

Innovation, R&D and the Levelling Up Agenda

Why High Value Manufacturing is the key to Levelling Up

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Outline

- The UK's productivity and regional imbalance problems
- Sources of productivity growth in the UK economy – the importance of manufacturing
- What should industrial policy focus on?

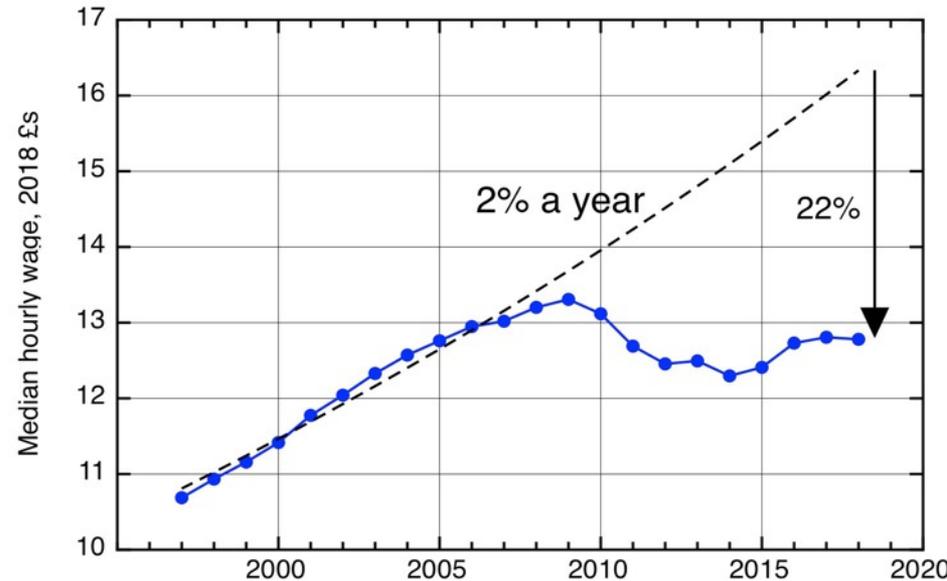
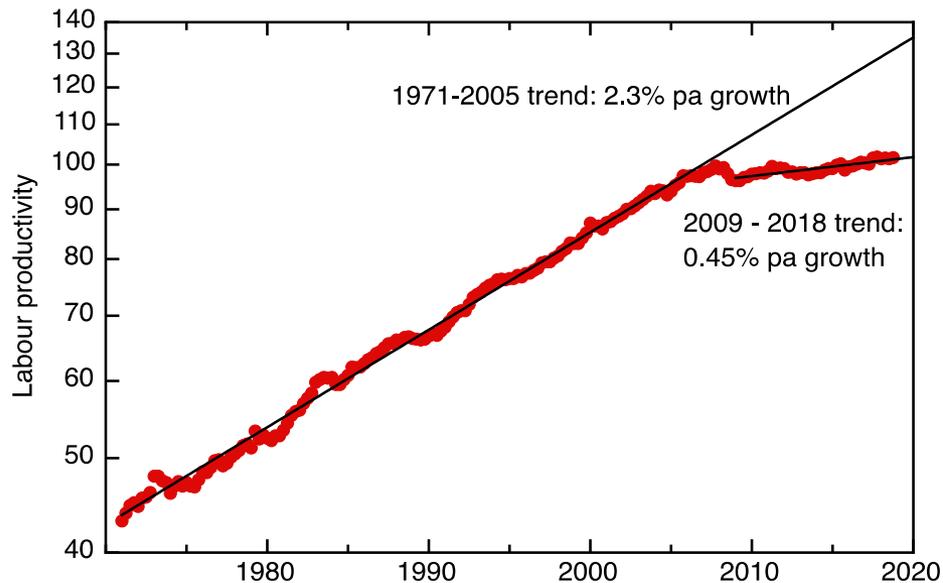


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The UK's productivity and regional imbalance problems

Economic growth has stalled – and this is reflected in stagnating living standards

UK labour productivity since 1970

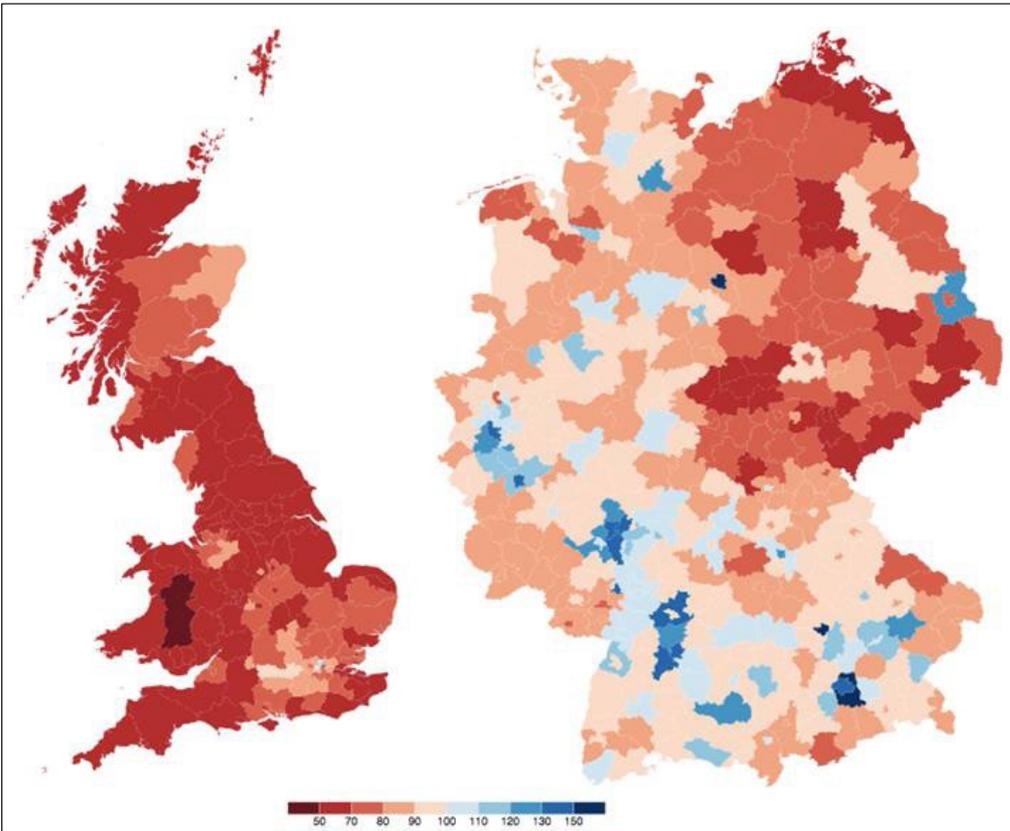


UK average real wages

Data: ONS

(All data pre-COVID, of course)

