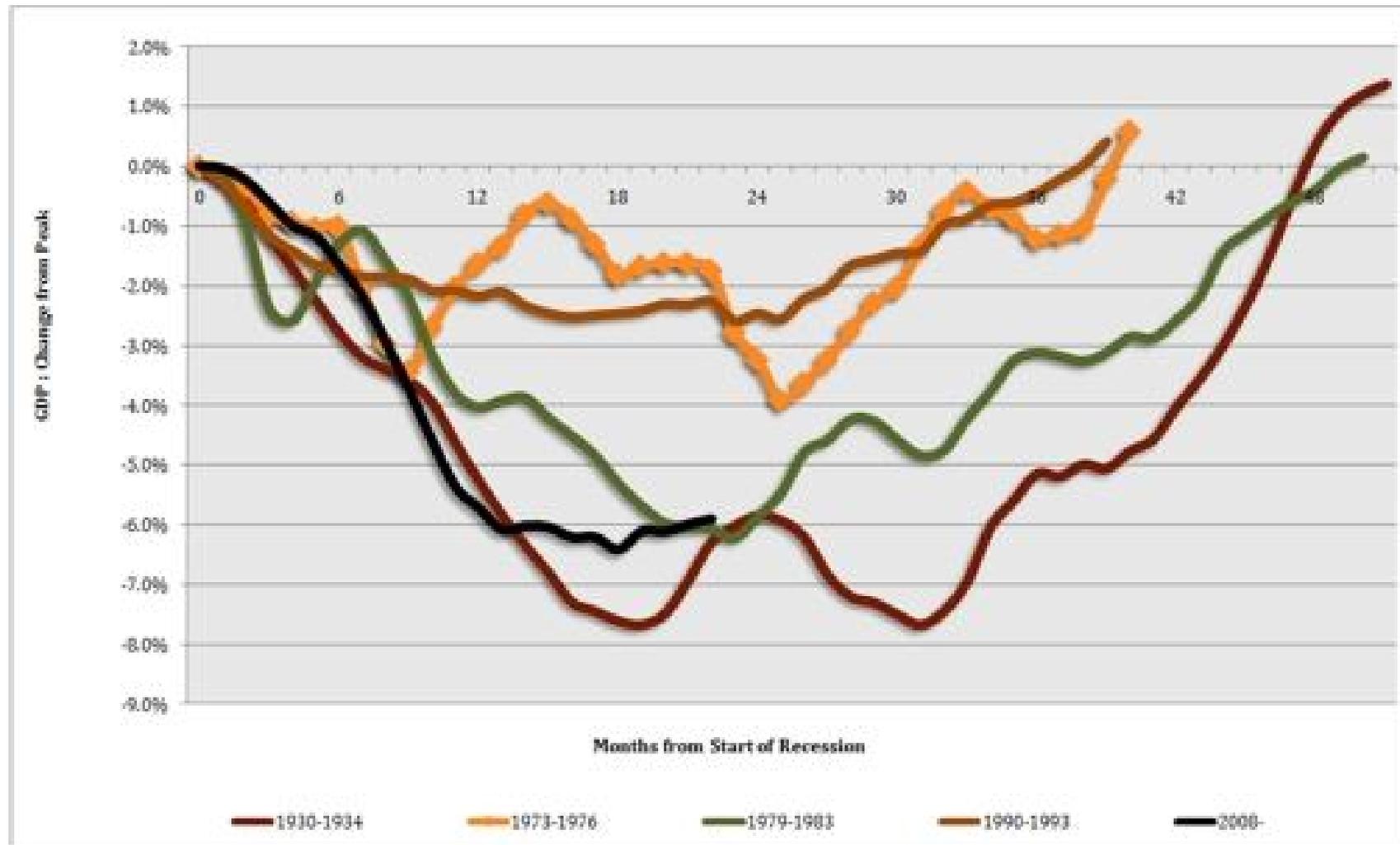
1 The UK financial sector was adjusted to reflect its position as a financial hub. See the technical appendix for details.

2 Data for Switzerland represent year-end 2007.

SOURCE: Haver Analytics; McKinsey Global Institute

# Recessions compared

Note: In the past it has taken between 36 and 48 months to return the level of output to where it was at the start of the recession. Source: NIESR



