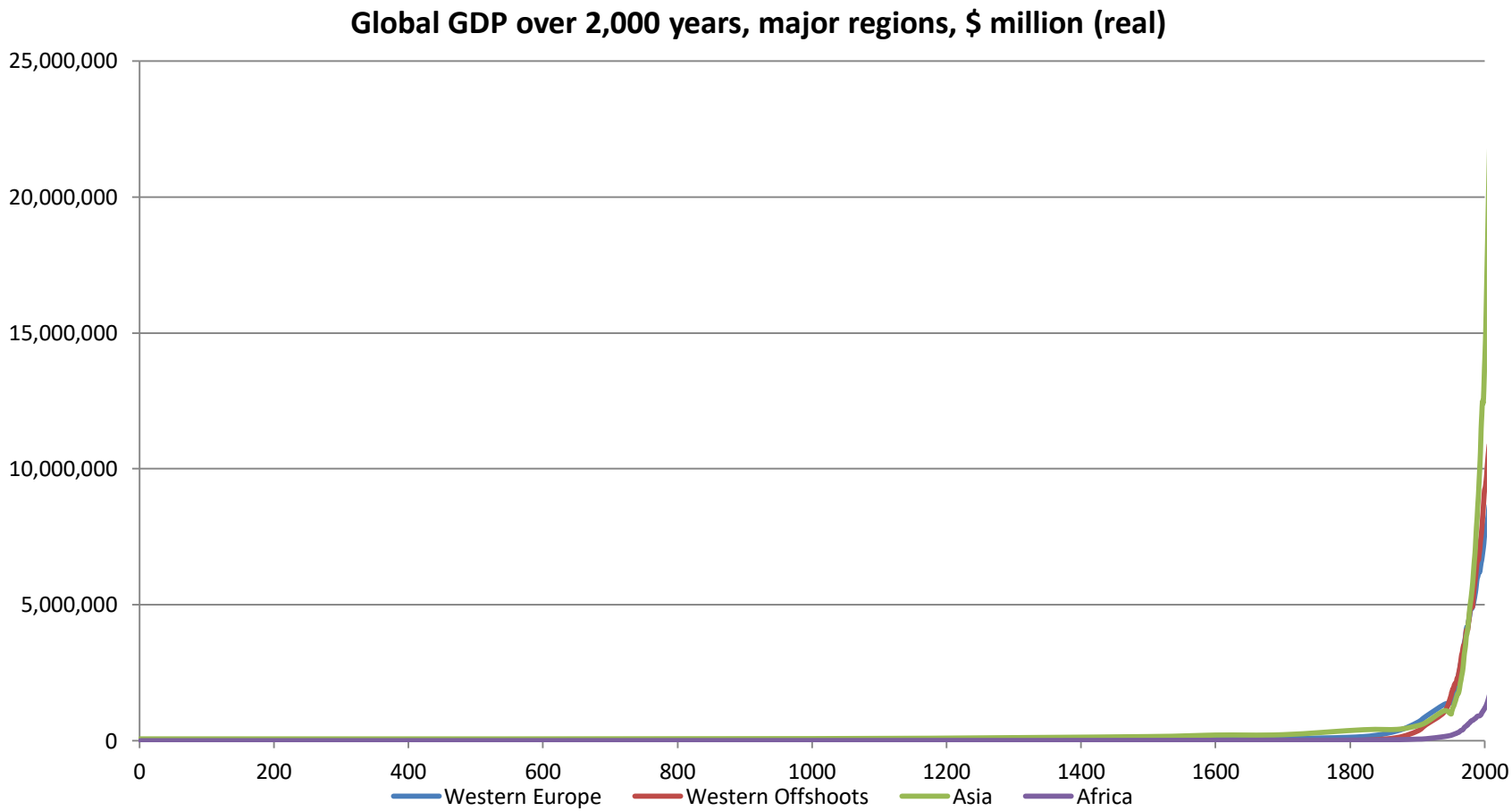
Welsh Government Future Trends Report 2017– Economy & Infrastructure Theme data slides

The following slides provide background data and graphs used for the Economy & Infrastructure theme in the Future Trends Report 2017

Global growth at over 2% per annum is a trend that is well-established over recent decades, but remains a relatively recent phenomenon. Over time, growth compounds and is totally transformational:

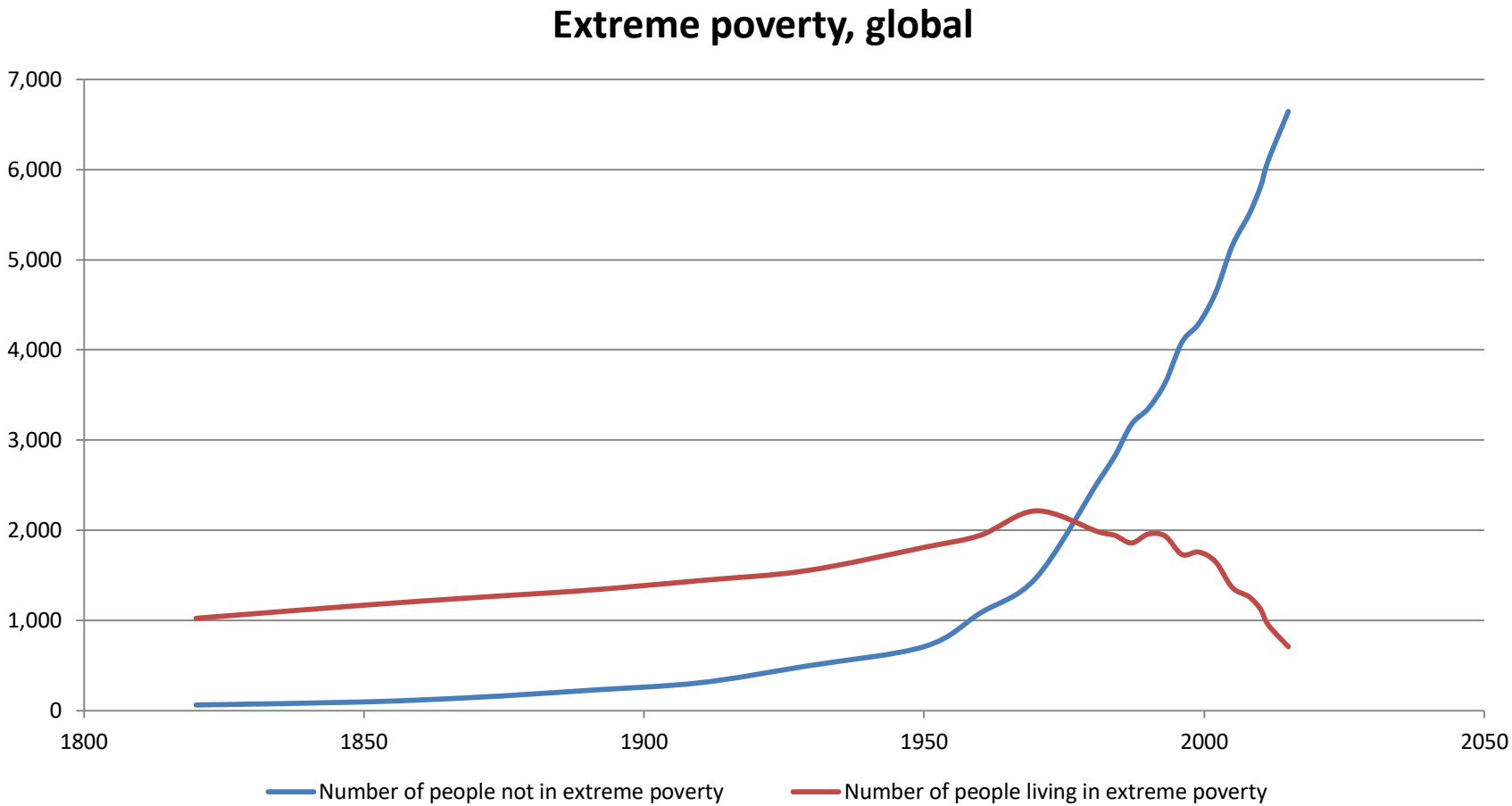


Source: ourworldindata.org

Global GDP continued

- Economic growth is an historically relatively recent phenomenon - less than two centuries old.
- It has spread to most, but not quite all, parts of the world; Africa is still lagging.
- So far, those at the frontier have not lost out as others have caught up. So catch-up for developing countries does not imply that growth must stop for developed countries.
- At/near the frontier (as Wales is, in global terms), living standards have doubled since the early 1980s.

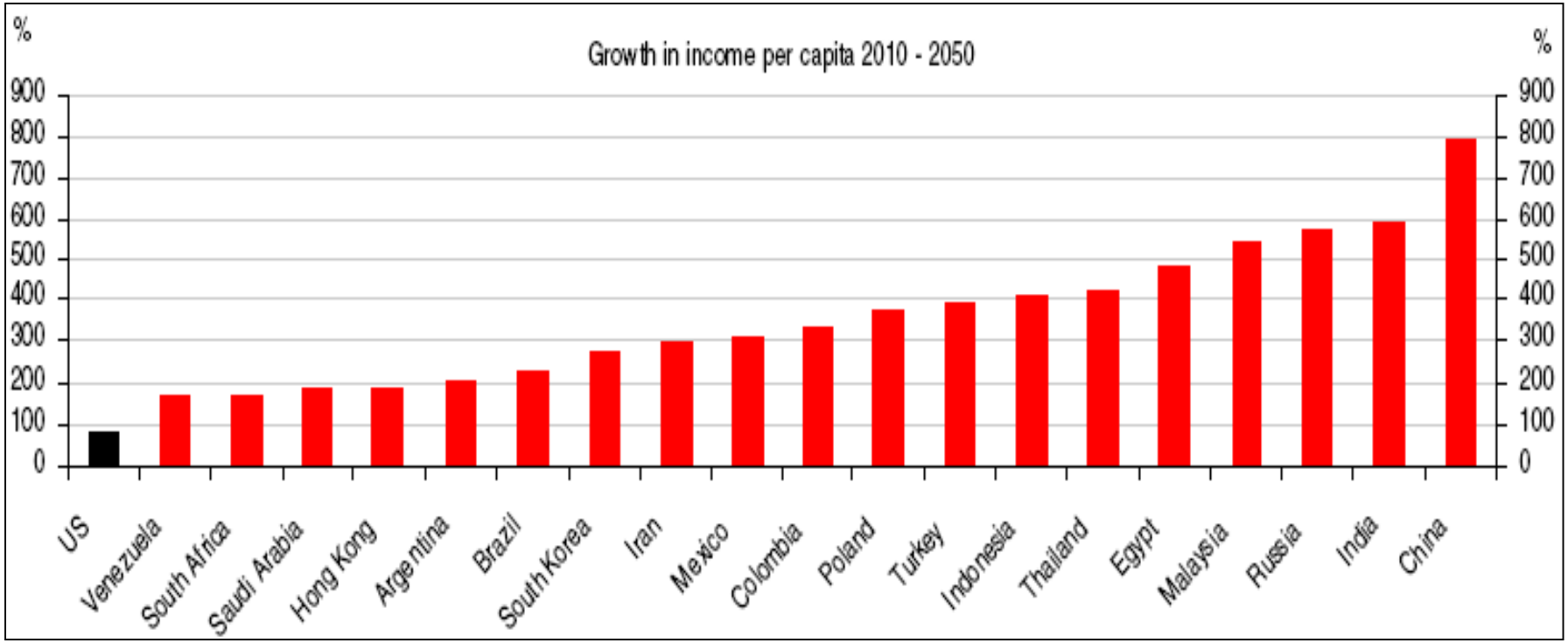
Global economic growth has resulted in a large reduction in the number of people living in extreme poverty:



The definition used of extreme poverty is $1.90 per day, in real terms. Population growth means that the decline in the share of the population in extreme poverty is even more dramatic

Source: World Band

Current difficulties notwithstanding, most studies do not predict a major decline in the long term rate of growth for developed countries… even very rapid growth in developing countries still leaves living standards well behind richer nations in 2050