Most of the UK is below average in wealth and productivity

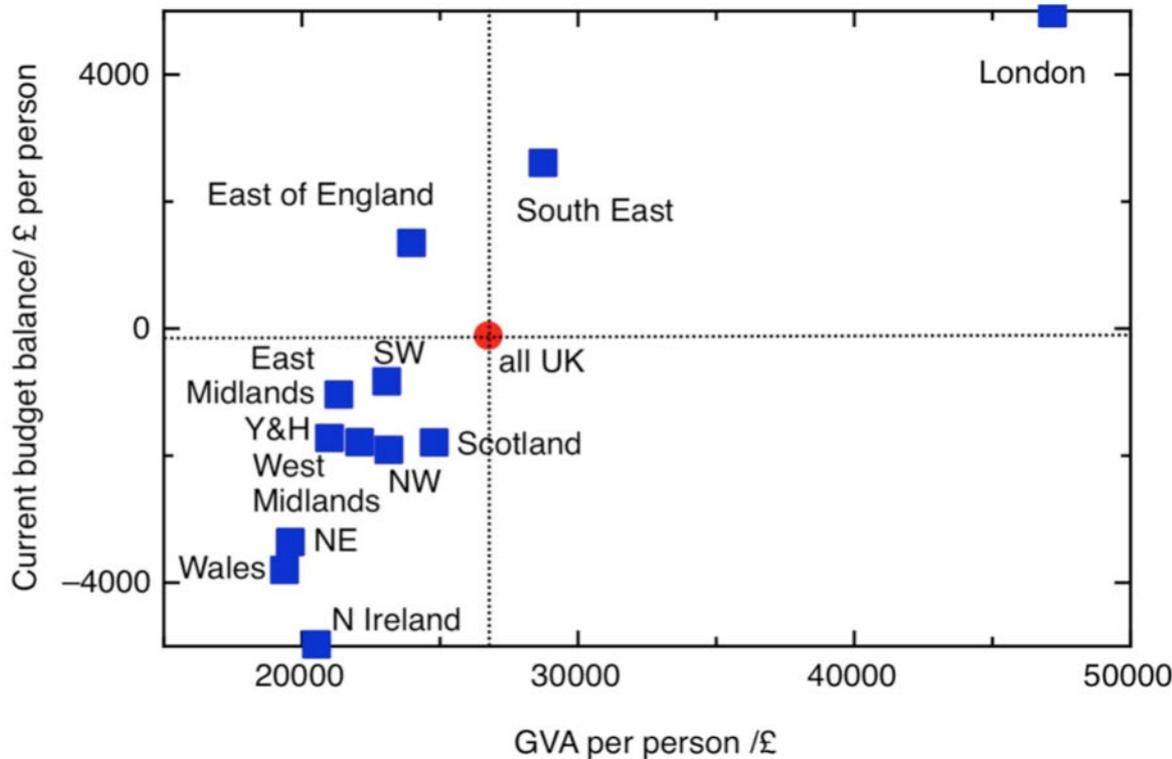


Outside the SE, productivity levels are comparable with E. Germany or S. Italy

GVA per hour at NUTS 3 region level in 2014

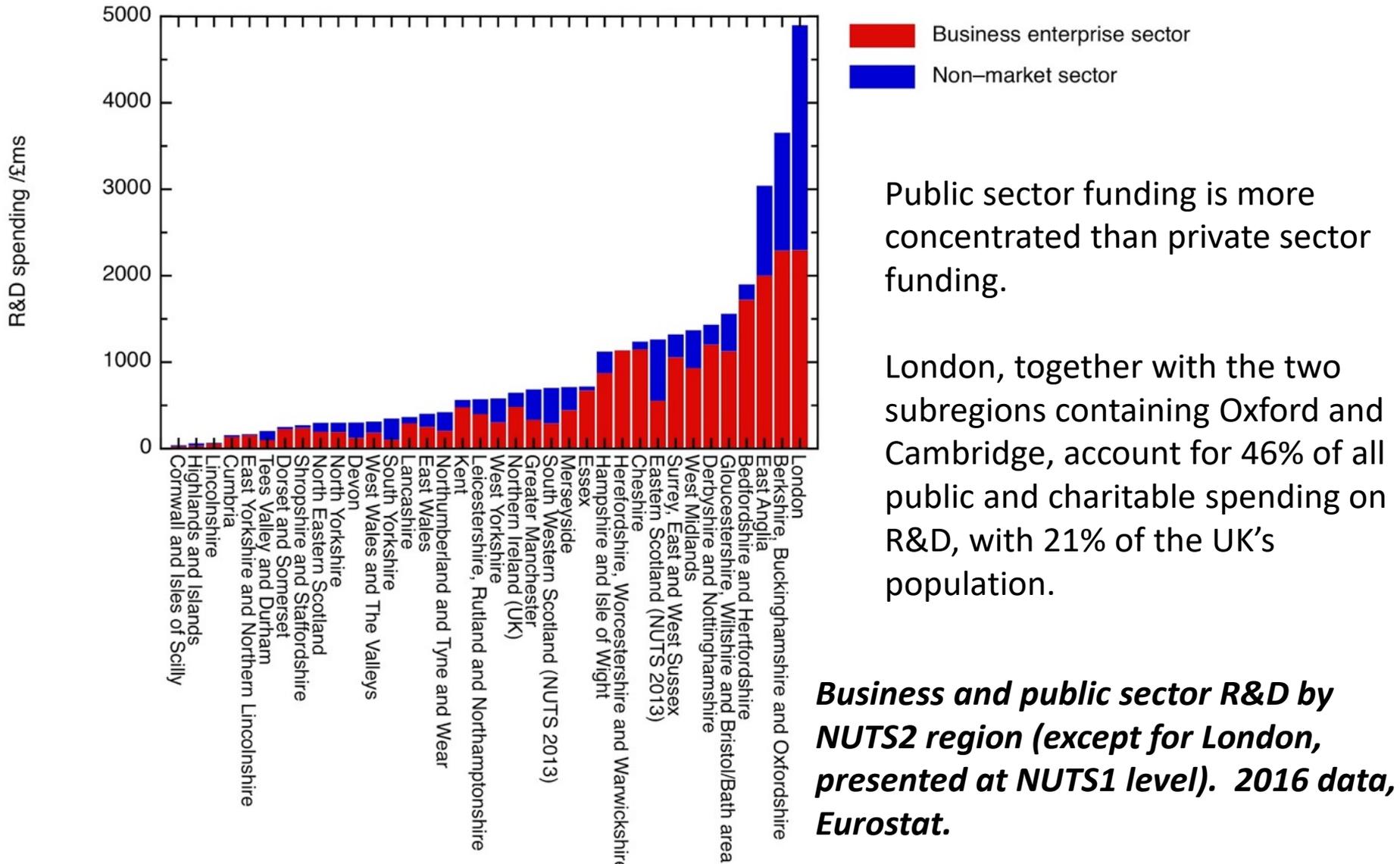
Bernick, S., Davies, R., and Valero, A. (2017) 'Industry in Britain – An Atlas', *Centre for Economic Performance Special Paper No.34*

Only three regions of the UK contribute to government more than they receive.



The difference between government revenue and current expenditure for NUTS1 regions, plotted against their regional productivity (GVA per person), both expressed per head of population. ONS data.