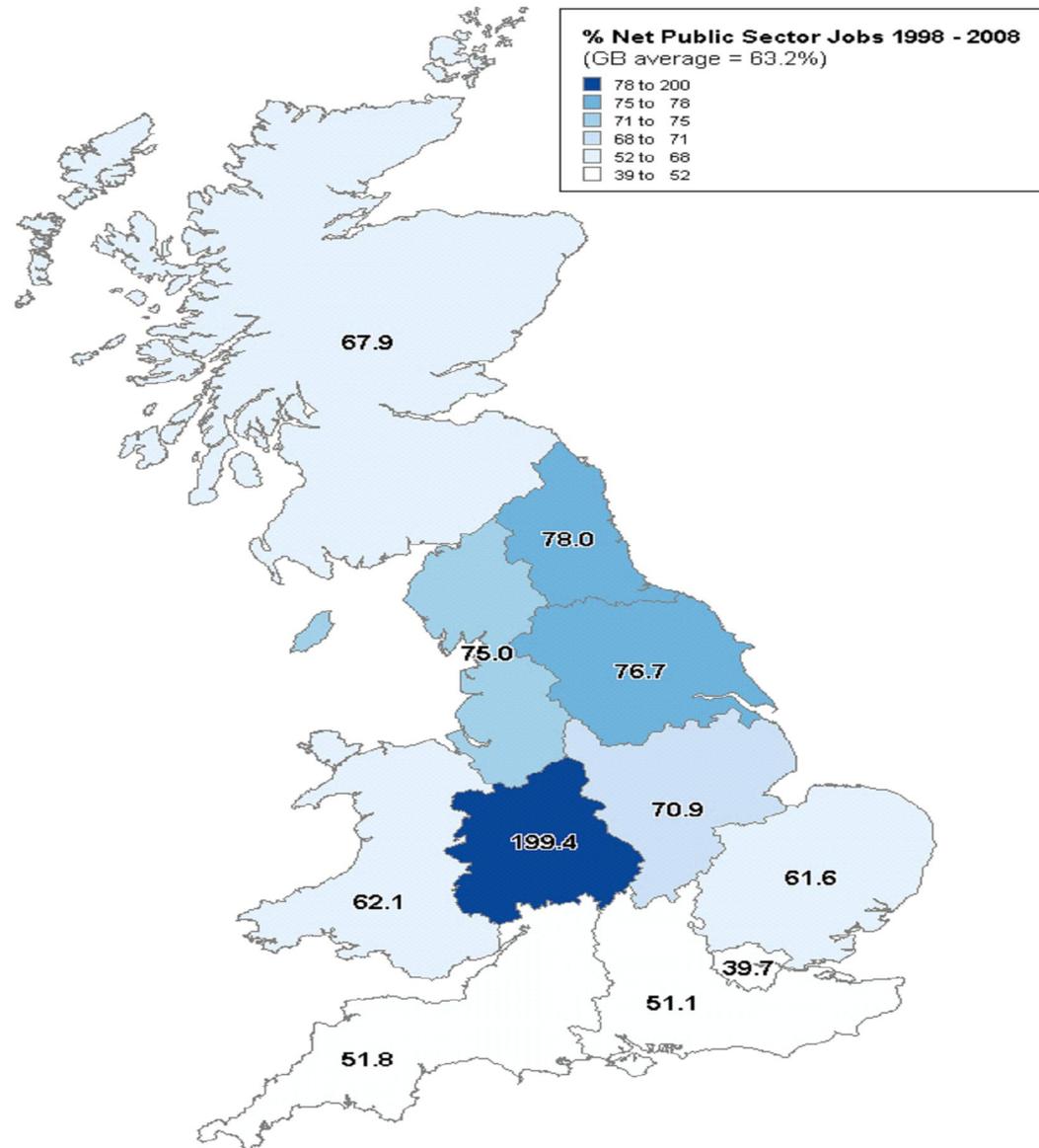
# The tough 2010s



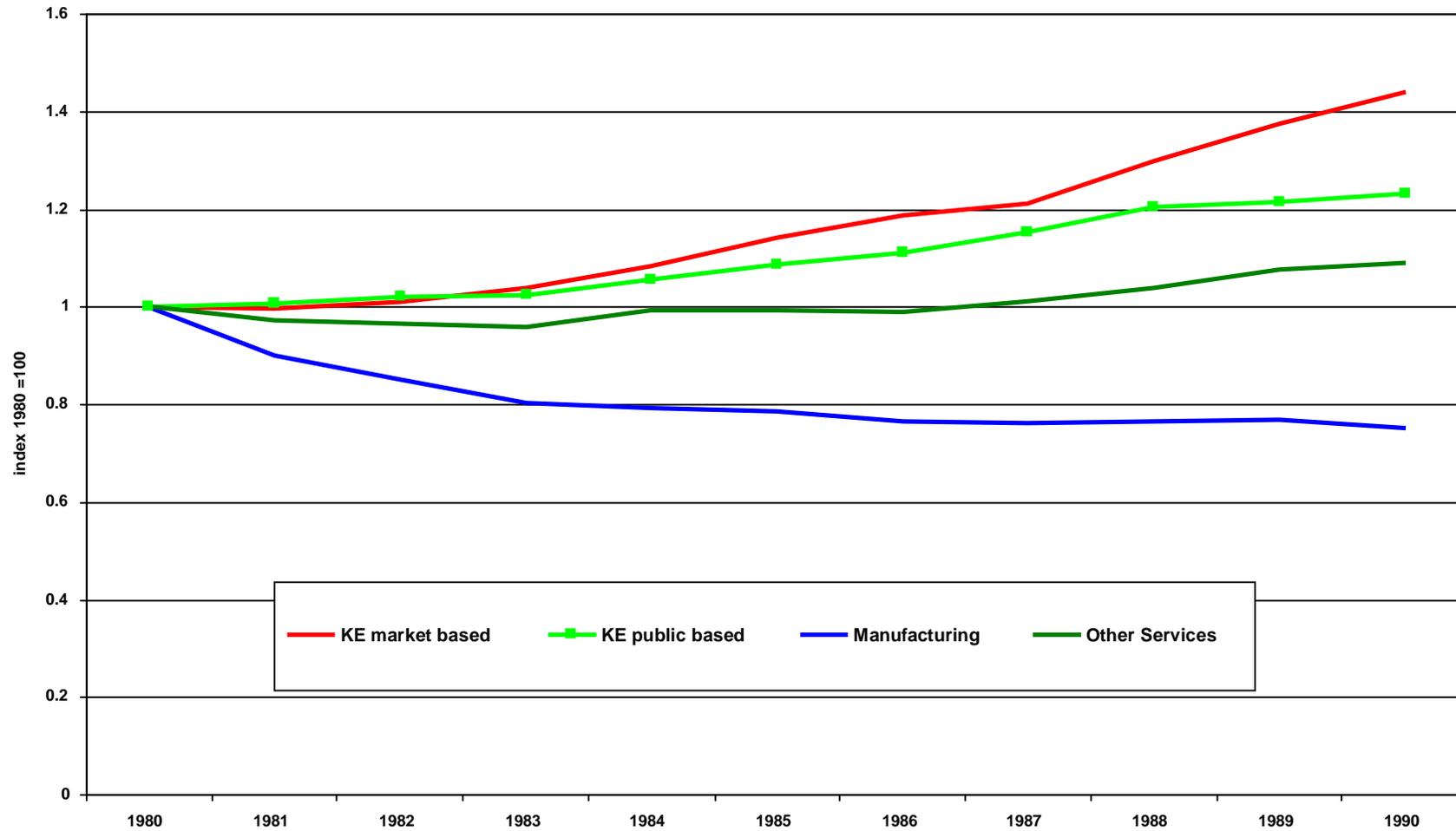
- Minimum 5 per cent of GDP lost for ever. Loss could be as high as 10 per cent.
- Trend growth rate 1991 to 2009 (trough to trough) was 2.0 per cent but contained bubble effects. Note between 1997 and 2007 half GDP growth financial services, property and construction.
- Barclays worst case forecast in IFS Green Budget is trend growth of 1.75 per cent
- There will be deleveraging and build up of saving
- Yet 3 million economically inactive, 2.8 million involuntarily idle and 2.45 million unemployed.
- Public sector has generated half jobs growth since 1997. Cannot be repeated 2010-20.

.....Where are growth and jobs to come from in the 2010s?

# % Net public sector jobs 1998-2008

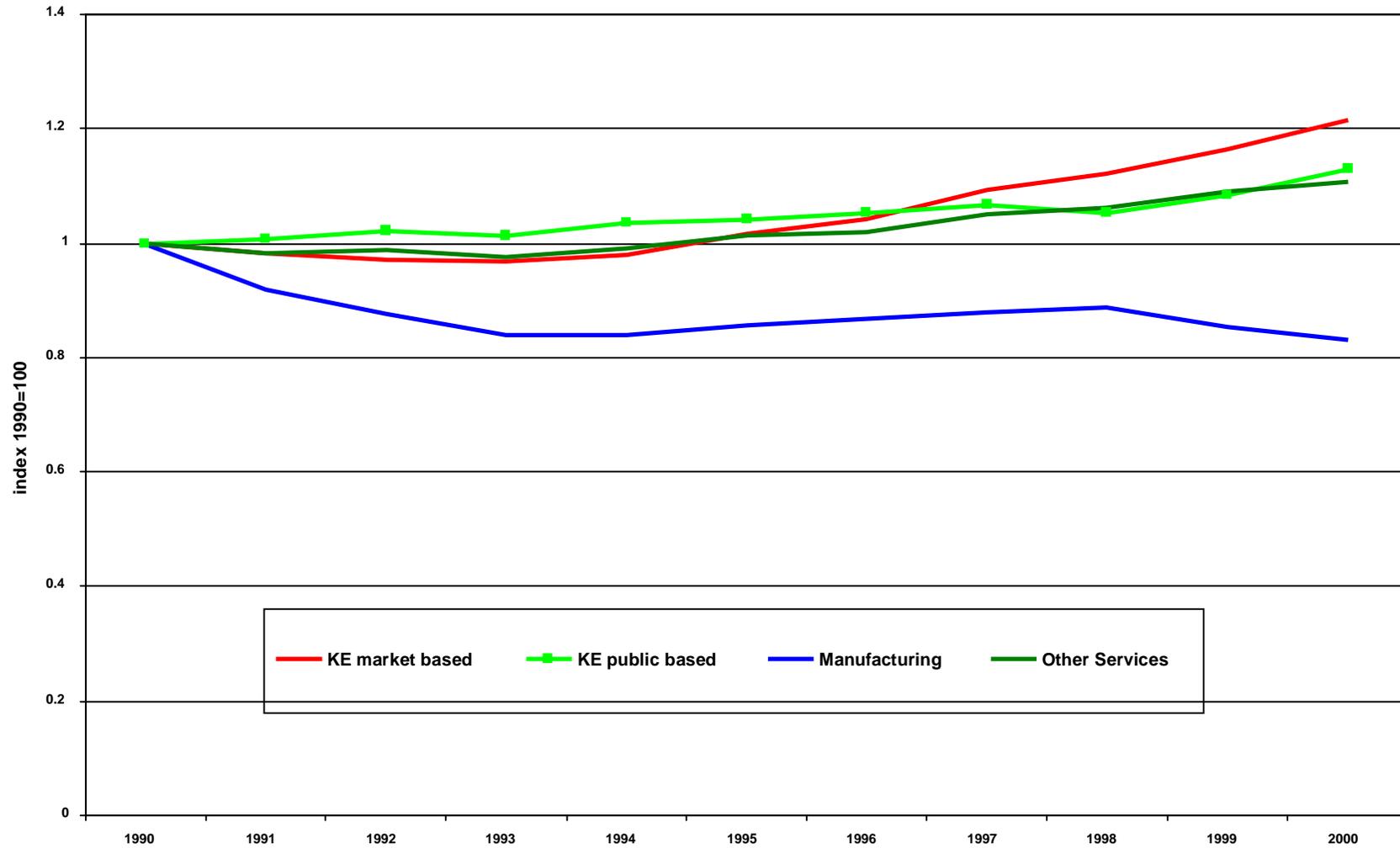


# Knowledge economy and the 1980s recession and recovery



Total employment, EU KLEMS database definition 1980=100. KE market based is telecoms, high tech, business, financial, and cultural services; KE public based is education and healthcare

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# Defining the Knowledge Economy



“ Economic success is increasingly based on the effective utilisation of intangible assets such as knowledge, skills, and innovative potential as the key resource of competitive advantage. The term knowledge economy is used to describe this economic structure”

Source: UK Economic and Social Research Council 2005

# Knowledge based industries defined by the OECD

Note: manufacturing classified by R&D intensity; services classified by ICT use and employment of graduates. Recreational and cultural industries recognised as knowledge based by EU but not OECD, and includes libraries and museums.



Market based Knowledge industries	Public based knowledge industries	Other market based industries	Other public based industries
<ul style="list-style-type: none"> <li>• High to medium high tech based manufacturing</li> <li>• High tech services (telecommunications, computer services, R&amp;D services)</li> <li>• Financial services</li> <li>• Business services (real estate, advertising, accountancy, legal, technical, consultancy)</li> <li>• Creative Industries</li> </ul>	<ul style="list-style-type: none"> <li>• Education</li> <li>• Health and social work</li> </ul>	<ul style="list-style-type: none"> <li>• Low to medium low tech based manufacturing</li> <li>• Distribution, hospitality</li> <li>• Transport</li> <li>• Other services (dry-cleaning, hairdressing, refuse collection)</li> <li>• Recreational and cultural services*</li> </ul>	<ul style="list-style-type: none"> <li>• Public administration</li> </ul>

# Key drivers of the knowledge economy

*Growing as proportion of GDP in all western & advanced Asian economies*



## **Driver One**

New technologies, especially General Purpose Technologies ( GPTs), create new goods, services, processes and business models with multiple spill-overs.