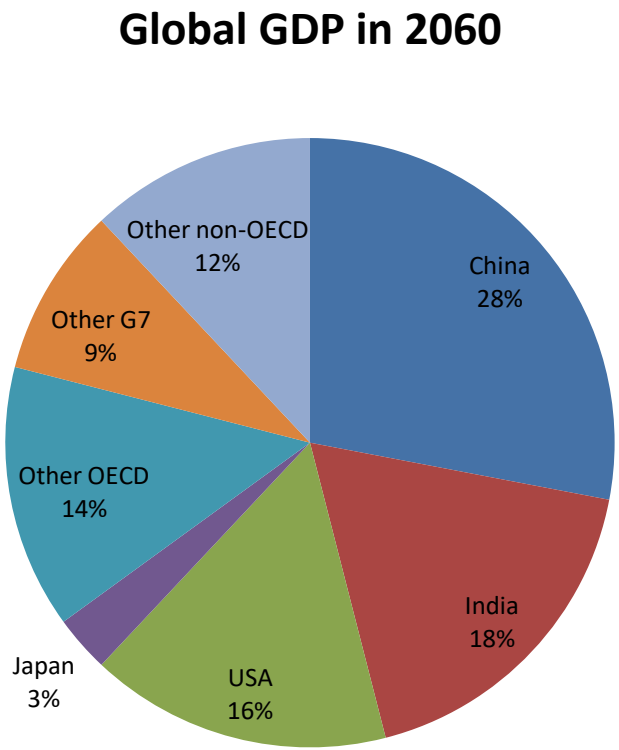


At predicted rates of growth, income per head in China will roughly increase eightfold by 2050, although Chinese incomes will still only be around one-third of those in the USA or UK

Most predictions suggest real incomes in the UK and Wales will at least double over this period

Source: HSBC – World in 2050

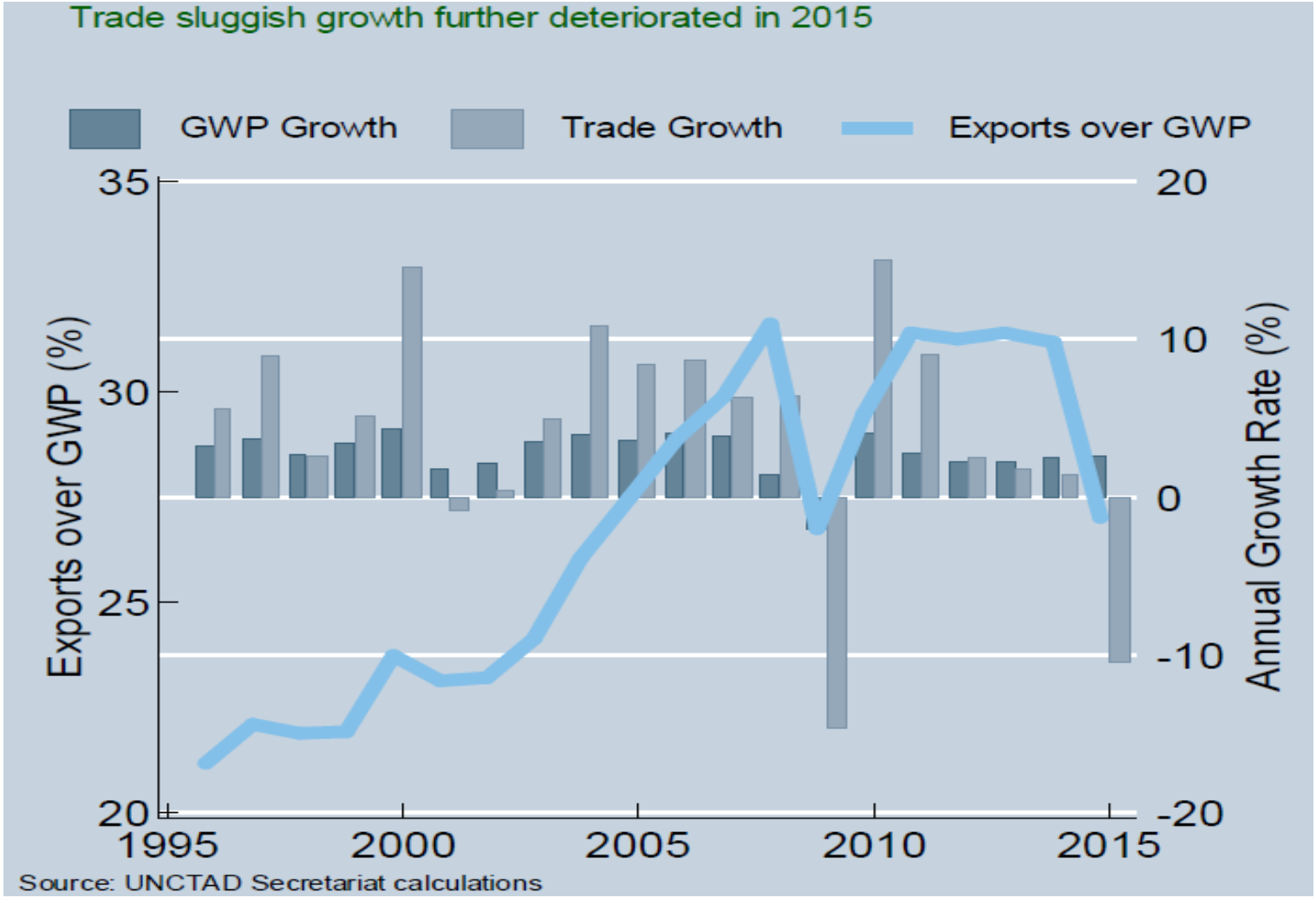
On most scenarios, continued growth and catch-up is projected to shift the global economic centre of gravity, with major political and social implications:



The UK's relative position in the global economy is shifting radically - in 1980, the UK economy was around three times as large as the Chinese economy.

Note: Data in 2005 purchasing power parities
Source: OECD Long Term Growth Scenarios 2013

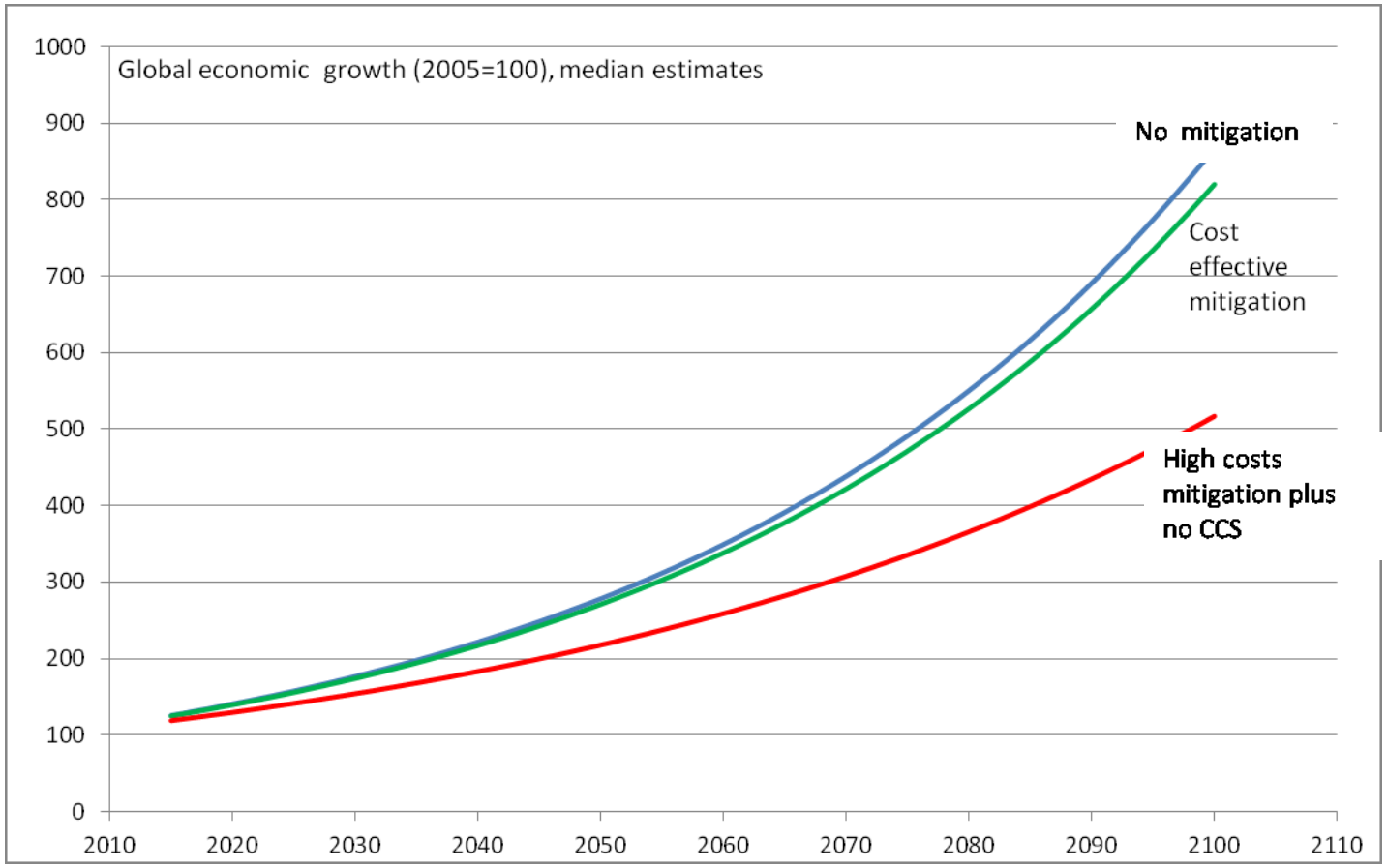
Recent years have seen a slowdown in the growth of world trade, and a decoupling from global economic growth:



Global trade continued

- Global trade was growing faster than GDP over most of the period since the early 1990s, but has slowed in recent years, with a particularly sharp decline in 2015
- The figure for 2015 was particularly affected by a reduction in commodity prices - a one-off effect
- The more persistent factors behind the slowdown may reflect the ending of a transitional phase of particularly rapid growth in manufacturing in large developing countries, including China
- Other studies have suggested that global data flows have continued to increase, suggesting that in some respects rapid globalisation may be continuing
- Pressure for protectionist policies in developed countries may in the future further limit trade growth; most economic evidence suggests that this would come at the cost of slower economic growth for those countries.

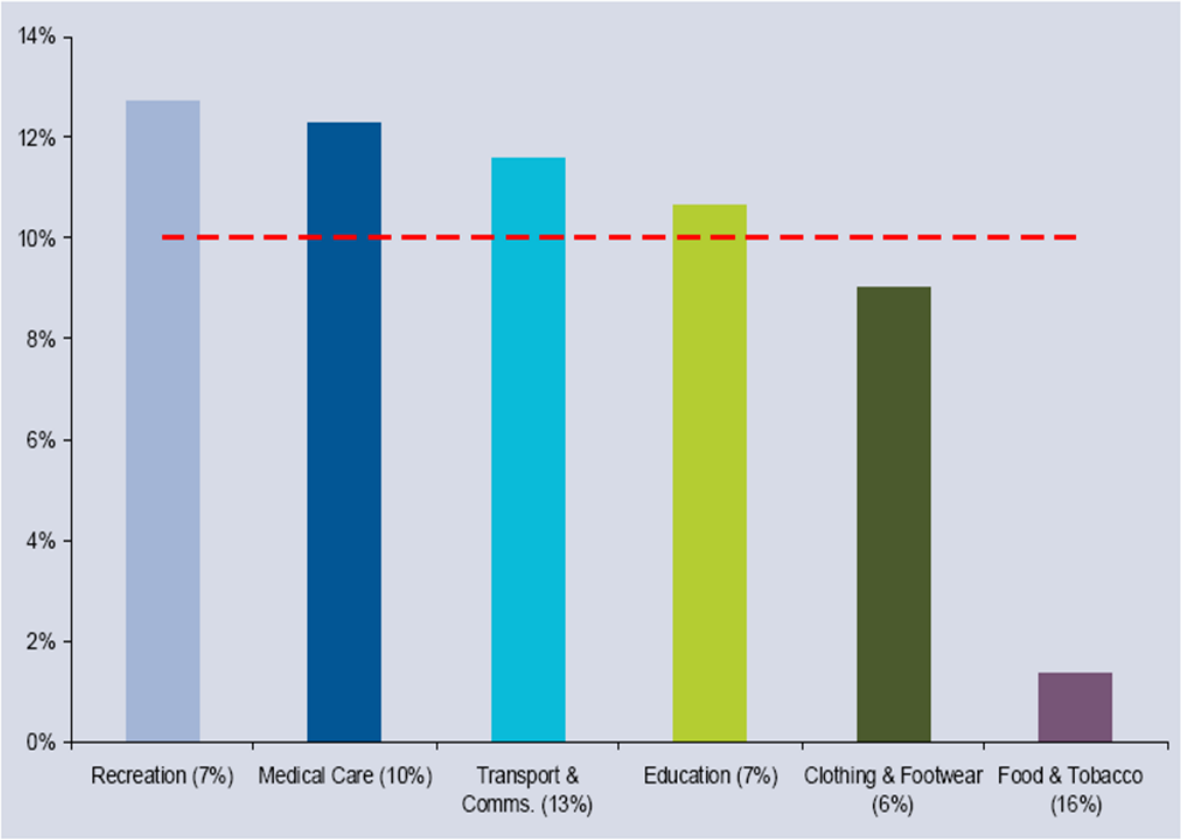
IPCC showed that cost-effective mitigation of greenhouse gases to 450ppm would address the most severe risks of climate change whilst being compatible with continuing economic growth; IPCC also showed that the choice of cost-effective mitigation is very important