R&D spending is highly concentrated in London, E & SE



Public sector funding is more concentrated than private sector funding.

London, together with the two subregions containing Oxford and Cambridge, account for 46% of all public and charitable spending on R&D, with 21% of the UK's population.

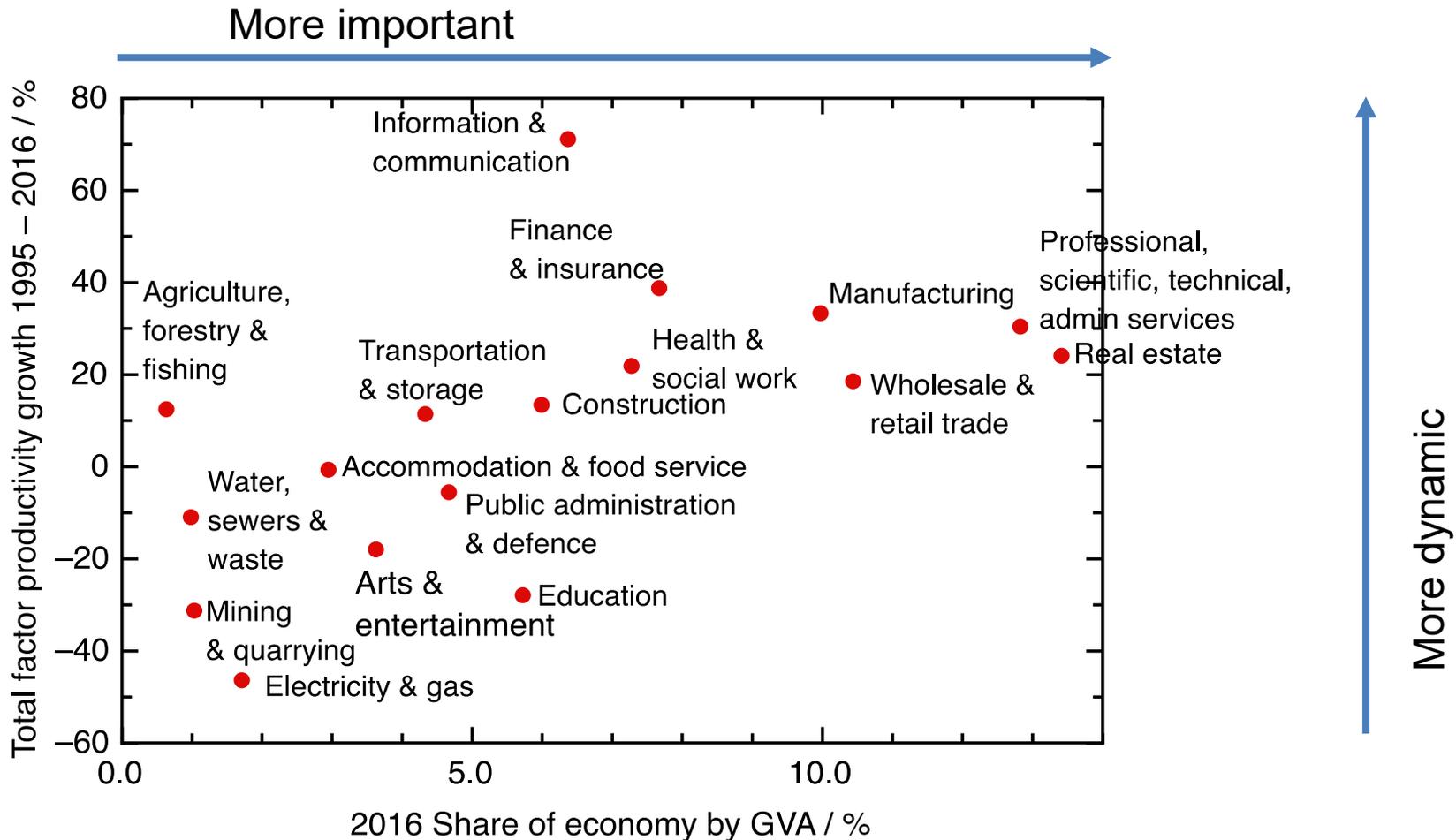
Business and public sector R&D by NUTS2 region (except for London, presented at NUTS1 level). 2016 data, Eurostat.



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Sources of productivity growth in the UK economy