## **Driver Two**

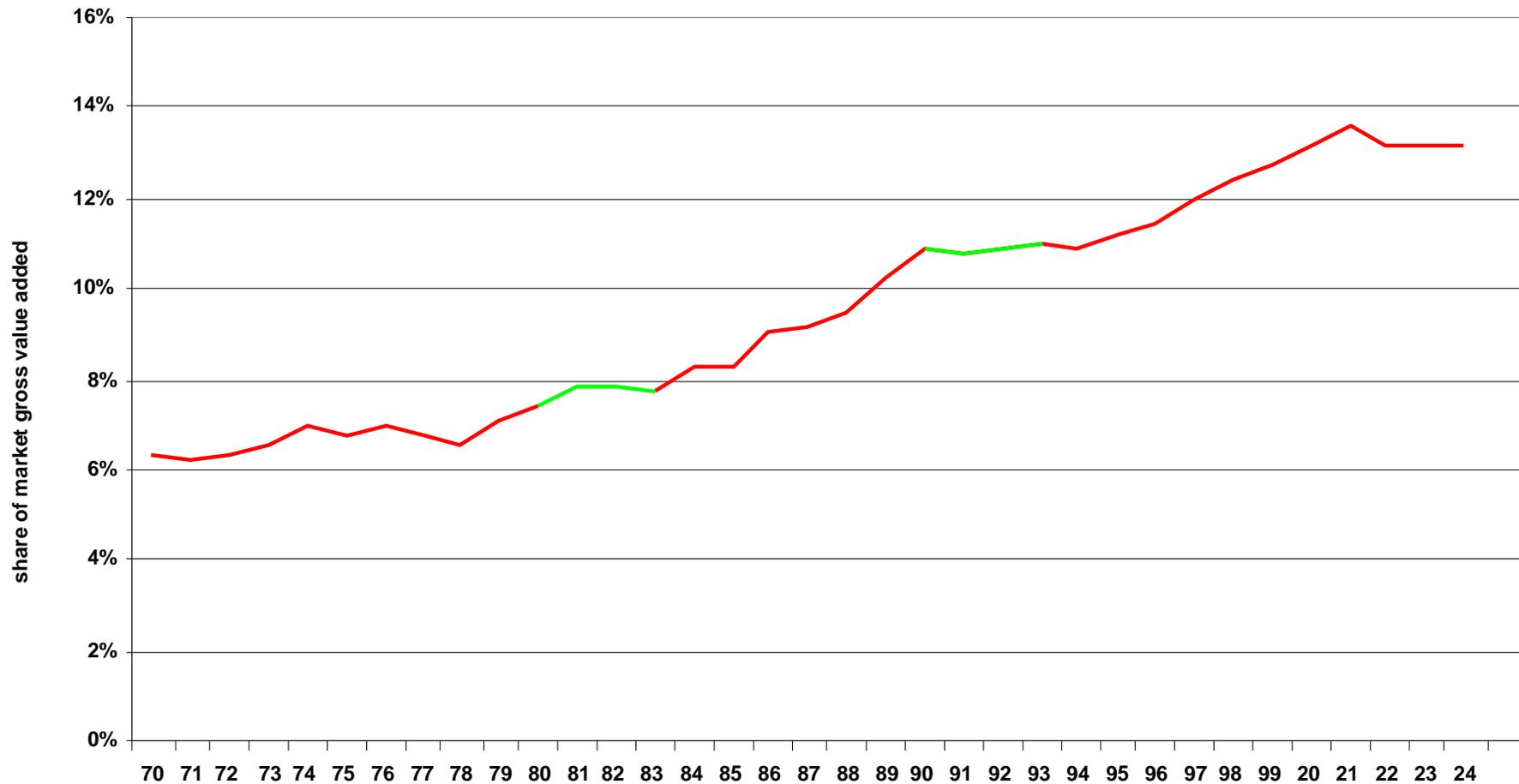
Shift in demand towards higher value added, experiential services and tech based goods as consumers have become more sophisticated and diversified.

# The rise and rise of “intangibles” – proof positive of the emergent Knowledge Economy

*Intangibles investment share 1970-2004*



Business investment in intangibles as a share of market sector value added adjusted to take account of intangibles. HMT October 2007.

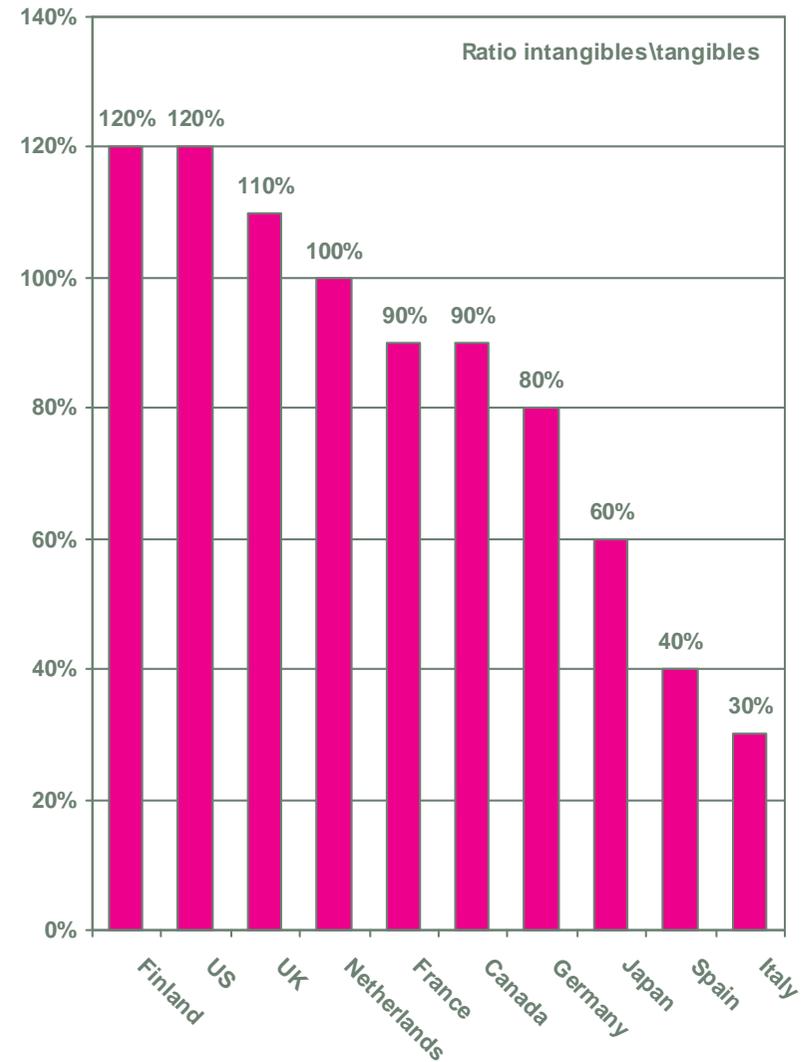
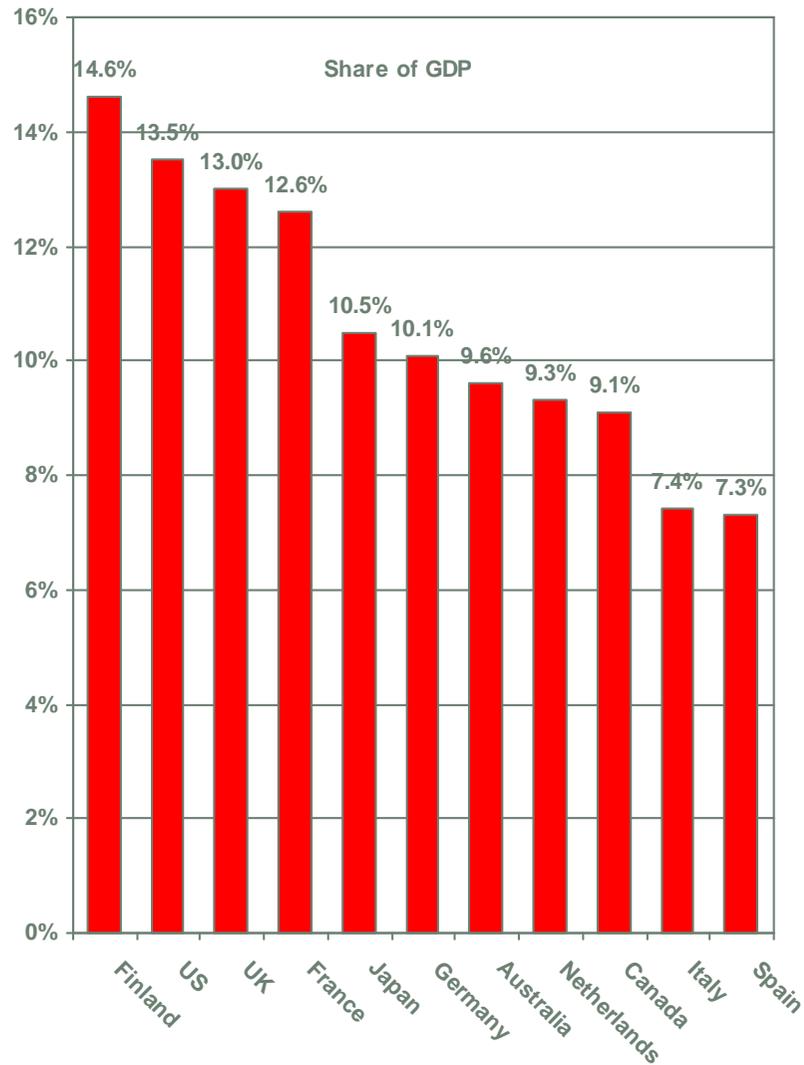


# Intangibles and tangible forms of investment



Tangibles	Intangibles	
Buildings	Computerised information	Software and databases*
Plant and machinery	Innovative property	Scientific and non-scientific R&D Mineral exploration, copyright, licence costs* New products from the finance industry New architectural and engineering designs
Vehicles	Economic competencies	Brand equity (strategic advertising plus market research) Firm specific human capital (employer provided training) Organisational structure (share of management time spent on strategy plus cost of external consultants)

# Business investment in intangible knowledge based assets across the OECD



# Health spending to 2020



- If there is “ ring-fencing” be sure it will be tightly defined – only around 30 per cent of NHS spending really front line
- Total wage bill to 2014/15 can rise by 2 per cent per annum in nominal terms.
- To preserve real wages and increments up to 100,000 job losses
- Demand pressures will not reduce
- What to do?