Note: The no mitigation" scenario does not include the costs of un-mitigated climate change since these are best expressed as risks rather than central estimates.
Source: IPCC

As people – and countries – get richer, their patterns of expenditure change in predictable ways

Change in expenditure following a 10% change in income



Source: W. Michael Cox and Richard Alm, Federal Reserve Bank of Dallas, 2007 Annual Report. "Opportunity Knocks"
Note: Share of overall consumer expenditure given in brackets

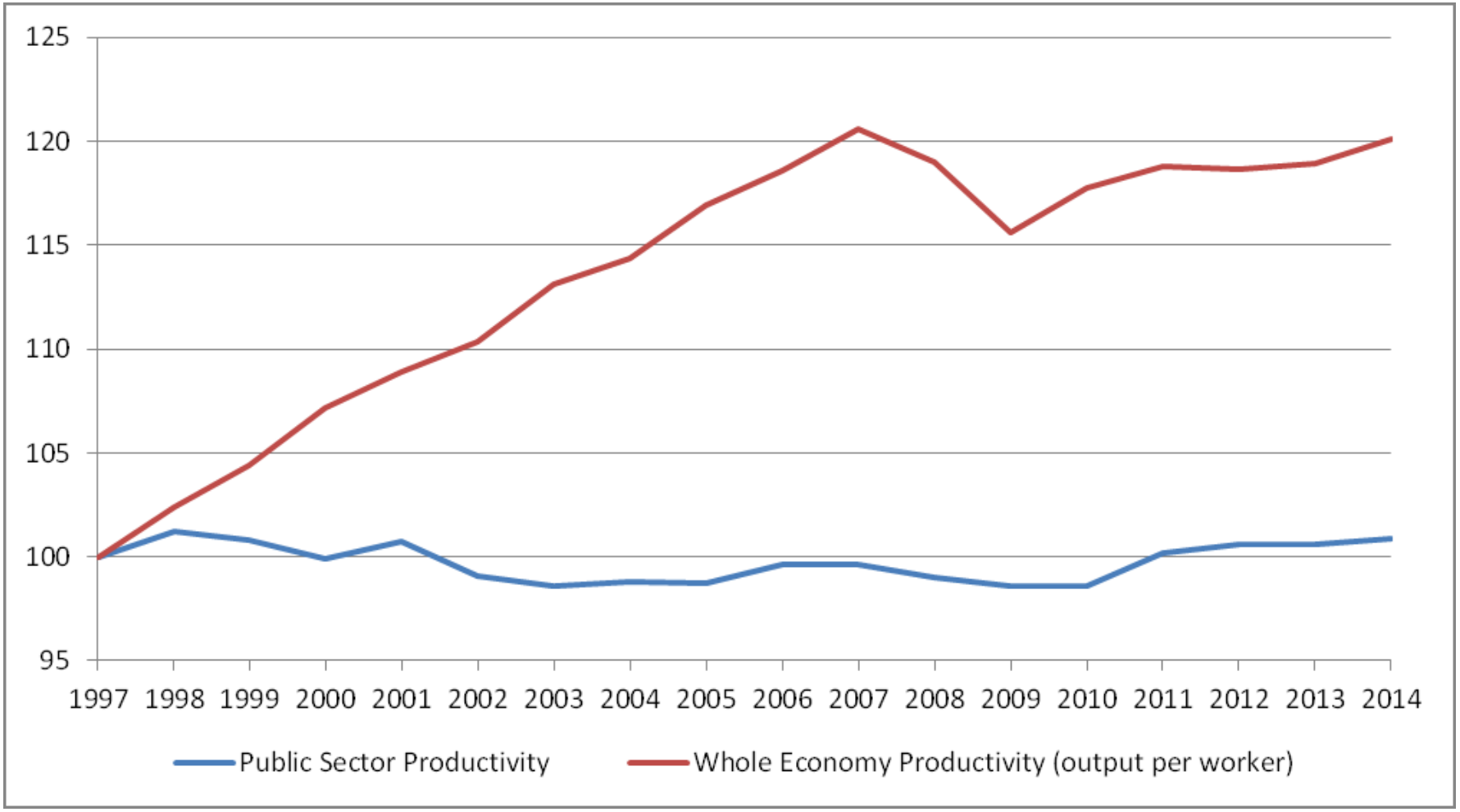
Full list, >10% expenditure:

1. Recreation
2. Medical care
3. Other
4. Communications & transport
5. Household operations
6. Housing and utilities
7. Education

Full list, < 10% expenditure:

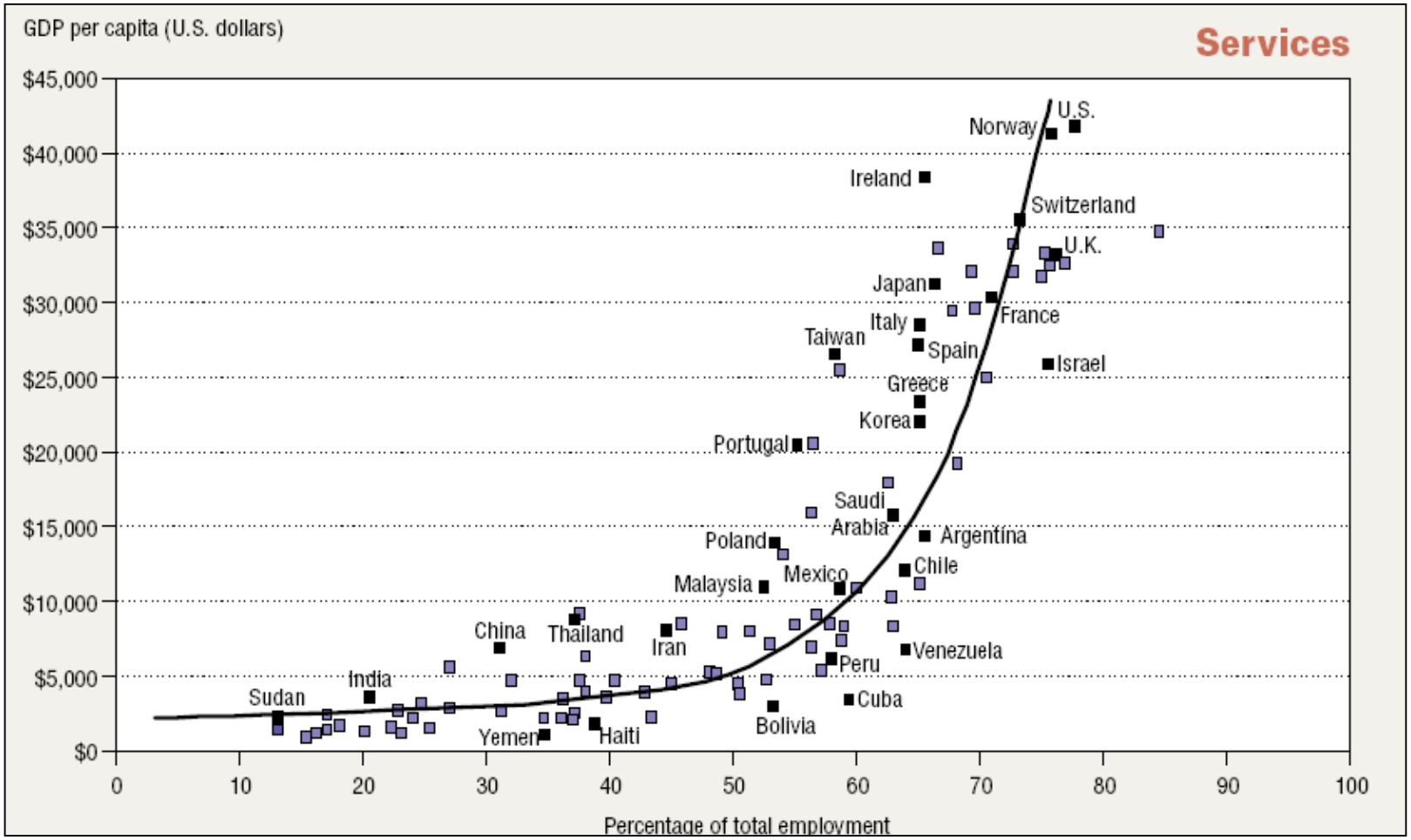
1. Clothing and footwear
2. Food at home and tobacco

Not only do people want more public services (and to a higher standard) as they get richer, costs tend to rise faster than average, since public services tend to remain labour-intensive:



Note: Data for UK but reflects more general position

The changing pattern of demand, coupled with rapid productivity growth in manufacturing, means that growth brings a shift towards employment in services:

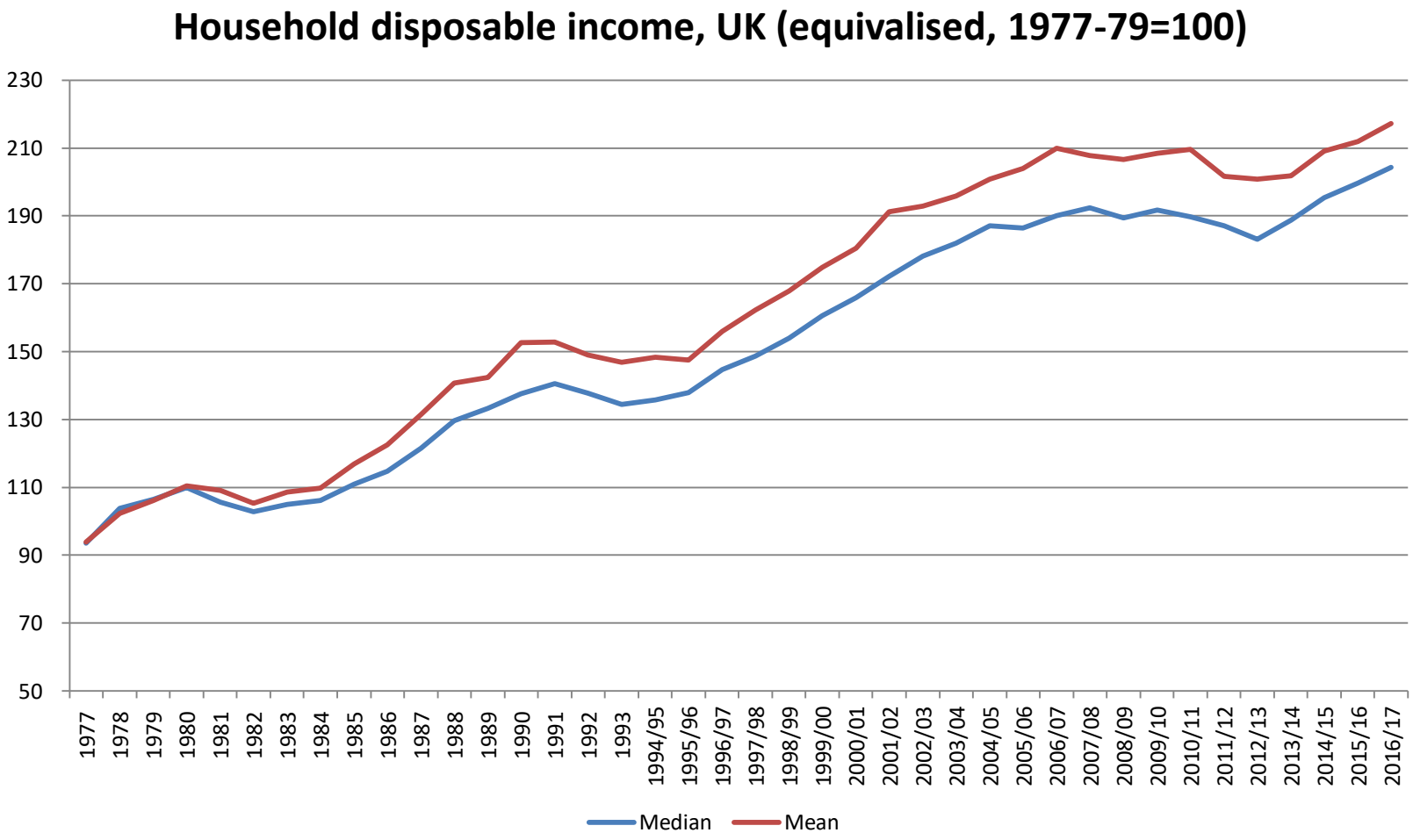


Changing pattern of demand continued

- The combination of productivity growth driven by innovation (especially automation) and the trend to services is the main factor behind the loss of jobs in manufacturing industry in developed countries