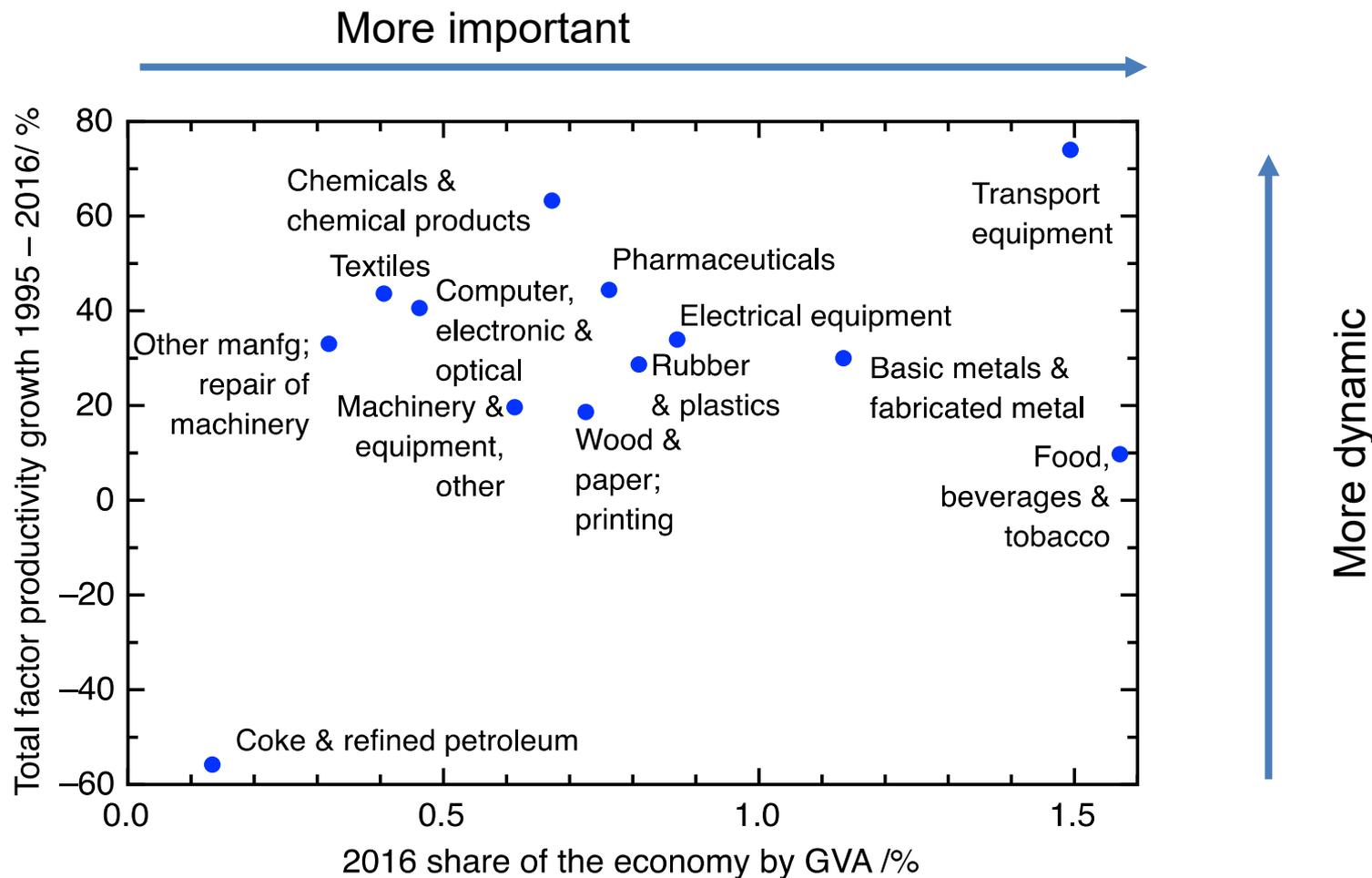
A map of the UK economy



The UK's economic sectors, mapped by their contribution to the economy and historical total factor productivity performance..

Data from EU KLEMS Growth and Productivity Accounts database

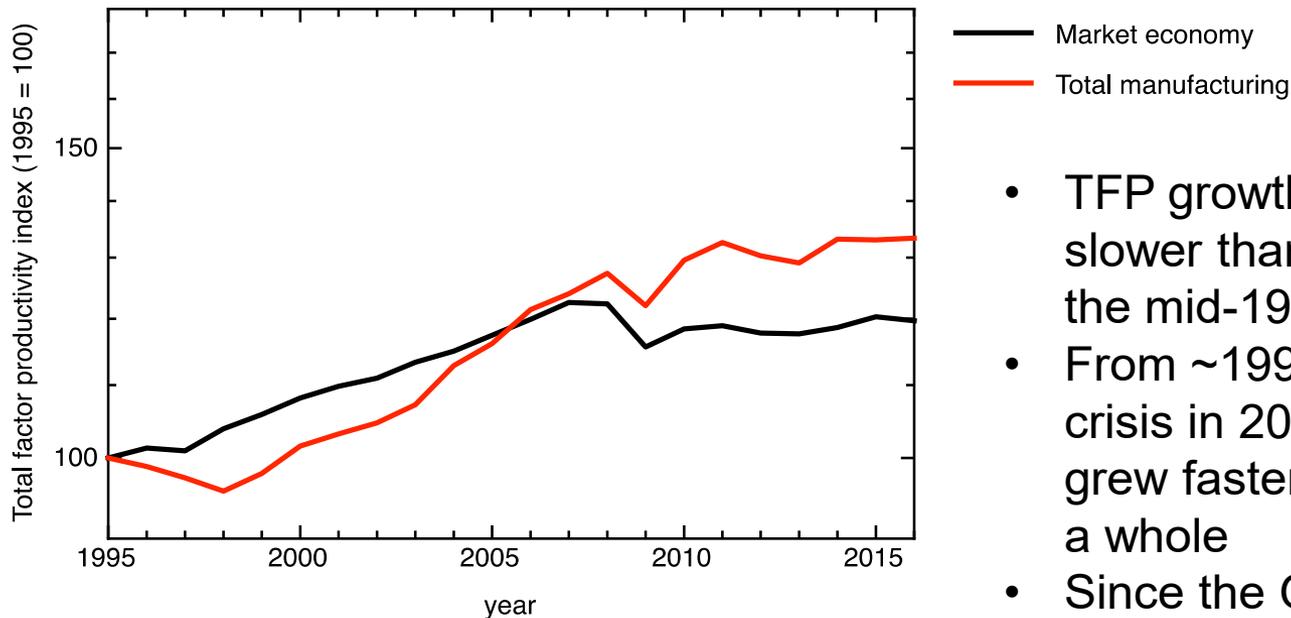
Total factor productivity growth in manufacturing sub-sectors



Manufacturing subsectors in the UK', mapped by their contribution to the economy and historical total factor productivity performance..

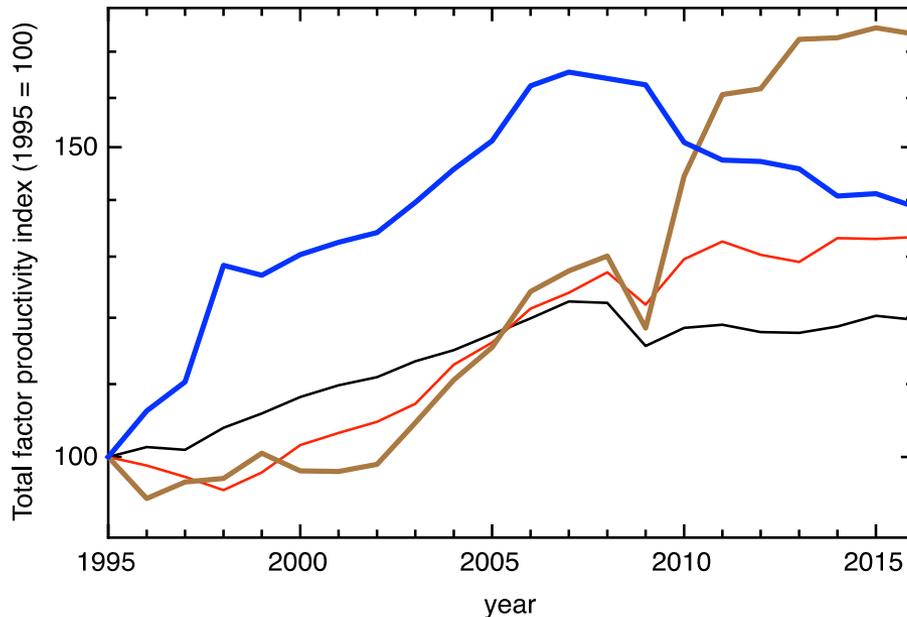
Data from EU KLEMS Growth and Productivity Accounts database

Total factor productivity growth – manufacturing



- TFP growth in manufacturing was slower than the whole economy in the mid-1990's
- From ~1998 to the global financial crisis in 2008 manufacturing TFP grew faster than the economy as a whole
- Since the GFC TFP of both manufacturing & whole economy have stagnated