# Now the money has run out we have to think

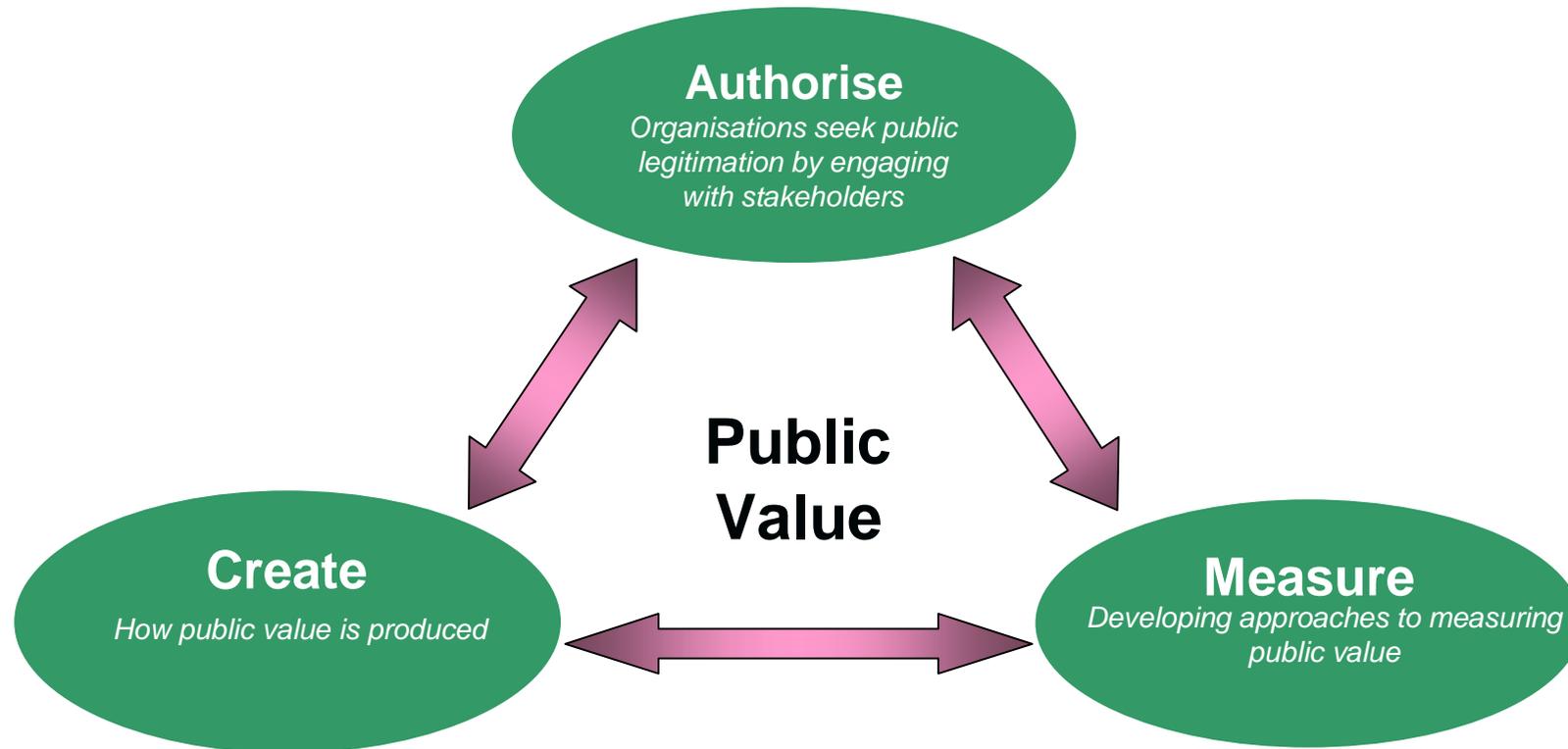
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- Structural approach to reform – more foundation trusts, more polyclinics
- Managerialist approach – more targets, more performance metrics
- Let a thousand flowers bloom – emphasise experimentation and the local
- A fourth way – public value plus behavioural economics

# Implications for the public sector

*Delivering public value is all about ...*



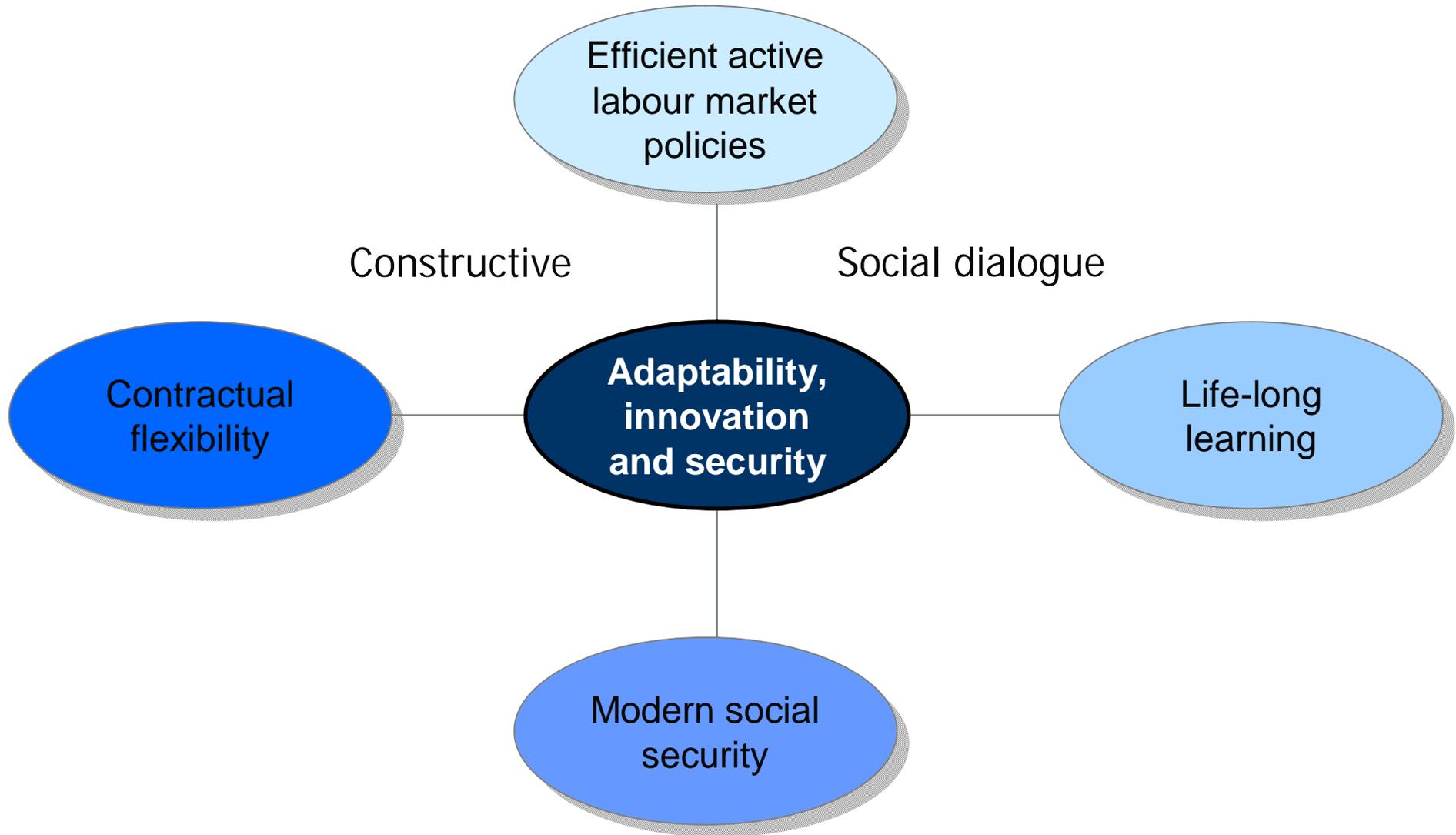
*...organisational responsiveness to refined citizen preferences*

# Five routes to behavioural change



- Set default option ( NHS Direct )
- Information ( preventative health )
- Self-contracting ( personal health targets )
- Architecture ( hospital design – design bugs out)
- Social norms ( lifestyle choices)

# “Flexi-security”



# Conclusions...



- In Knowledge Economy health spending rises. Health spending will be plus 10 per cent of GDP in 2020.
- Necessarily there will be more co-financing
- There must be more emphasis on preventative health and smart use of diagnostic and clinical techniques
- From Big Pharma to Smart Pharma
- This means behavioural change - think imaginatively about behavioural economics to induce behavioural change
- There will have to be a new workplace bargain, more flexibility about job roles. Big leadership and management challenge.
- Now the money has run out – we have to think!