- Trade and the international relocation of manufacturing is very much secondary, and may be of negligible significance in quantitative terms (except over the short term in areas where there are concentrations of vulnerable sectors)

The UK has experienced growth of real incomes of around 2% per year for many decades. But the Great Recession produced a prolonged hiatus in the rate of income growth:

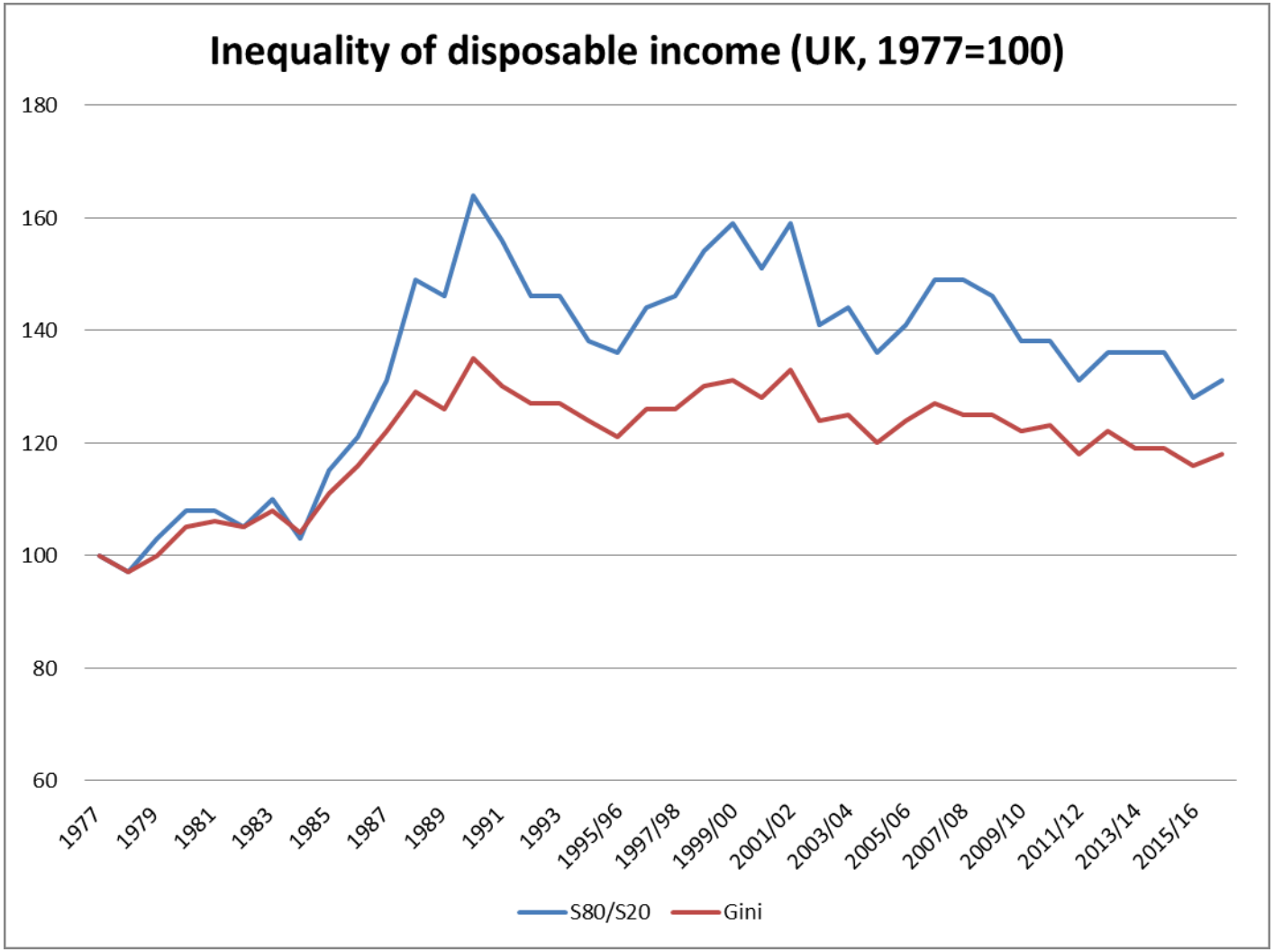


Source: Office for National Statistics (ONS)

Income growth continued

- The slowdown in the growth of incomes following the great recession was unprecedented in recent times
- Similar slowdowns were seen across developed countries
- The recovery in income growth has reflected a strong labour market performance, with productivity growth remaining sluggish across developed countries, and particularly in the UK (see later). It therefore remains to be seen whether the recovery in income growth is sustainable
- Some commentators have suggested that a reduction in innovation has been a contributory factor in the productivity slowdown; this remains a matter of speculation

UK income inequality rose sharply in the 1980s, but has been stable or fallen since:



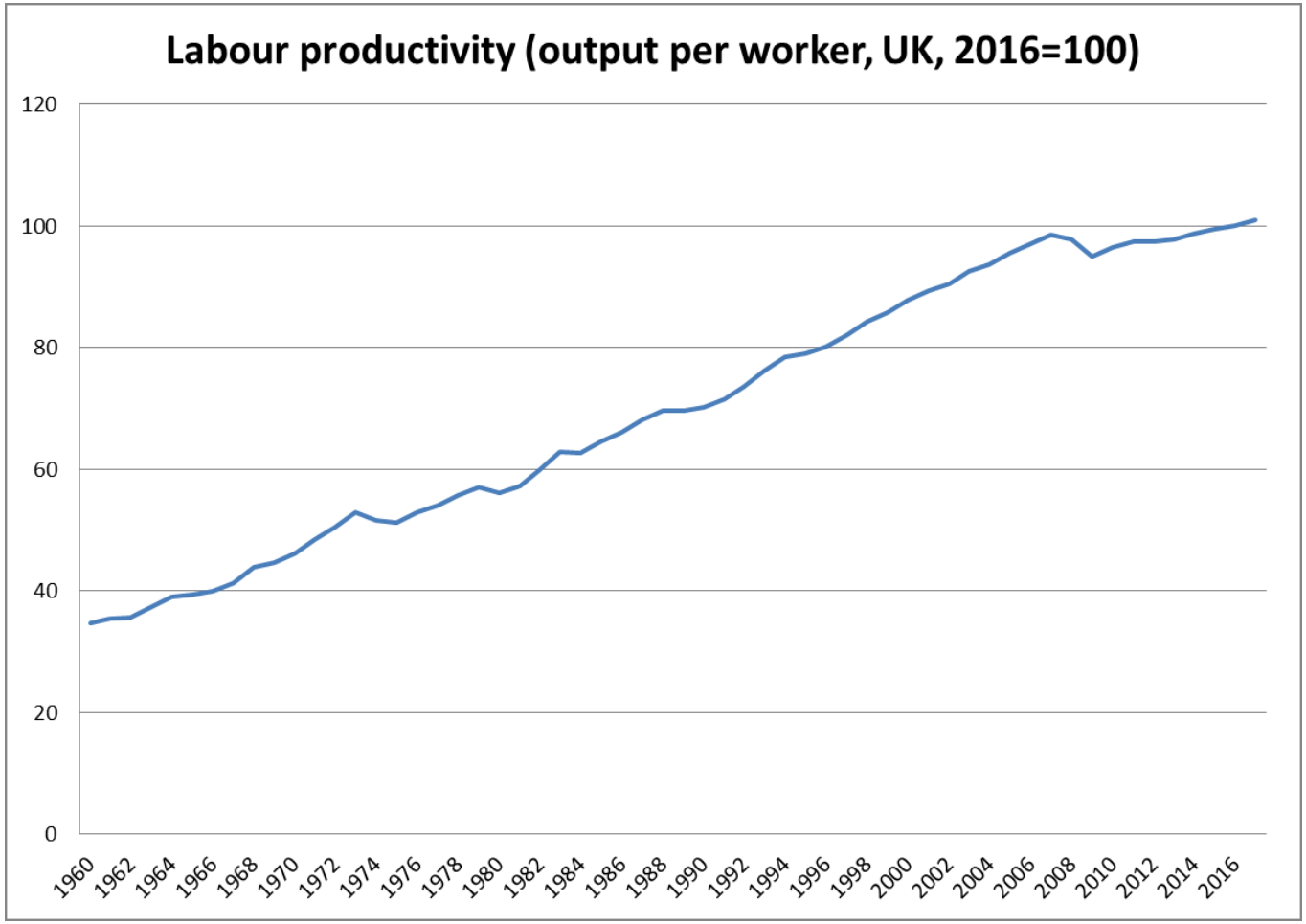
S80/ S20 is the ratio of the total equivalised disposable income of the richest fifth of the population to that of the poorest fifth of the population.

Source: ONS

Income inequality continued

- Contrary to some popular commentary, income inequality has not generally increased across the UK in recent years
- However, a small proportion of those with the very highest incomes have continued to "pull away" from the rest (not shown)
- The IFS and others expect inequality to increase over the next few years as welfare reforms continue to take effect

Reduction in productivity growth since Great Recession (with a similar pattern seen across developed countries); if productivity growth does not revive, future growth is threatened:

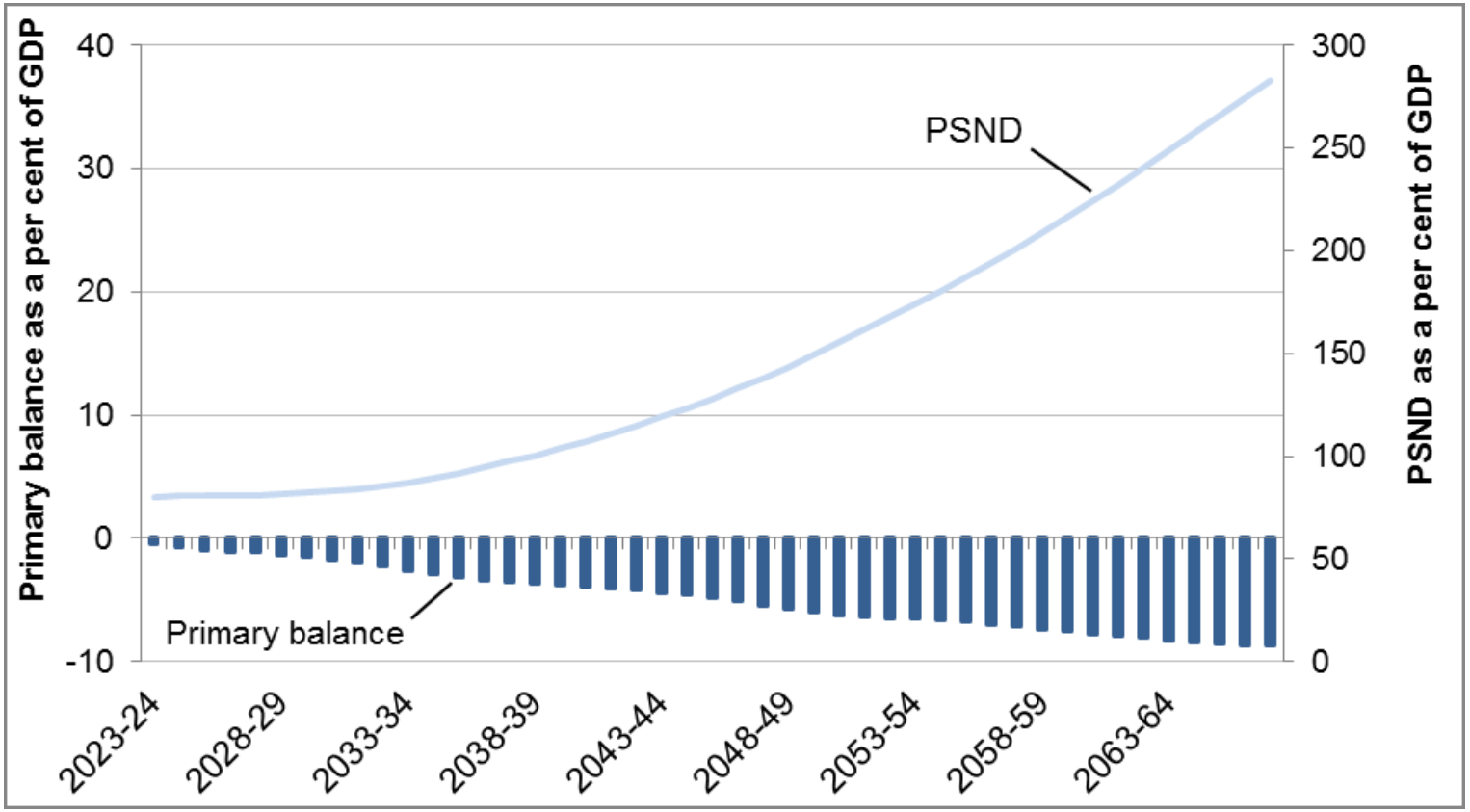


Source: ONS

UK labour productivity continued

- Similar slowdowns in productivity growth (albeit to a varying extent) have been seen across developed countries
- It is unclear to what extent this slowdown reflects temporary factors (such as the after-effect of the Great Recession) or a more permanent shift (such as would result from a slower pace of innovation or an aging population
- Most mainstream forecasters, including the OECD, continue to expect the rate of productivity growth, and therefore of economic growth, to revive over the medium term

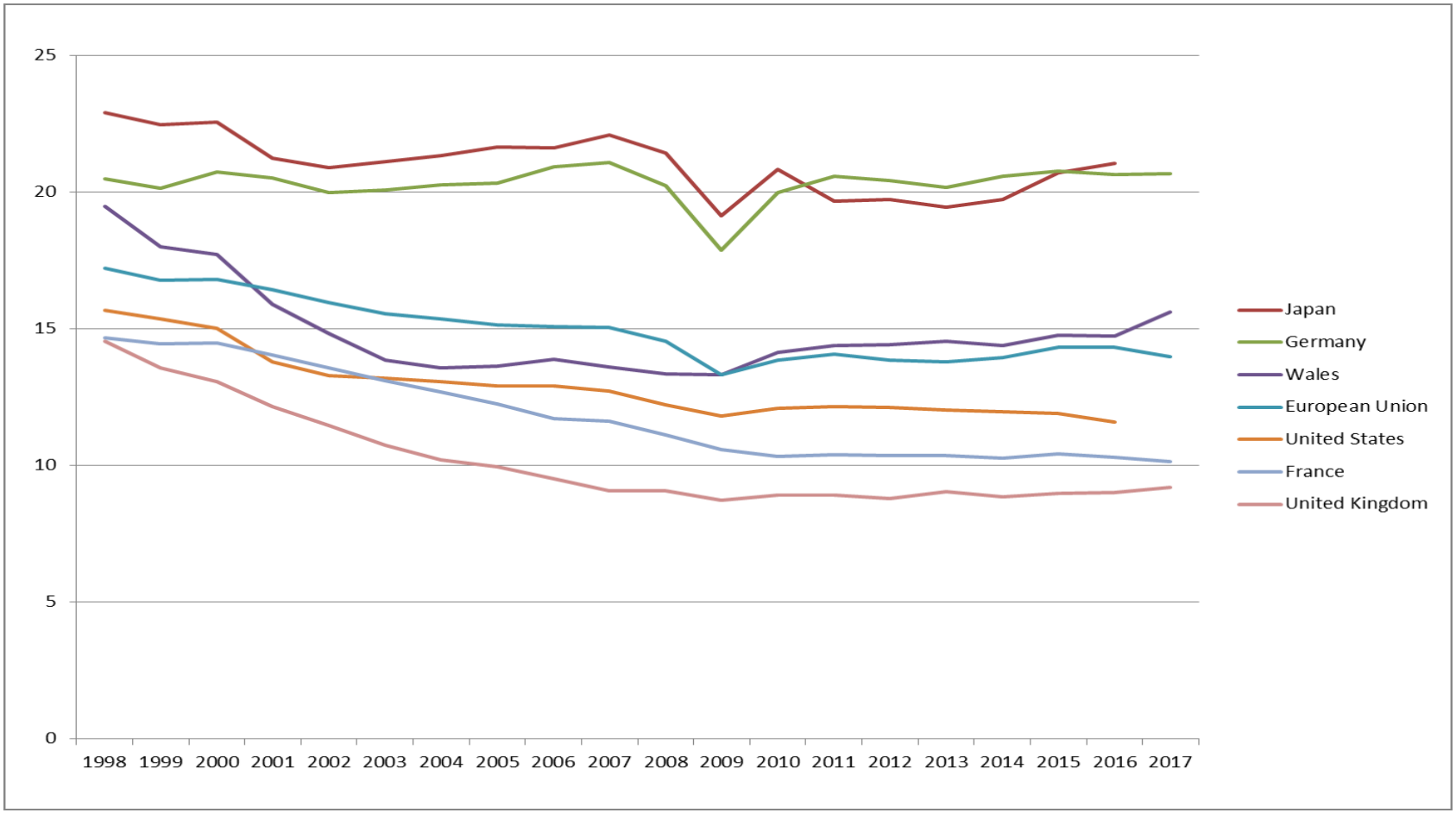
Even on their current assumption that productivity growth will revive, the OBR's central projections suggest the UK's fiscal position is unsustainable over the long run, partly due to population ageing; tax increases or spending reductions would be required to restore budget balance and stable debt:



Note: Primary balance is the excess of public spending over tax revenues before interest payment; PSND is public sector net debt

Prior to the Great Recession, manufacturing's share of GDP was on a long downward trend in UK and in Wales, as in other developed countries; the trend in employment was even more marked (due mainly to increased automation):

Manufacturing (share of GVA, %, World Bank consistent definition)

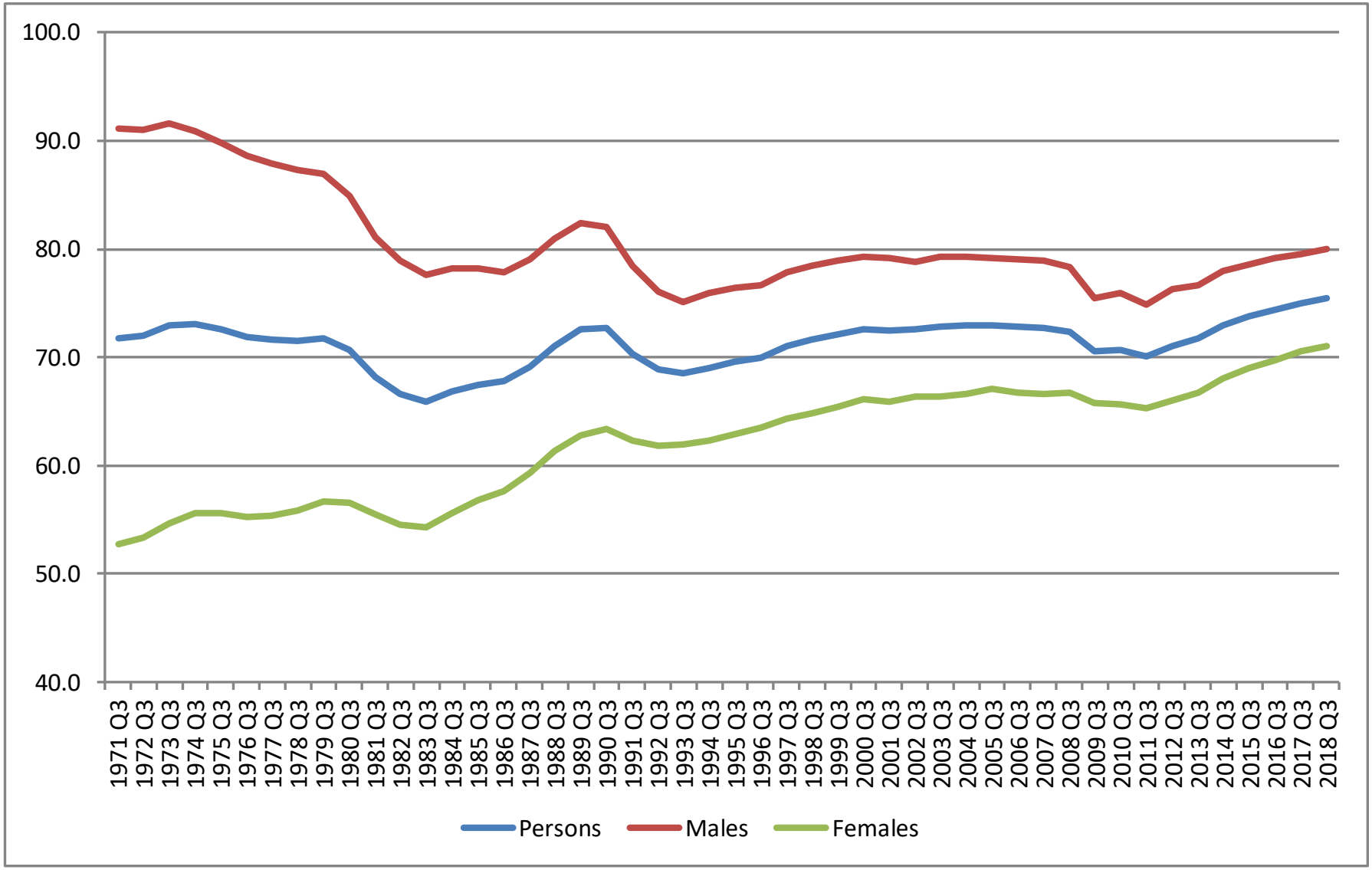


Source: World Bank and WG

Manufacturing continued

- The general decline in manufacturing's share of GDP reflects the tendency of people to shift demand towards services as they become more affluent
- Evidence suggests globalisation and out-sourcing are relatively minor factors in the decline of employment in manufacturing in developed countries; automation is far more important over the long run
- Manufacturing's share of GDP is relatively low in the UK, but not an outlier; Wales is more typical of developed countries
- The low share of manufacturing in UK GDP probably reflects the UK's relative specialisation in financial and business services, and, until recently, in oil and gas