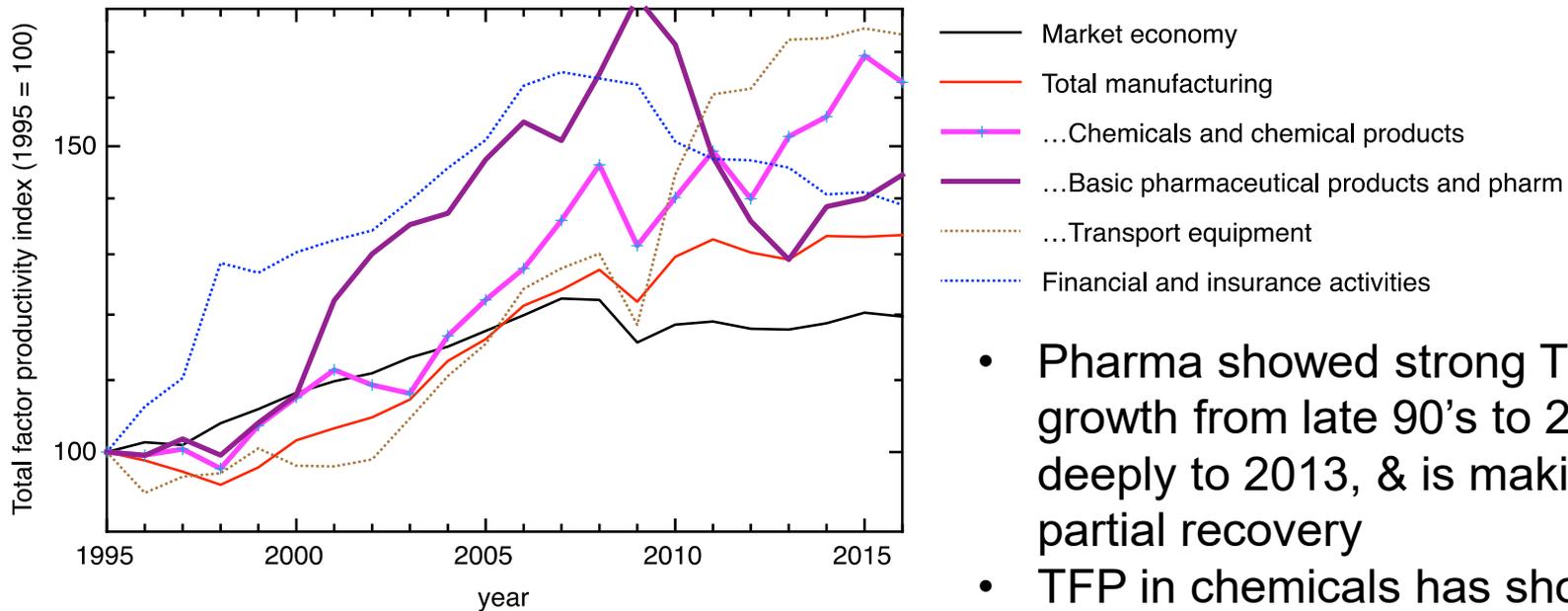
Total factor productivity growth – fast growing sectors



- Market economy
- Total manufacturing
- ...Transport equipment
- Financial and insurance activities

- TFP growth in finance boomed in the mid-90's, peaked in 2007, and has fallen ever since
- A strong recovery in transport equipment (automotive & aerospace) accelerated from 2009 but shows signs of plateauing

Total factor productivity growth – pharma & chemicals



- Pharma showed strong TFP growth from late 90's to 2009, fell deeply to 2013, & is making a partial recovery
- TFP in chemicals has shown steady increases over the whole period

What should industrial policy focus on?

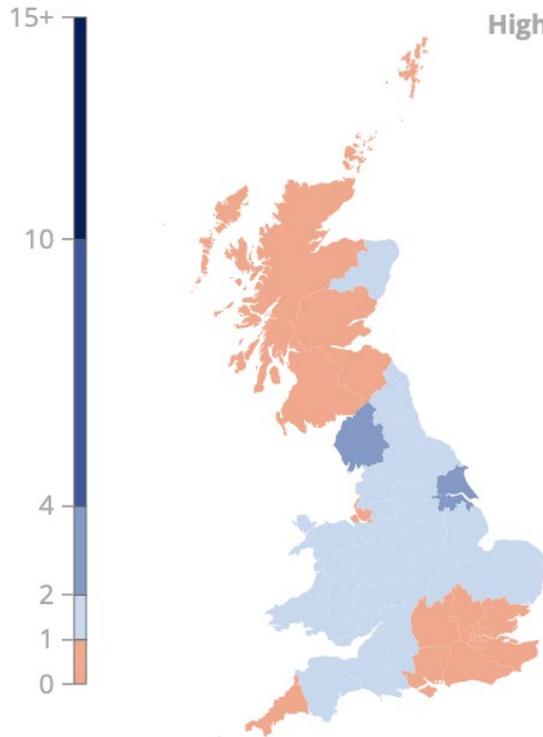
- “Vertical” industrial strategy - based around the specific needs of industry sectors – was out of fashion in the 80’s, 90’s & 00’s. This was a mistake.
 - We’ve seen some return to sector-based industrial strategy since the global financial crisis.
- What best fixes the UK’s problems of stagnant productivity and regional economic disparities?
 - Sectors with the high potential for productivity growth
 - Sectors that contribute to high productivity in economically underperforming parts of the country
- What supports big national priorities like net zero?
- Manufacturing supports all these goals– our aim should be to increase its scale & grow its productivity