# Facing the future – The Nuffield Conference

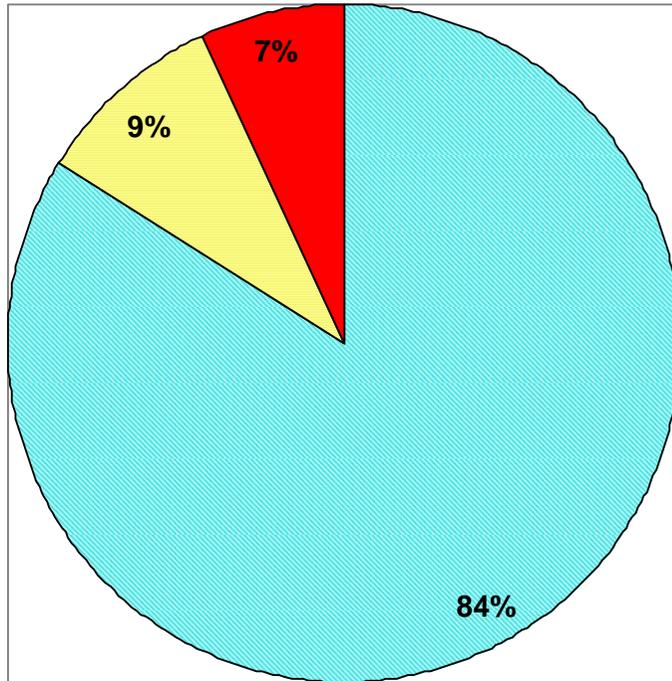
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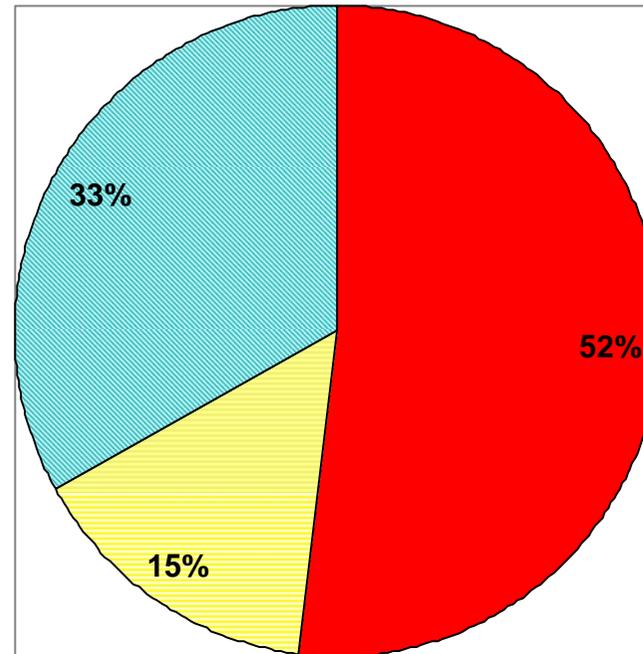
# Jobs: 2008 – 2009 and the 2020 workforce

**Recession speeds up structural change**  
total employment change Apr-June 2008-2009



Manual, unskilled, admin   Care and sales   Knowledge associated

**Workforce in 2020**



Knowledge associated jobs   Care and sales   Manual, admin, unskilled

# A short history of general purpose technologies (GPTs)...



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- **9000 BC – 1400AD**

## Seven GPTs

*domestication of animals & plants; wheel; smelting of ore; writing; use of bronze; iron & steel; creation of water wheel*

- **1400 – 1750**

## Two GPTs

*three masted sailing ship and printing*

- **1750 - 1900**

## Five GPTs

*steam engine; factory system; railway; iron steamship; communications*

- **1900– 2000**

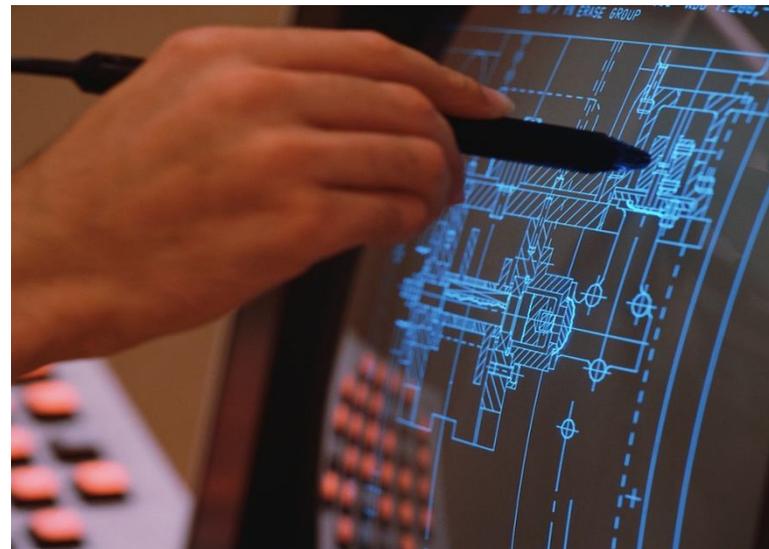
## Nine GPTs

*internal combustion engine; electricity; motor vehicle; airplane; mass production; computer; lean production; internet; biotechnology*

# Twenty-first century prospects ?

## Grand Challenges for Engineering

- Nanotechnologies
- Energy from fusion
- Advanced materials
- Carbon sequestration
- Manage the nitrogen cycle
- Water
- Health informatics
- Durable customised infrastructure
- Customised medicine
- The brain
- Cyberspace security
- Enhance virtual reality
- Personalised learning



# Why exponential growth of innovation



- Knowledge is a public good that constantly expands with each individual contribution to the pool of common knowledge from which others draw
- Multiple combinations of ideas ceaselessly growing
- As a result much invention and innovation happens simultaneously
- Research scientists report that their research anticipated by other teams

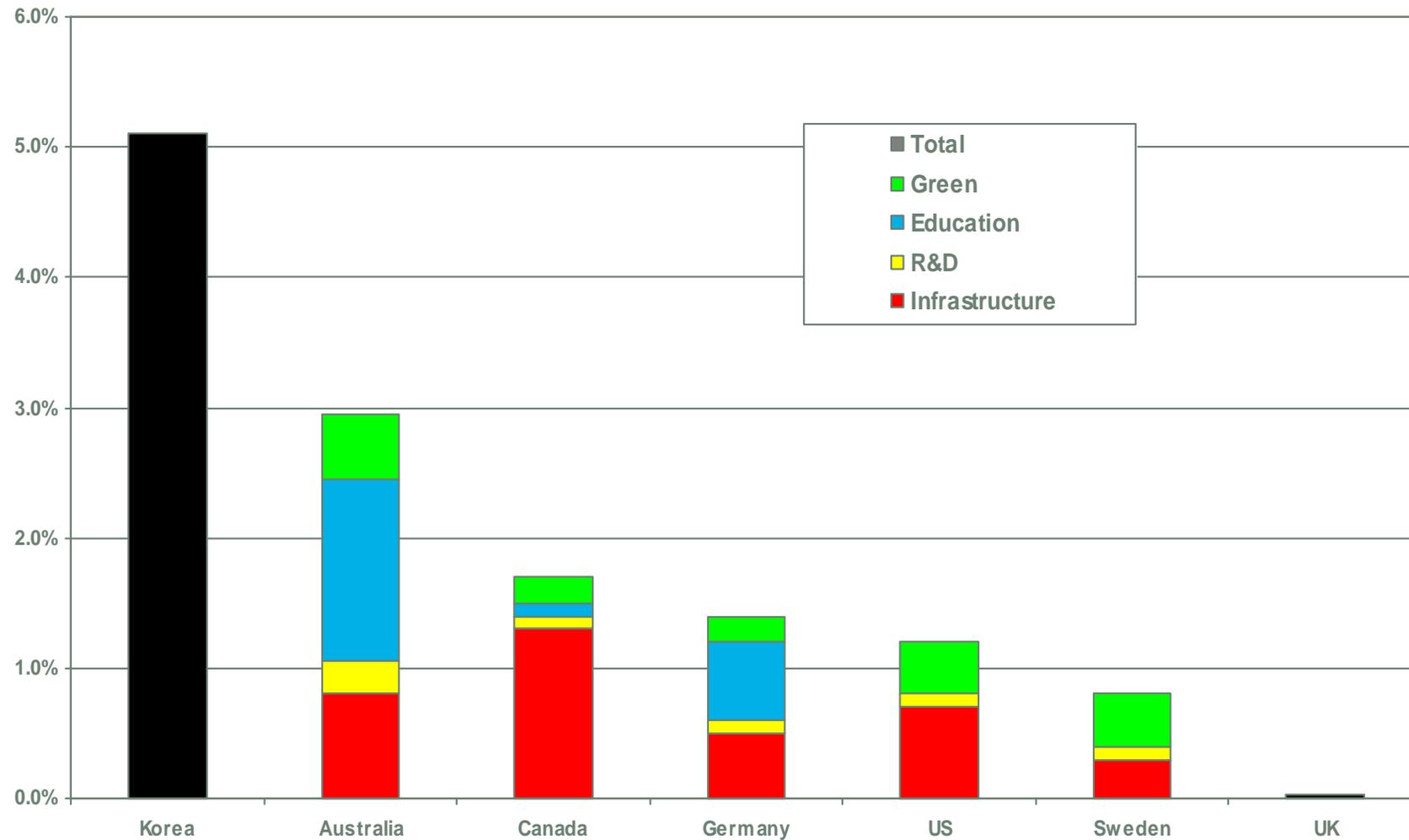
## Potential sectors for Britain include....