Employment rates: UK, ages 16-64

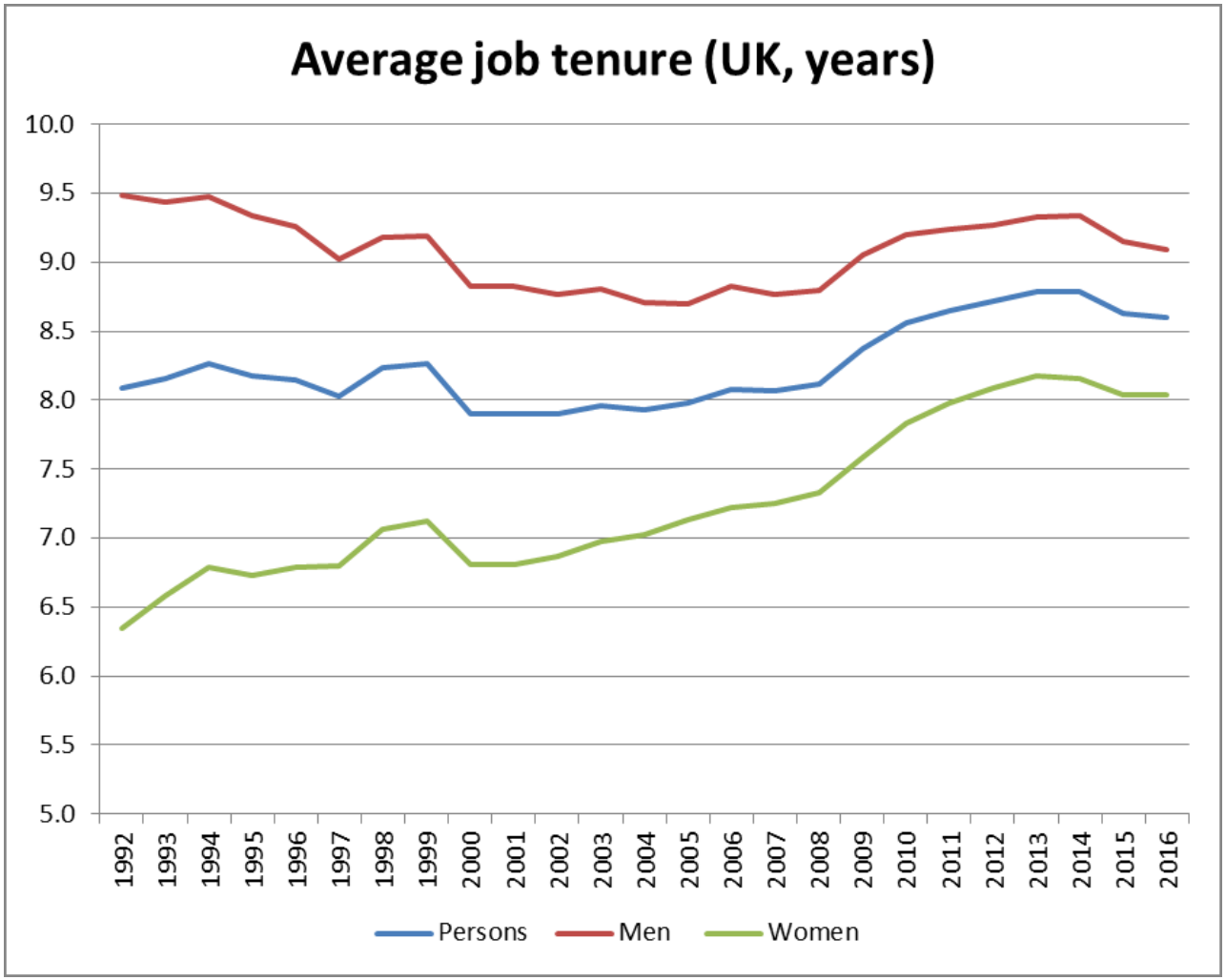


Source: Labour Force Survey, ONS

Employment rates continued

- Little sign that new technology and automation has so far resulted in an overall shortage of jobs
- More new jobs have been created as a result of increased demand than have been lost due to automation
- There is no guarantee that this will continue into the future - but also no reason to assume that it will not

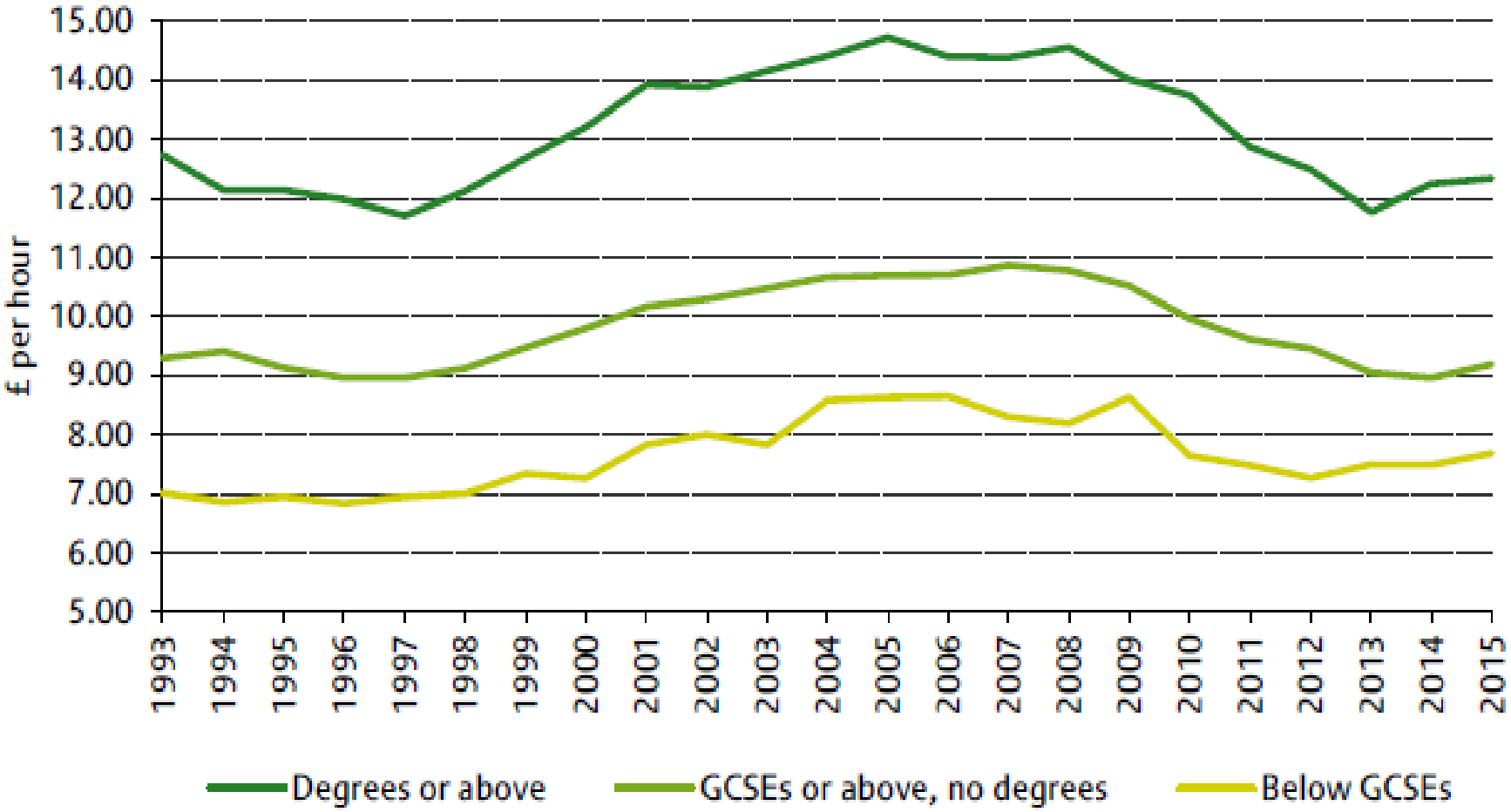
Overall, no recent trend for people to spend shorter periods in jobs, despite the apparent growth of the "gig" economy:



Source: OECD

There has been an increase in the numbers of people on zero hours contracts and in other forms of employment that are sometimes regarded as less secure, but so far the scale of the impact has been limited at the "headline" level; one impact of the recession was to increase average job tenure as voluntary separations reduced

Pay is strongly linked to qualification level, with little sign that the strength of the relationship has changed over recent decades - despite the big increase in numbers of people with higher level qualifications

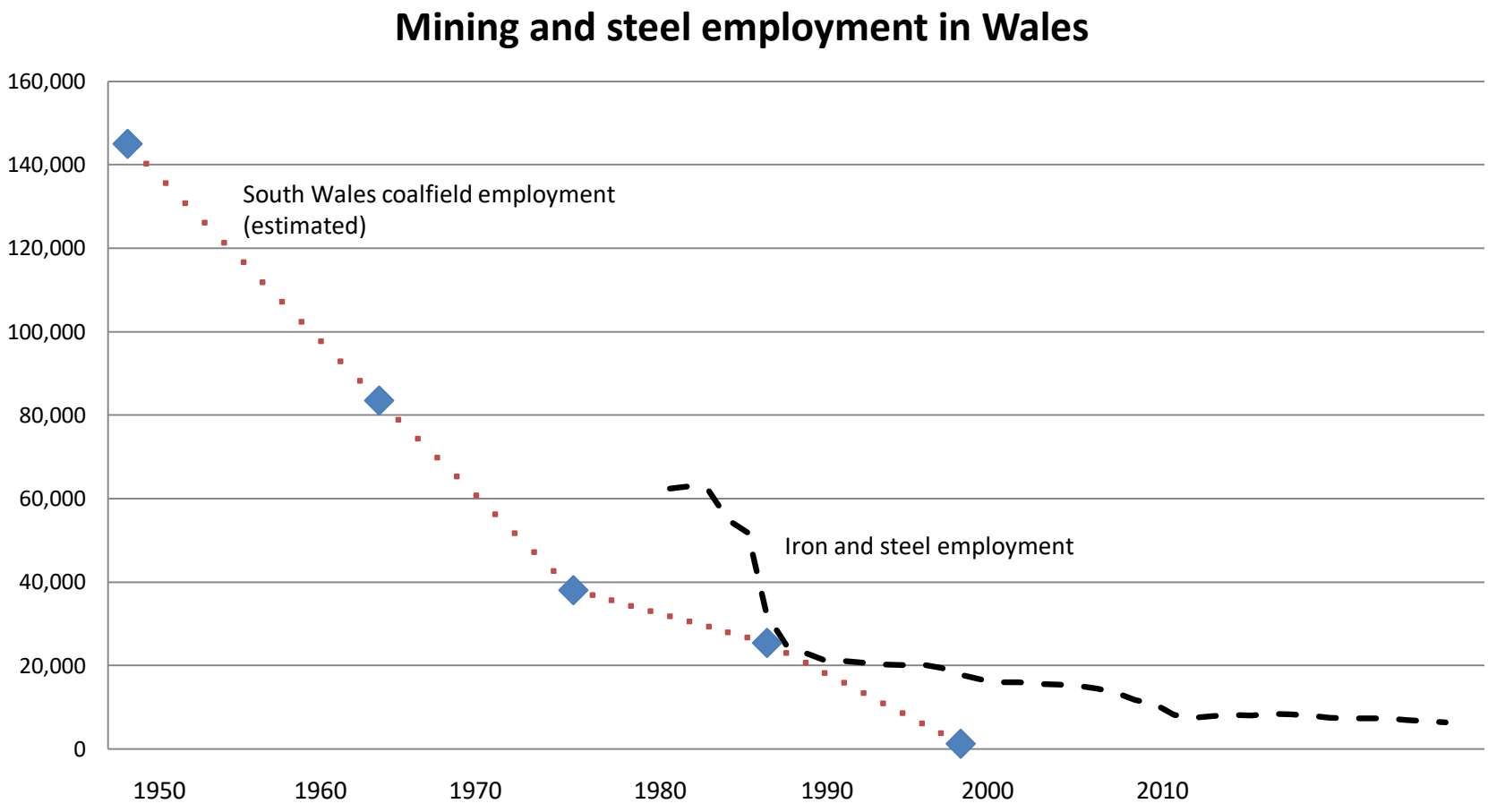


Source: Institute for Fiscal Studies

Pay and qualifications continued

- There may be some sign of a weakening of the pay premium associated with first degrees in recent data - but this is offset by some strengthening in the pay premium associated with postgraduate qualifications
- The average figures shown in the chart mask wide variations depending on subject, institution and grade
- Some STEM subjects, and other subjects with a quantitative component, tend to show higher returns