Manufacturing is concentrated outside the rich GSE

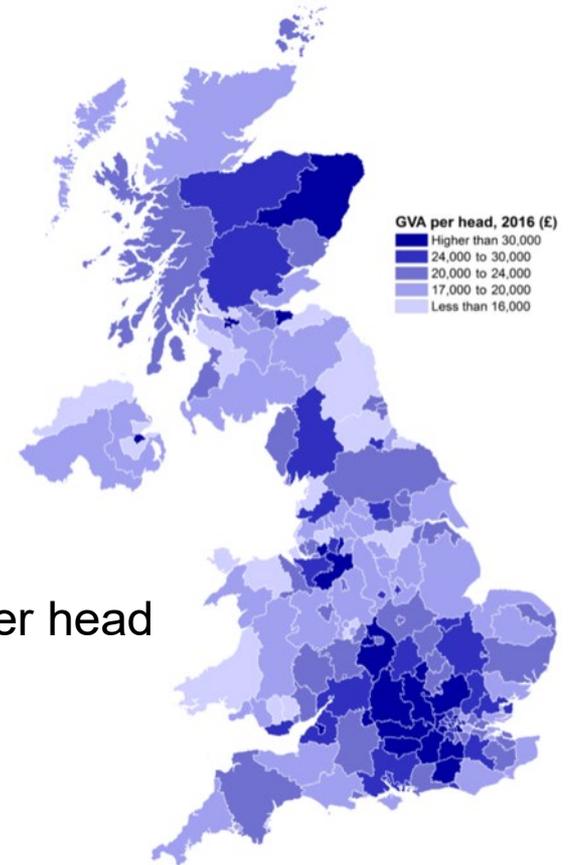
Location
quotients,
2015

Manufacturing overall

Highlands and Islands: 1.0



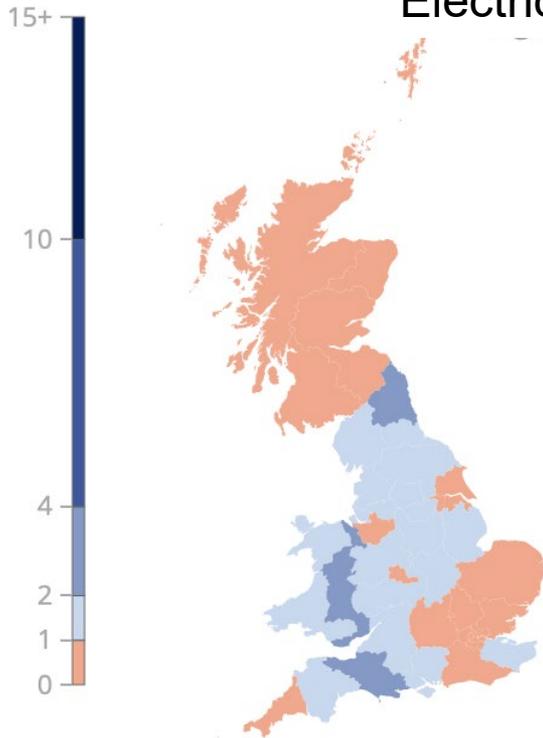
GVA per head
2016



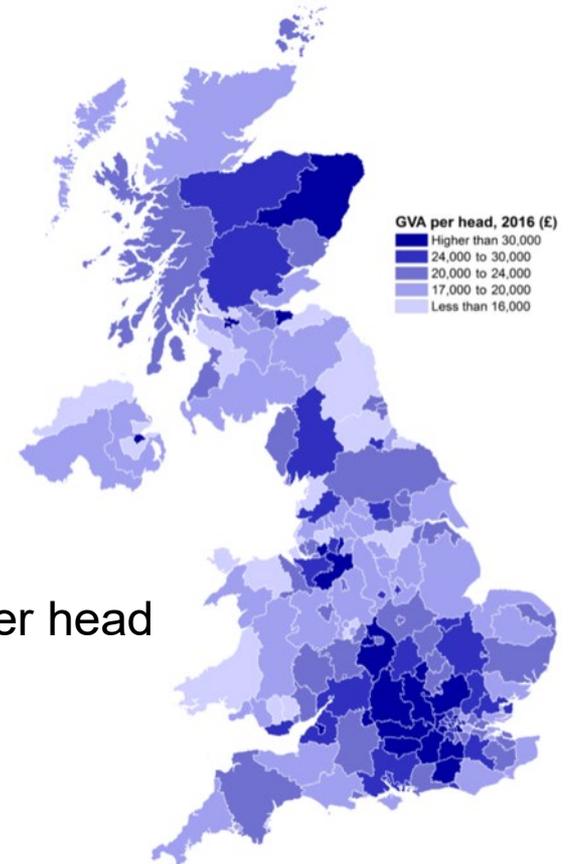
Manufacturing is concentrated outside the rich GSE

Location
quotients,
2015

Electrical equipment

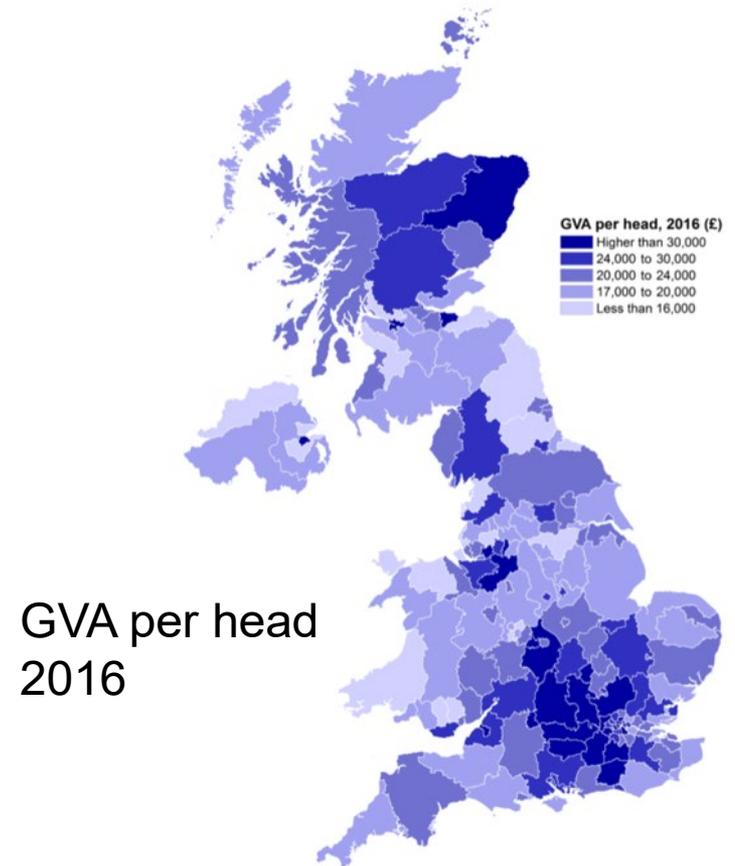
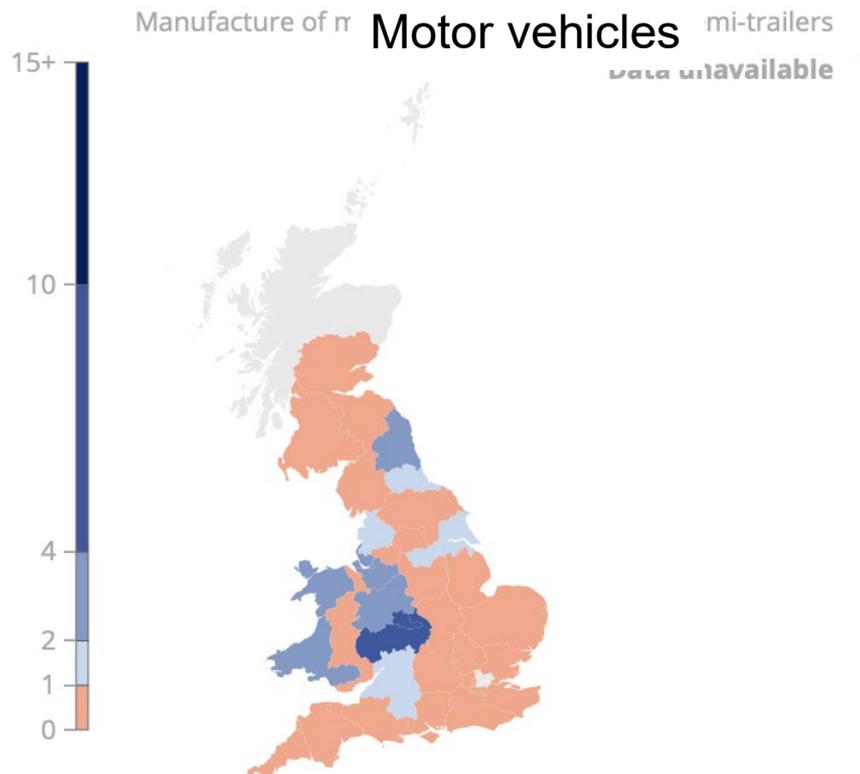