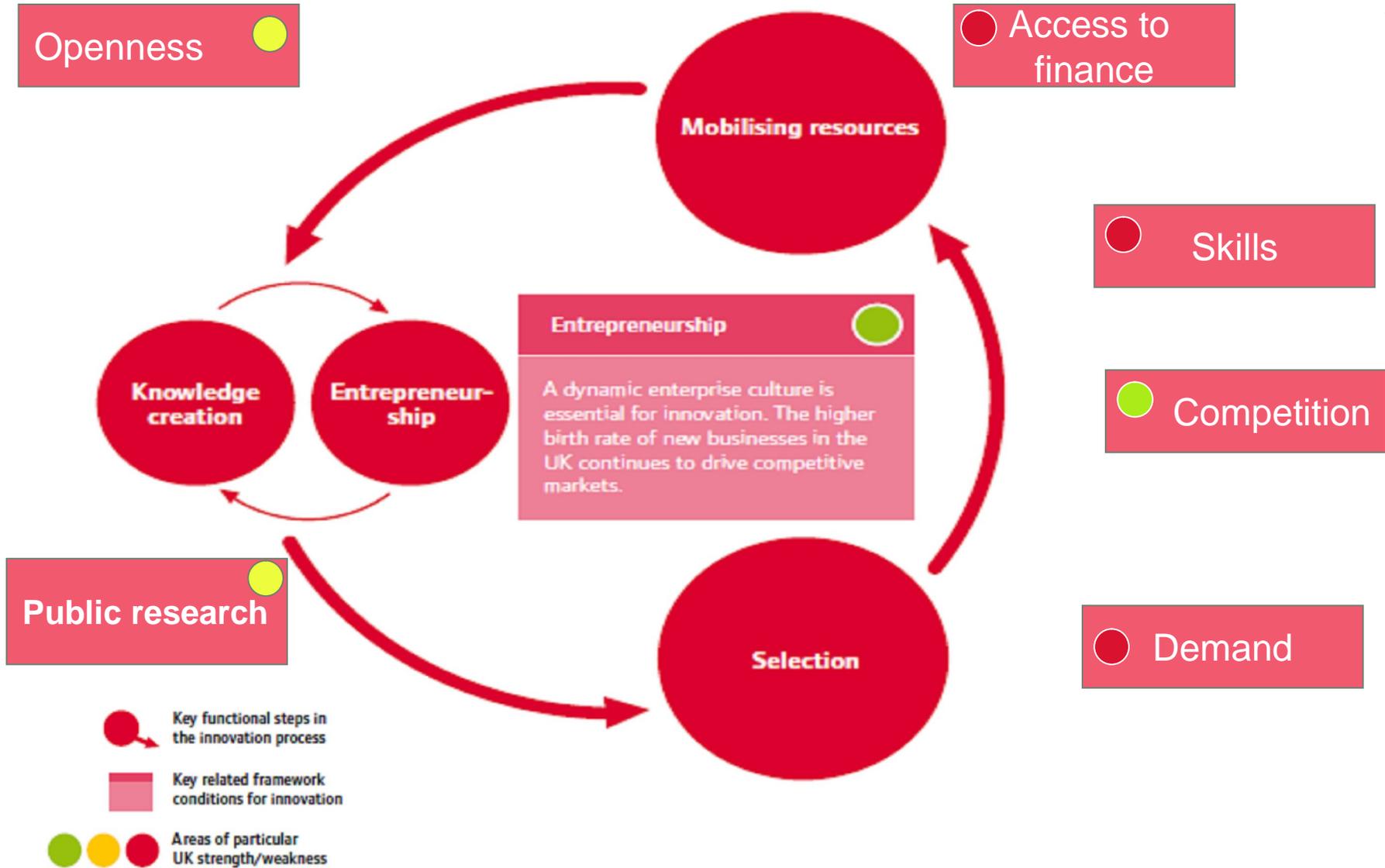
- Average life expectancy of S and P 500 company 45 yrs in 1955 – 11 years today
- “Manuservices” in aerospace, pharmaceuticals, defence, high tech engineering( cars, chemicals)
- Low carbon economy – energy production, energy efficiency, green manufacturing plus associated services
- Creative and cultural industries – design, electronic/digital media and publishing, games
- High tech and business services – computer, business to business services

# Support for innovation and investment in OECD stimulus packages

Note: all figures percentage of GDP. Break-down for Korea not available. Source: OECD, except for UK which is estimate by TWF.



# The Innovation Ecosystem



# A national innovation eco-system to support productive entrepreneurship – A “ new economic model “

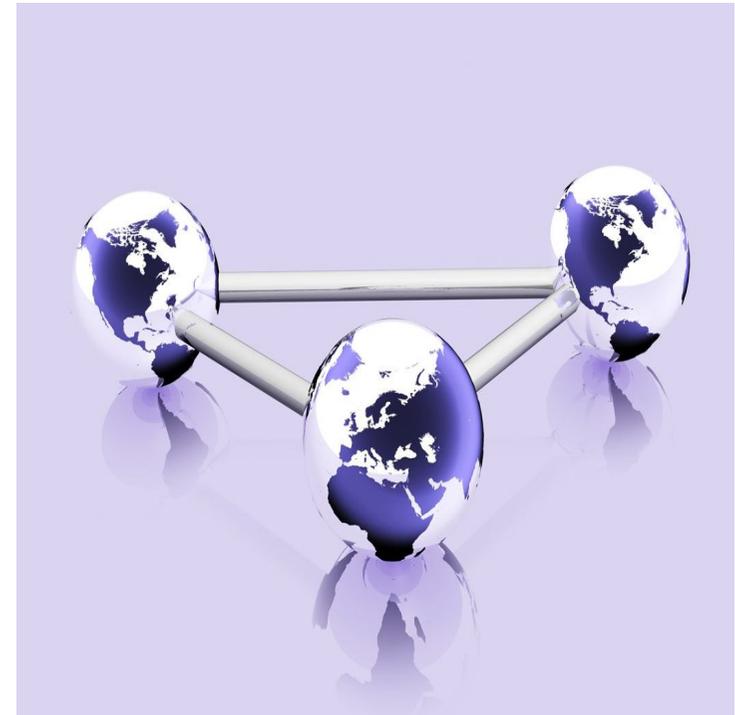


- Productive Entrepreneurship
- Knowledge Creation and Diffusion
- Selection and Dissemination of Research
- Market Formation
- Financial mobilisation
- Human Capital Development

# A new architecture of “intermediate institutions”



- Russell Group Universities plus science
- British “Fraunhofer” Institutes
- Creative hubs
- Network of intermediate financial institutions – Green Bank, Creative Industries Bank, Infrastructure Bank, new 3i
- Long term ownership, anchor companies
- Comprehensive lifelong learning
- Intermediate employment insurance mutuals, residential FE colleges, vocational academies to support flexi-security
- Cities with innovation “anchor” institutions

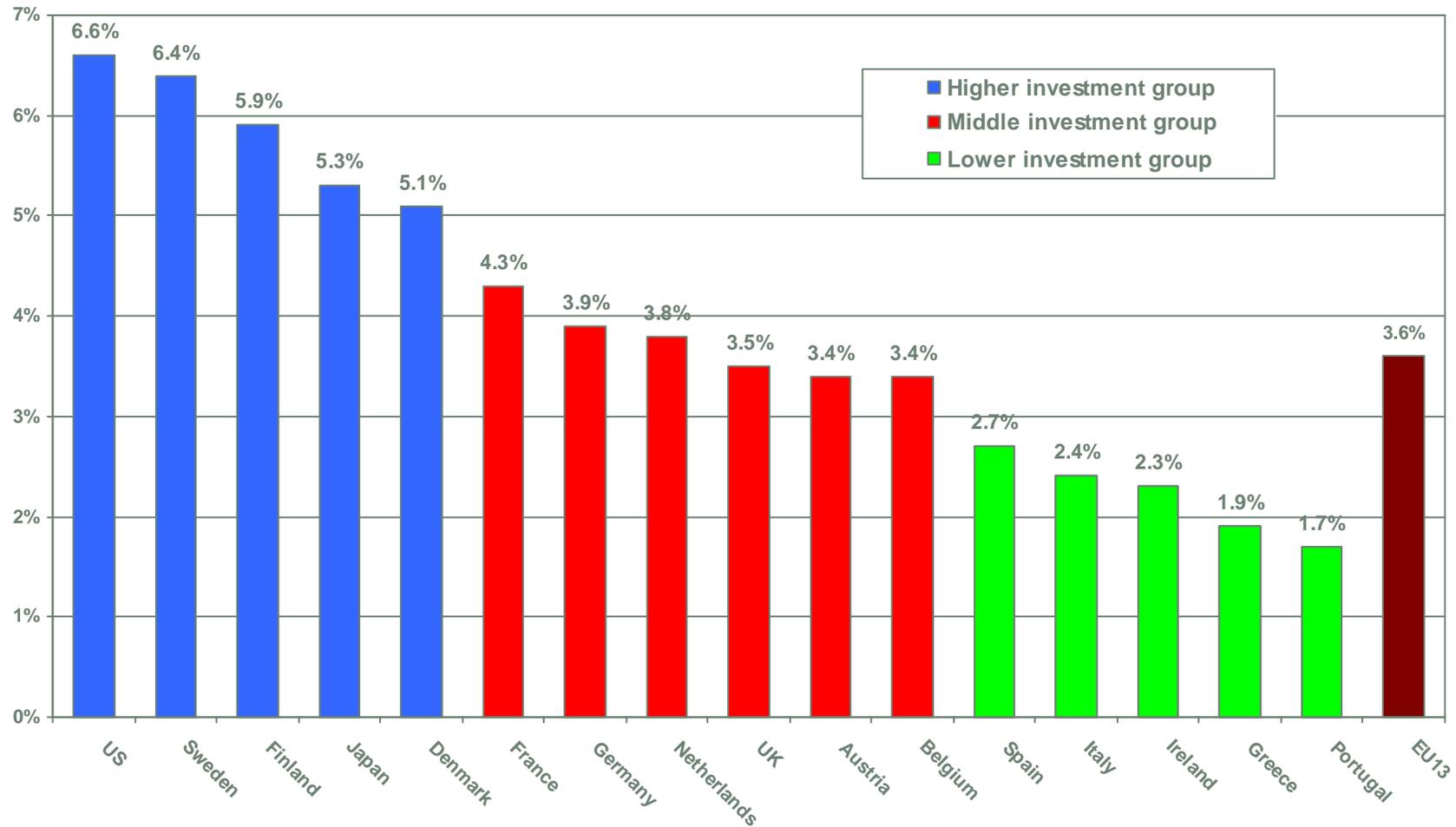


# Investment in some knowledge assets (R&D, higher education, software) in 2003-2004



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OECD composite indicator, share of GDP: EU13 excludes Greece. US, Japan, Germany are 2004, rest are 2003. OECD STI Scoreboard 2007.



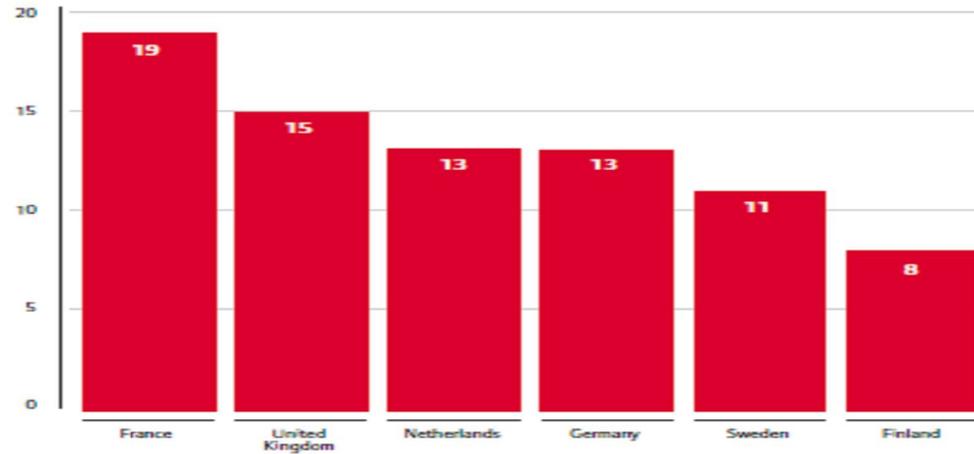
# The case for reform of finance

Source NESTA

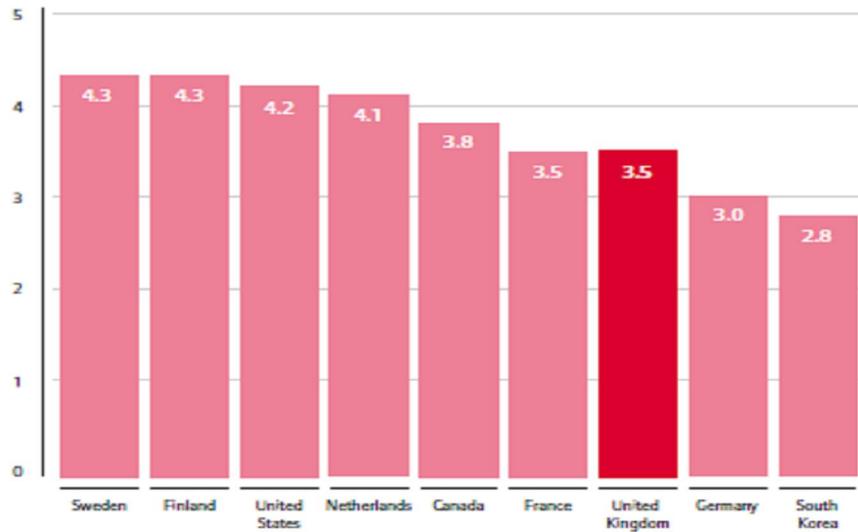


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## Companies identifying access to finance as the most pressing problem



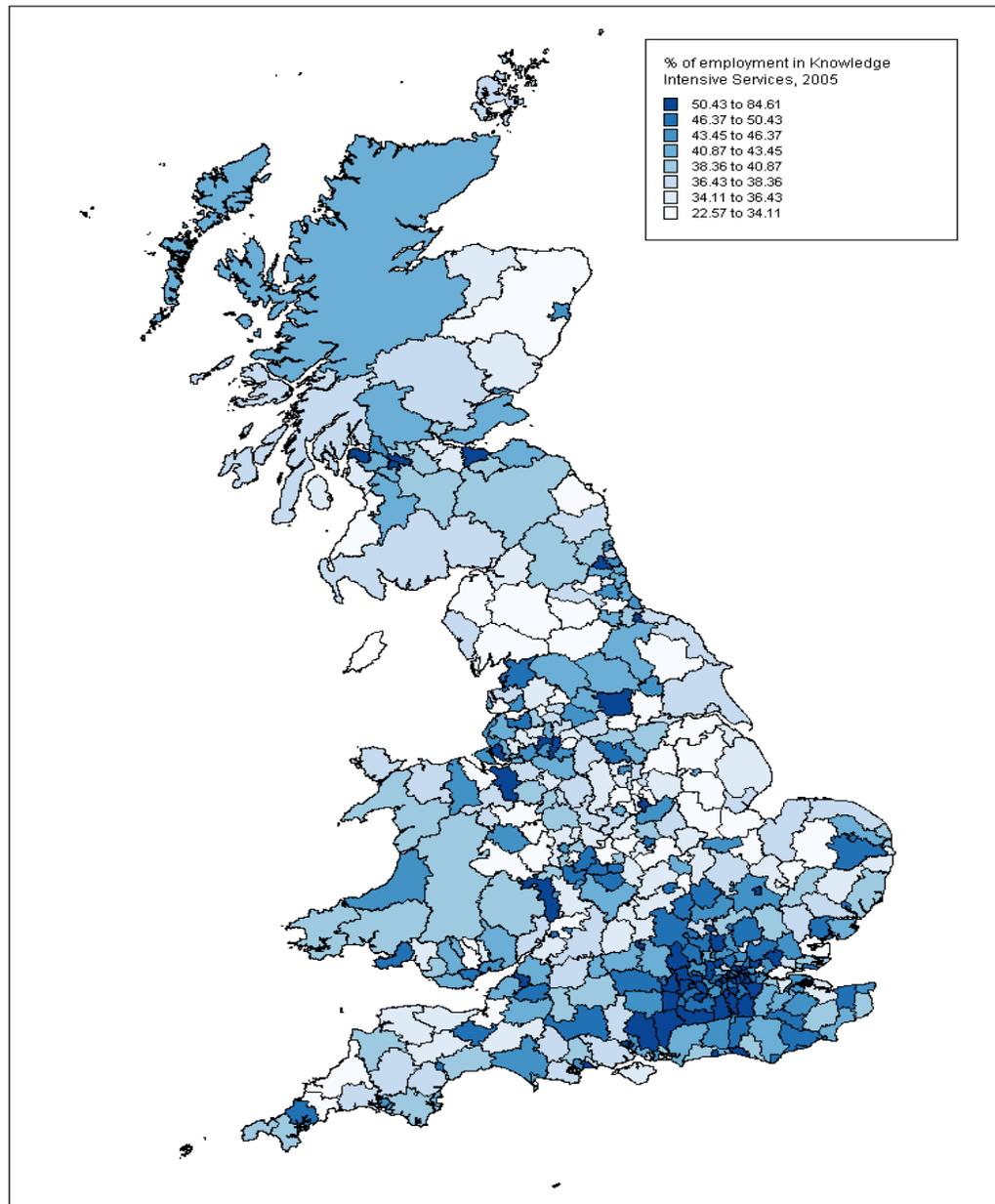
## Access to venture capital, 2009



## Access to local equity markets, 2009



# Cities as engines of the economy



## % Employment in knowledge-intensive services, 2006

Eurostat definition of knowledge intensive services includes: communications, computer services, other business services, financial services and health and education services.