GVA per head
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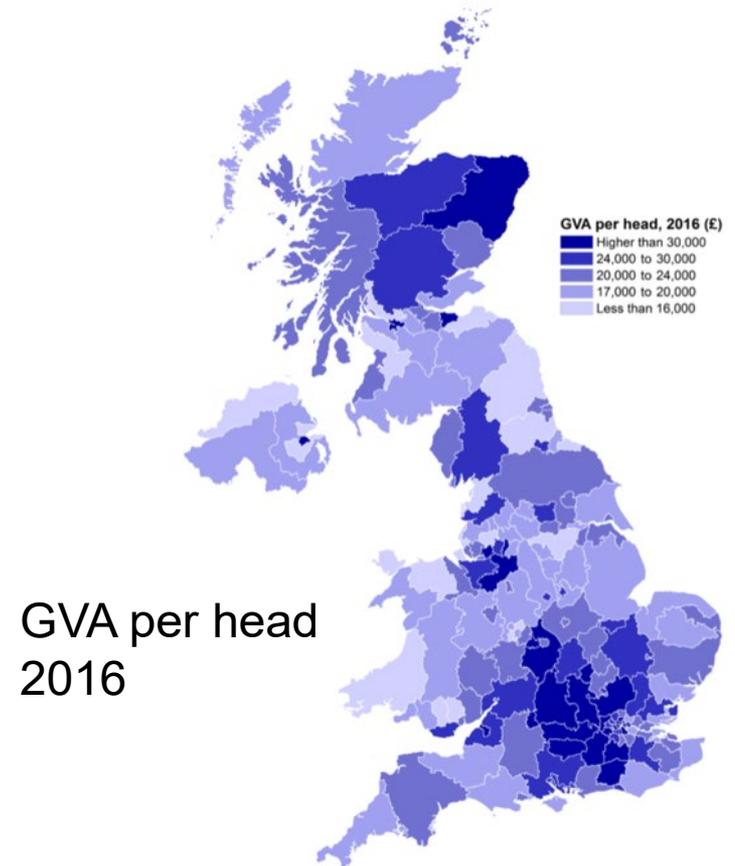
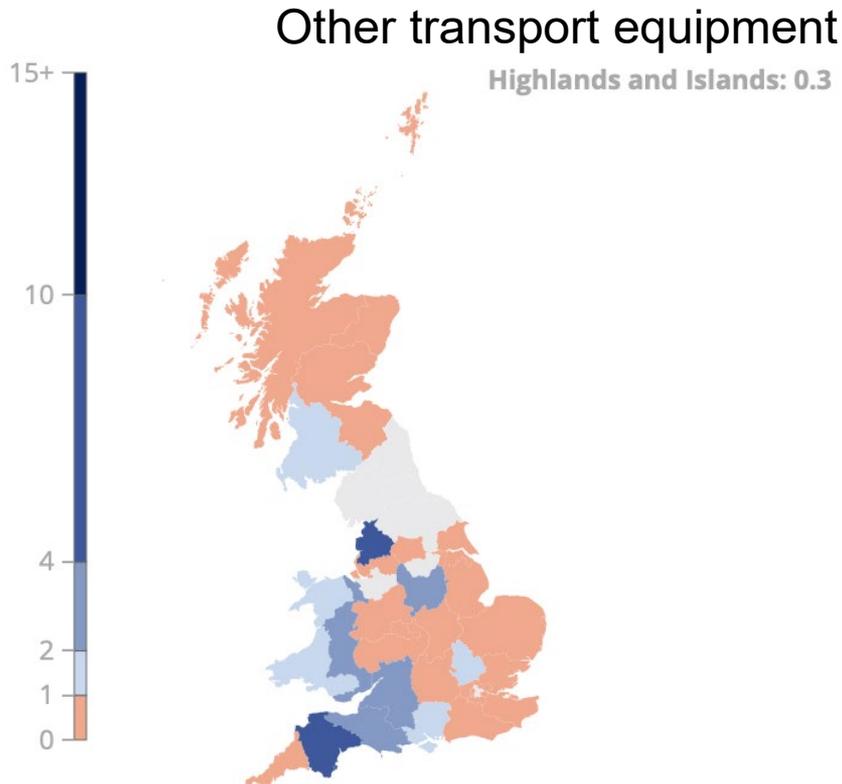
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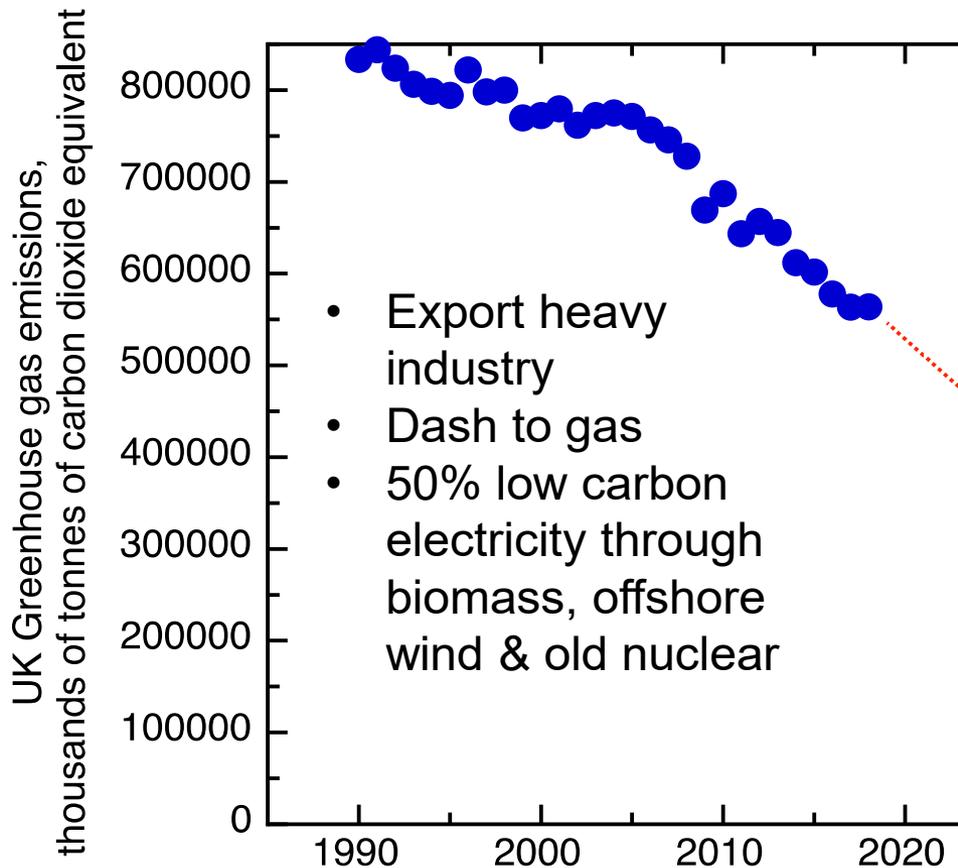


Manufacturing is concentrated outside the rich GSE

Location
quotients,
2015



Towards net zero: the UK's domestic greenhouse gas emissions



- Export heavy industry
- Dash to gas
- 50% low carbon electricity through biomass, offshore wind & old nuclear

Fully decarbonize & expand electricity generation:

- More offshore wind
- New nuclear (?)
- CCS (?)