## A new deal on macro-policy



- Focus fiscal consolidation on reduction of current deficit – eg retirement age for all 70 by 2025 plus Swedish lock-in on life expectancy
- Boost rather than reduce capital investment – Infrastructure Bank
- Intelligent Public Procurement to support market creation
- Tax regime to focus on productive entrepreneurship
- Guaranteed carbon price floor
- Competition regime needs to reflect dynamic gains from competition
- Modernisation of Intellectual Property Right Regime

# The British Opportunity

- Productive entrepreneurship
- Focus on knowledge economy sectors
- Intermediate institutions to build an innovation eco-system
- A reframed macro-deal
- A new bargain on work – supporting workers as risk-taking authors of their own lives
- A second industrial revolution



**Slides that follow are supplementary ...**



# Knowledge Creation and Development



- Aggressive public investment in R and D, Russell Group Universities and be tough on strategic priorities
- Establish “ University Consultancy” – JV with major PLCs professionally to identify and network ideas for commercial exploitation
- Innovation prizes of up to £10 million
- US style tax incentives for universities who commercialise research
- Assign Design Council lead role co-ordinating British design and applications

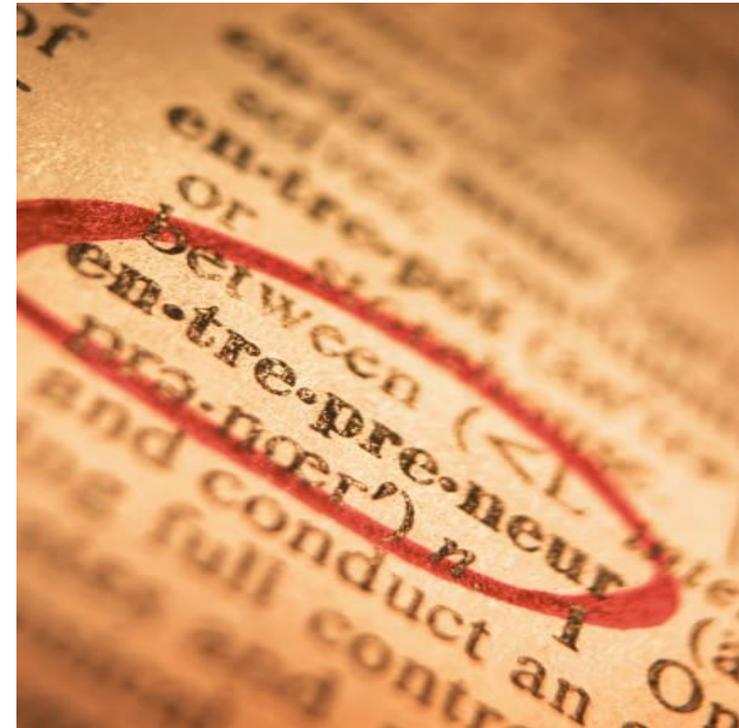
# Selection and Dissemination of Research

- Centrality of Intellectual Property Right Regime. Renewal fees for patent and copyright to be much higher
- Launch British network of Fraunhofer Institutes – to horizon scan, screen, and assess technologies identifying companies who might be able to exploit them, especially SMEs.
- Reform or replace RDAs with City based Innovation Panels to manage City based Innovation Funds to support clusters and specific knowledge generation to support. Each City to have “ Total Innovation” strategy



# Entrepreneurial Experimentation

- Competition policy to be much tougher on merging for scale and consolidation advantages so achieving static gains – instead emphasising dynamic gains from plural firms competing hard.
- Tax policy to favour small firm start ups and exits
- New 3i to finance start-ups
- Support large firm entrepreneurship via procurement, financing and R and D support
- Promote even more contractual flexibility in return for better unemployment benefit, employment insurance, lifelong learning, proactive career development and active labour market policies. “Flexi-curity.”



# Market formation



- Understand market creation – from infancy to maturity
- Regulate to create markets
- Standard setting for “credence” goods
- Benchmark against best eg “Top Runner”
- Smart public procurement looking to co-innovate
- Procurement to target key sectors eg defence, pharma, life sciences, ICT and Telecoms

# Financial mobilisation – reducing casino bias of modern finance



- Innovation Bank to provide medium term finance for knowledge based companies. Super 3i?
- Infrastructure Bank to plug up to £500 billion financing gap over next decade
- Refocus City on “productive entrepreneurship” – ban guaranteed bonuses, establish clawback mechanisms etc
- Break up too-big-to-fail super banks
- Shrink shadow banking system
- Bank of England to discount Innovation and Infrastructure Bank paper
- Corporate governance reform to encourage committed share ownership, including full disclosure
- FSA to regulate rather than promote financial services

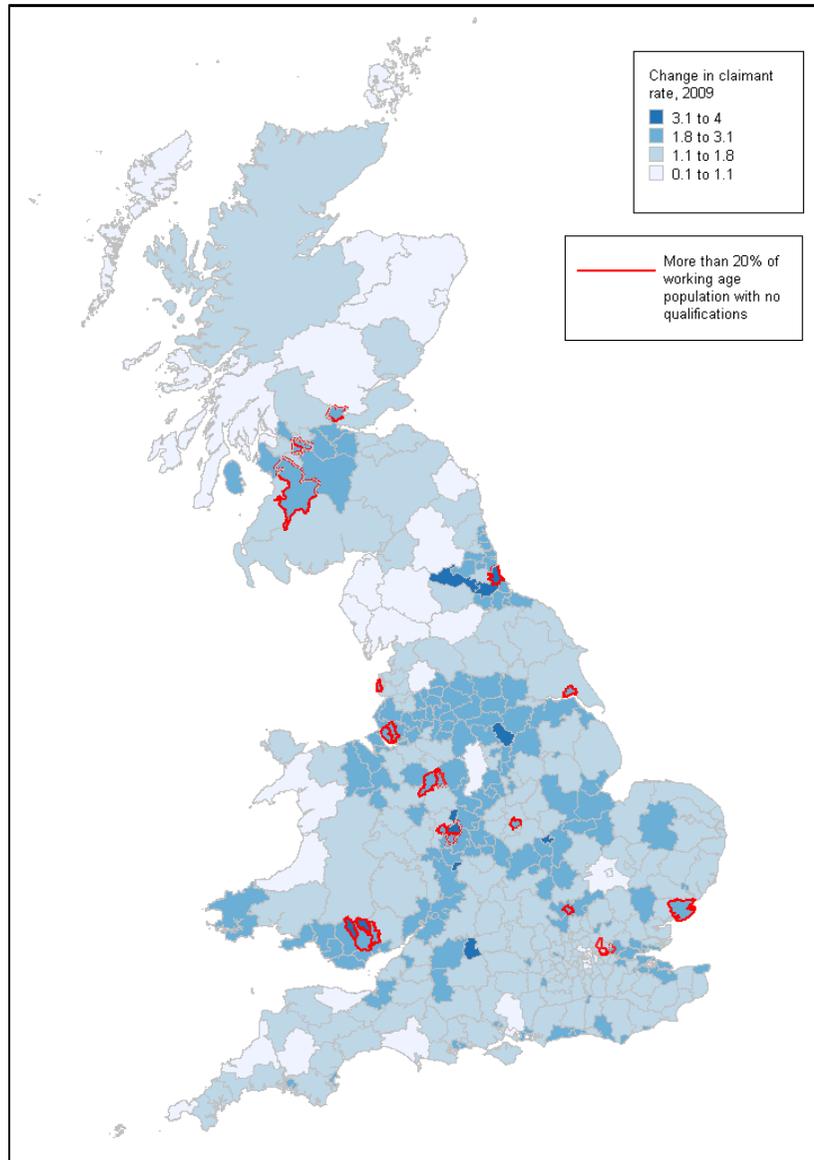


# Human Capital Development

- Introduce German style “Berufsschule” and build up apprentice system
- Specialist FE Colleges to have residential capacity
- Education system to develop cognitive skills rather than learning for exams
- More interdisciplinary degrees
- Individualised training and Innovation Accounts to support lifelong learning



# Skills key determinant of recession impact



Places with low skills being affected the most

Places with high skills being affected the least

Other characteristics affecting impact:

- Employment in manufacturing
- Financial services employment outside SE and Greater London

# A story of knowledge intensive cities

Public versus Private Sector Knowledge Economy

Private sector, 2005

Public sector, 2005