Storage

- Batteries
- Hydrogen (?)

Decarbonize industry:

- Hydrogen (?)

Decarbonize transport

- Electric vehicles
- Synthetic aviation fuel (?)

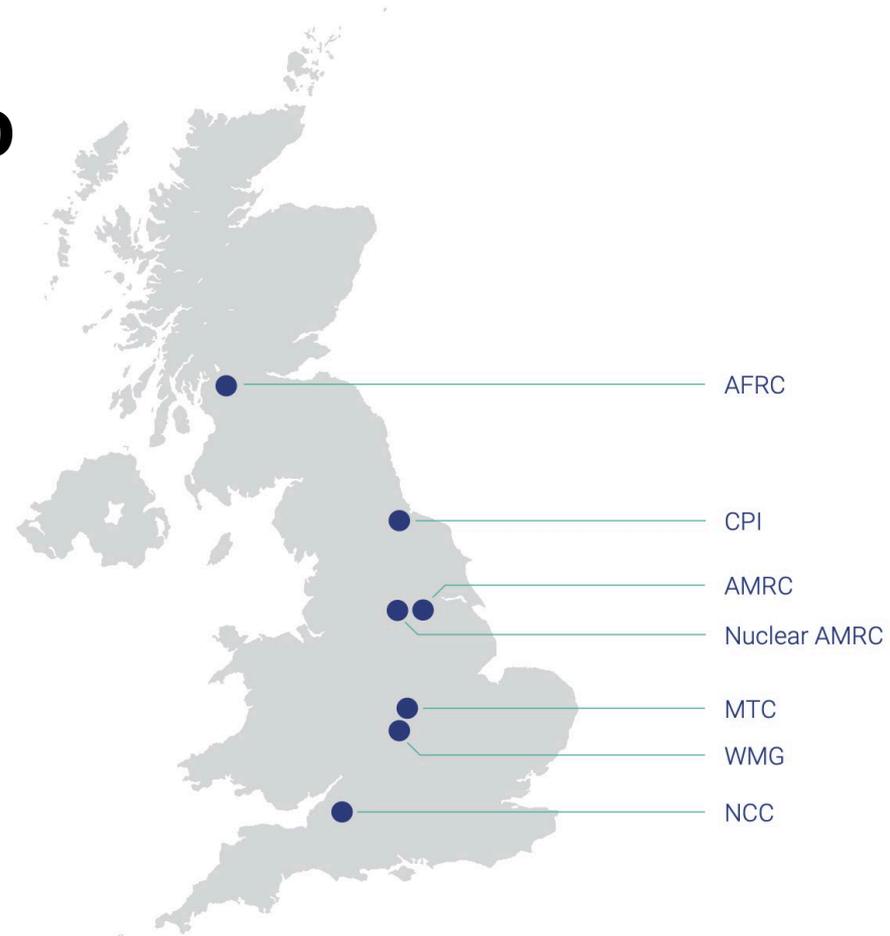
Decarbonise housing

- Net zero dwellings
- Hydrogen (?)

HVMC and levelling up

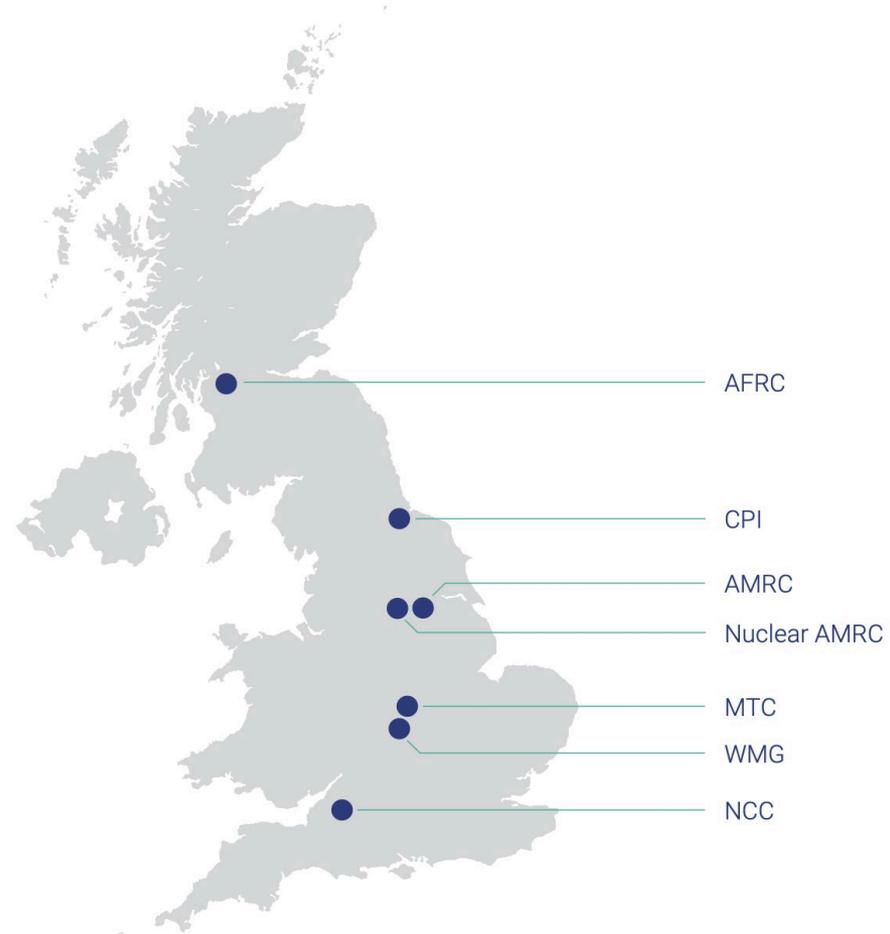
Regional Growth

- Starting geographical distribution is helpful
 - Role of regional outposts?
 - Expansion of the network?
- Key goals
 - Preserving and growing clusters
 - Regional innovation systems
 - Skills at all levels



HVMC at the centre of the manufacturing innovation system

- Working as a national network
- Deeply connected to business
- Integrated into the upstream research base



Some concluding thoughts...

- As we rebuild and reshape our national economy...
- ...and tackle big national priorities like net zero...
- ...high value manufacturing will be crucial for driving productivity growth and correcting regional economic imbalances.
- The High Value Manufacturing Catapult should be at the centre of this...
- ...working together with business, the research base, and government agencies, national and regional.

Thanks!

For more on this...

“A Resurgence of the Regions: rebuilding innovation capacity across the UK”.

R.A.L. Jones, preprint (2019)

<http://www.softmachines.org/wordpress/?p=2340>

“The Missing Four Billion: Making R&D work for the whole UK”

Tom Forth & Richard Jones, NESTA (2020)

<https://www.nesta.org.uk/report/the-missing-4-billion/>