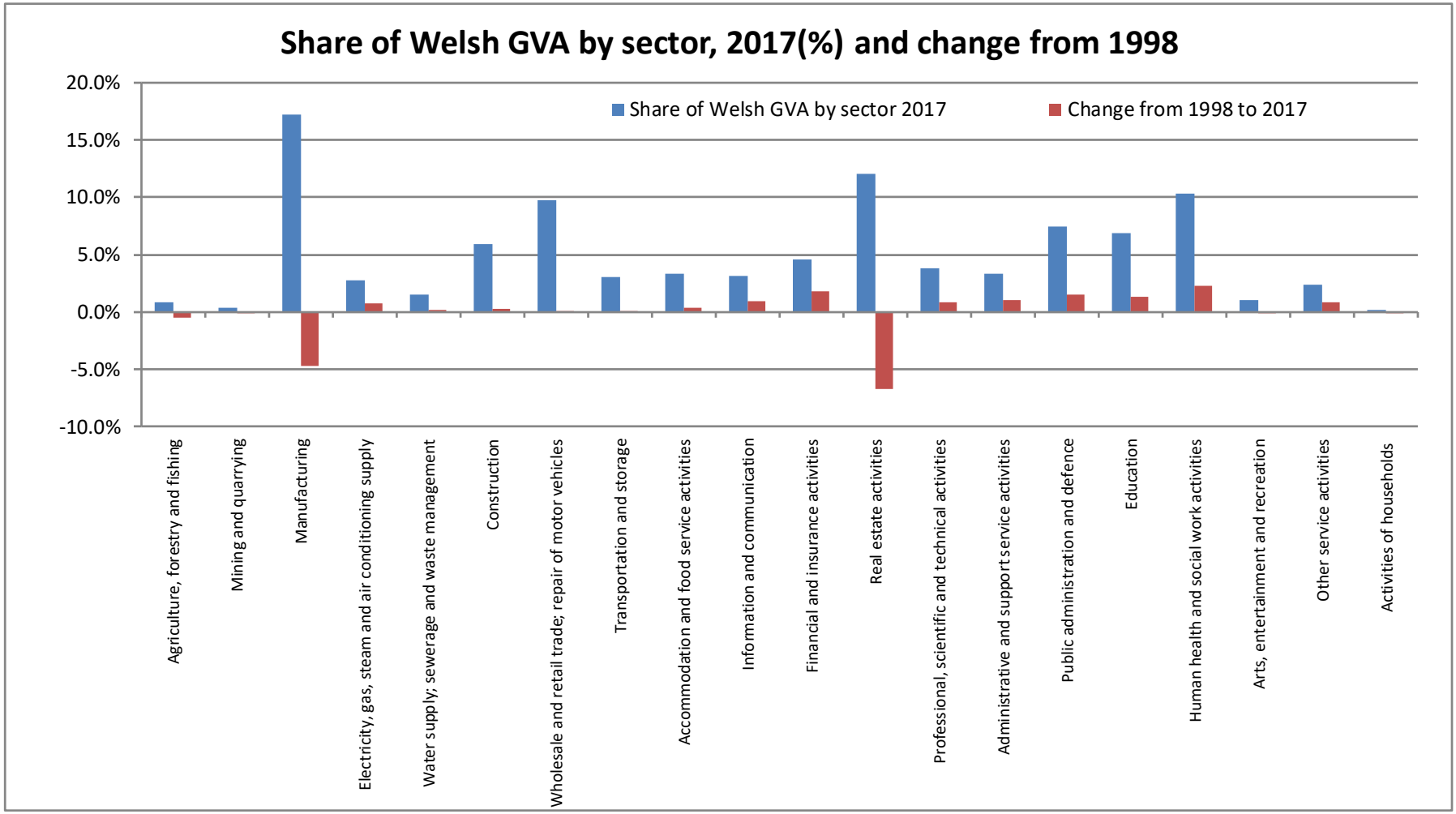
The major decline in employment in "heavy in industry" in Wales is long past - but the legacy remains:



Source: "Coalfield regeneration: dealing with the consequences of industrial decline", Bennet et al, JRF, 2000, and StatsWales

Note: South Wales coalfield data is illustrative, with trend interpolated between data points. Data excludes coal mining employment in other parts of Wales

Change in industrial structure is an ongoing process, with major change over recent years - and detailed predictions difficult/impossible, particularly in the context of Brexit:



Source: ONS

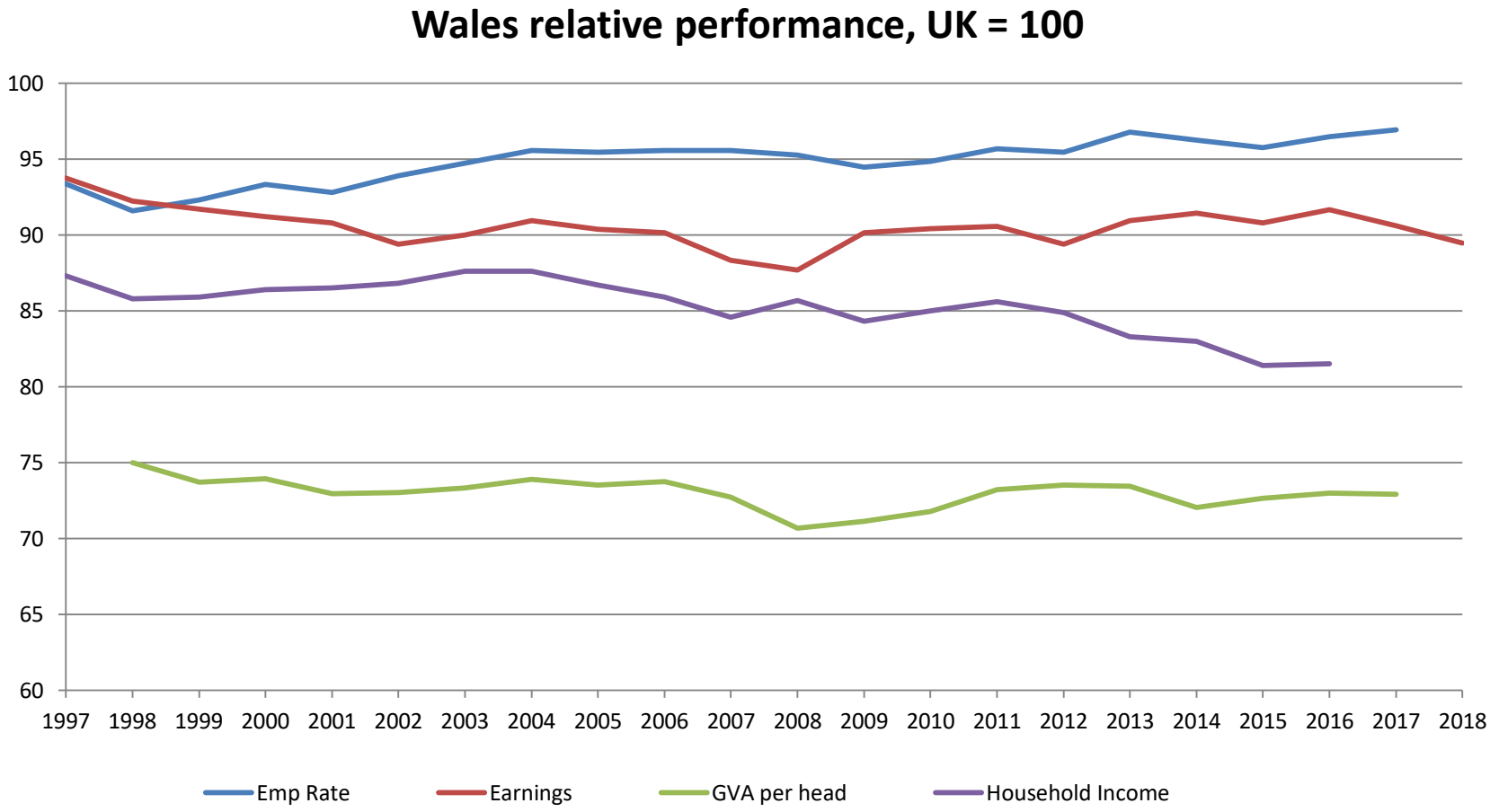
Note: Data for "real estate activities" includes imputed rent, and should be interpreted with caution.

Welsh GVA by sector continued

- Changes in industrial structure reflect a range of influences, including technological developments, competitive pressures and changes in the pattern of consumer demand, all of which are very hard to predict, particularly in the context of Brexit

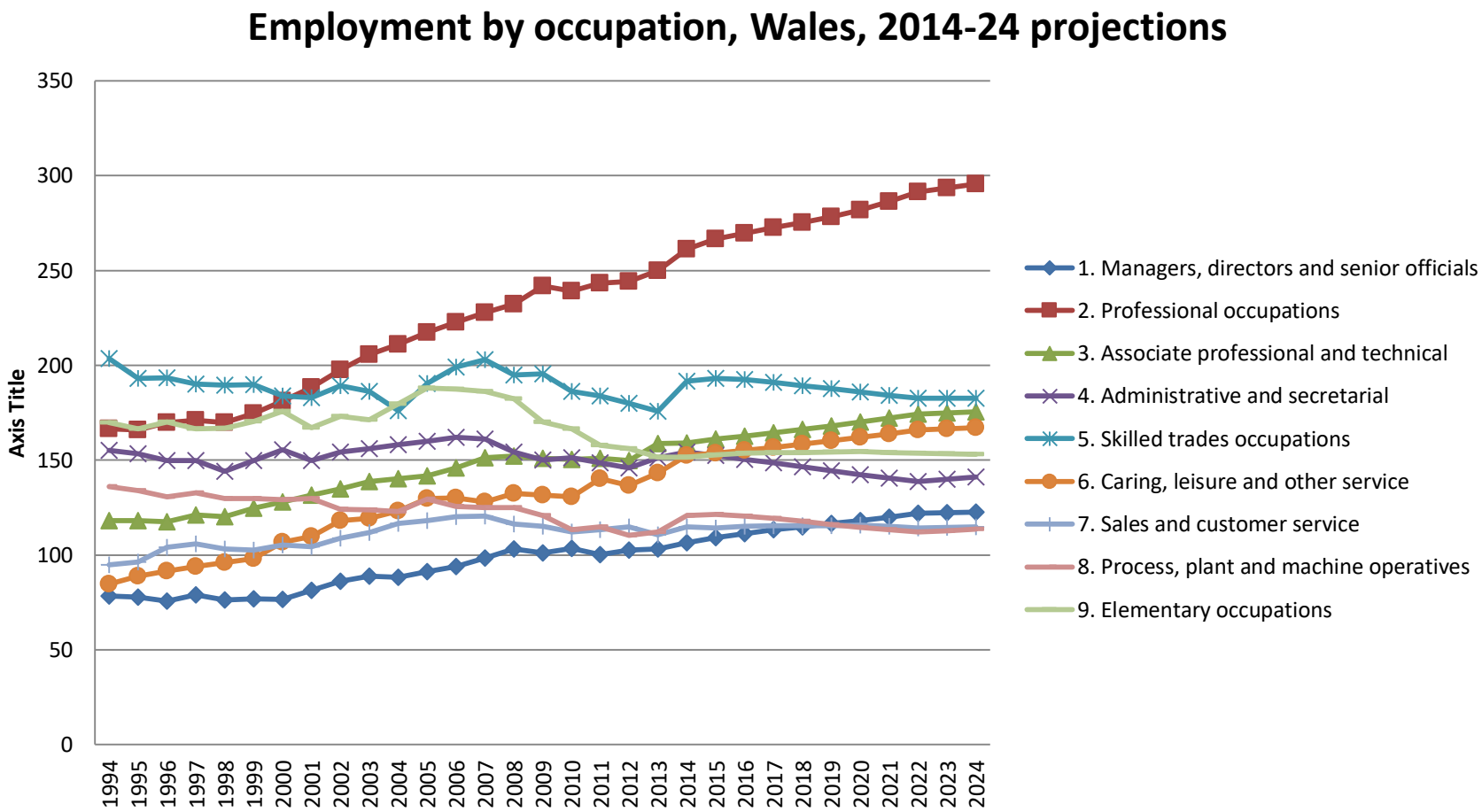
- The economy in Wales is deeply embedded in the wider UK economy, and heavily influenced by economic , social and political developments in the rest of the UK and the wider world

Over the medium term, the economy in Wales broadly tracks the wider UK economy (with fluctuations); Welsh Government policy levers operate mainly over the longer term:



Taking economic indicators "in the round", Wales has kept pace with UK on most indicators since devolution (after marked deterioration in the 1990s), and has outperformed on the employment rate

Previous trends in employment by occupation in Wales are projected to continue, with continued relative growth in more highly skilled occupations, but also in caring, leisure and other services:

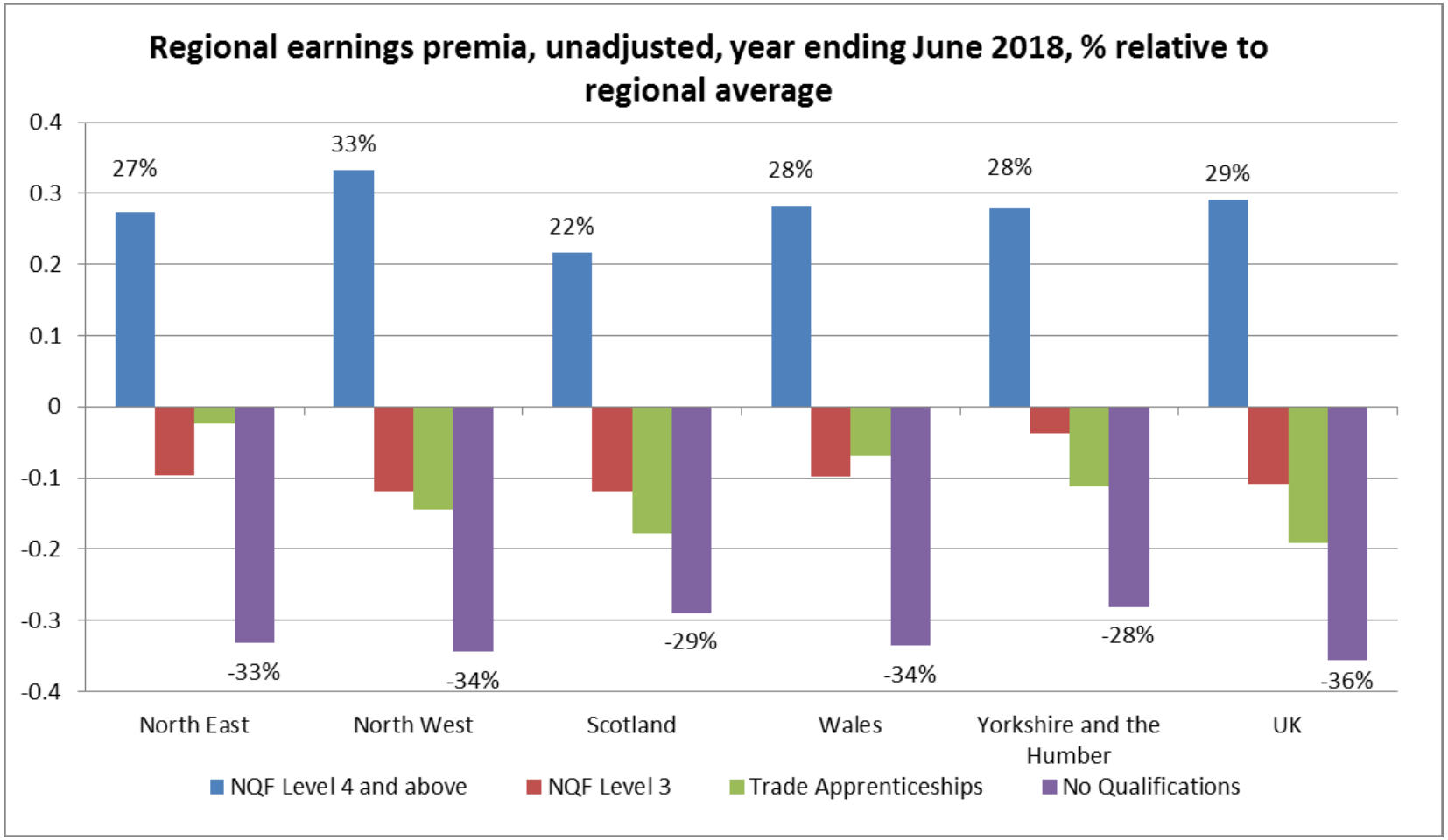


Source: UKCES

Employment by occupation continued

- It is a myth that job creation in Wales has been concentrated in low skill areas
- For lower skilled people, good interpersonal skills are increasingly important
- More labour demand is created by the need for replacement than by the expansion of growing sectors

The wage premium associated with qualifications are similar in Wales to other parts of the UK:



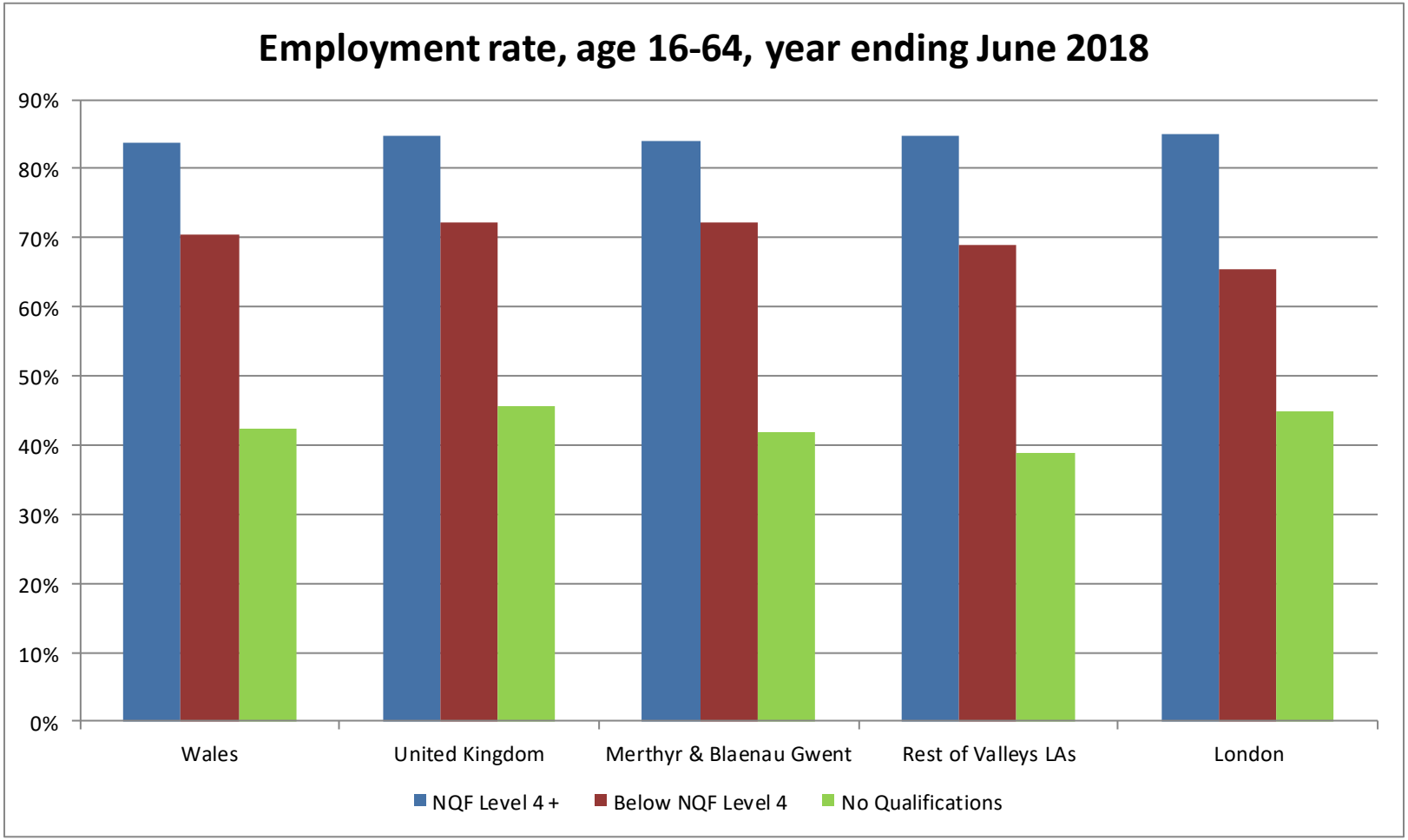
Source: Annual Population Survey

Wage premium from qualifications continued

- Wales has slightly lower wages across all qualification levels (which is not seen in the premium, since these are calculated relative to the pay of those with no qualifications in the same region)

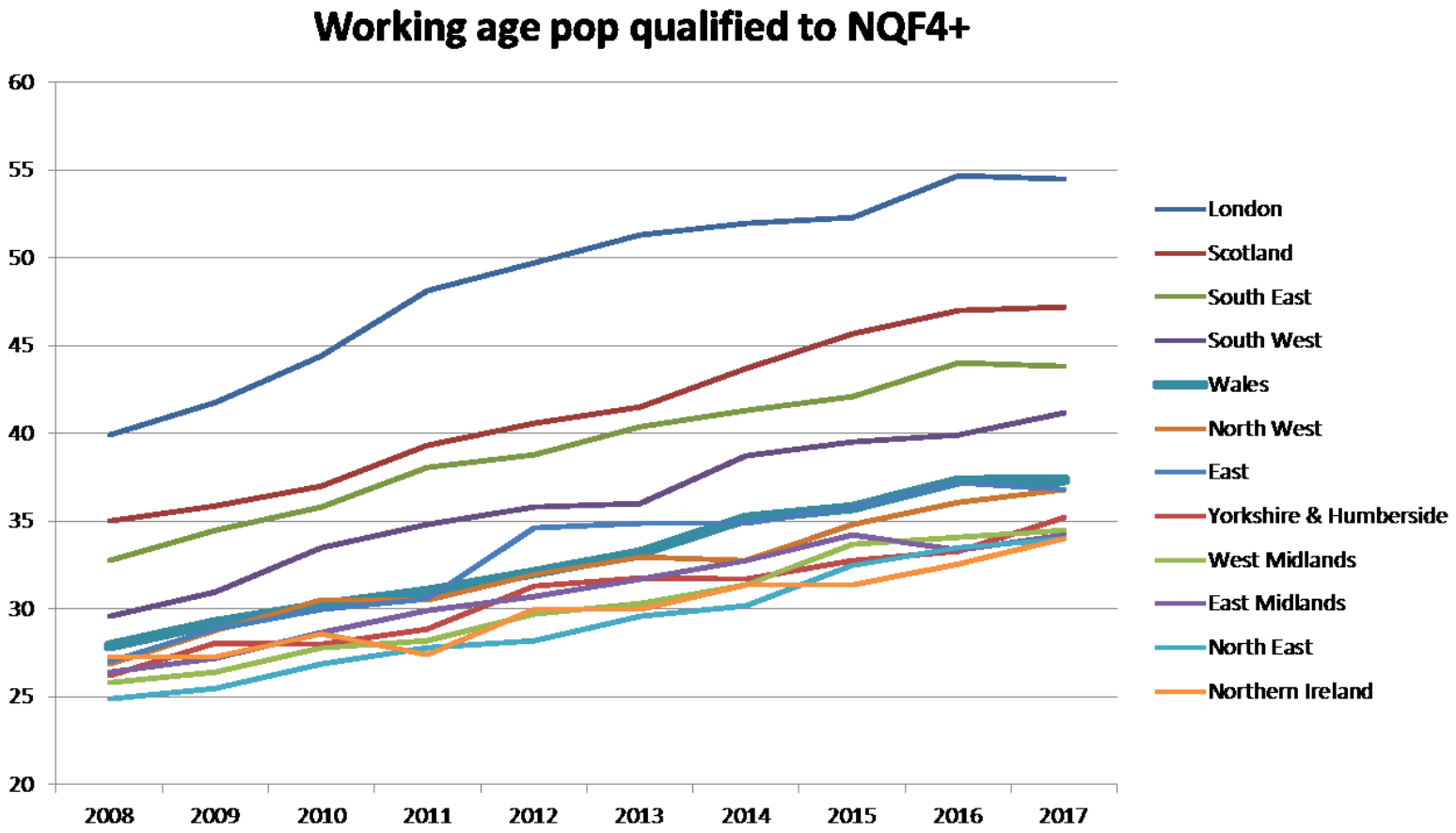
- Wider evidence suggests that this reflects the lower level of "economic mass", or "agglomeration", in Wales; pay and productivity tends to increase with access to centres of economic mass (once other factors, such as skill levels, are allowed for).

Within Wales (and across the UK), people's chances of employment are driven much more by their skills than where they live:



Source: Annual Population Survey

The qualifications of the Welsh population have been increasing in line with the rest of the UK; the proportion of the working age population that has graduate-level qualifications is higher in Wales than in many English regions:

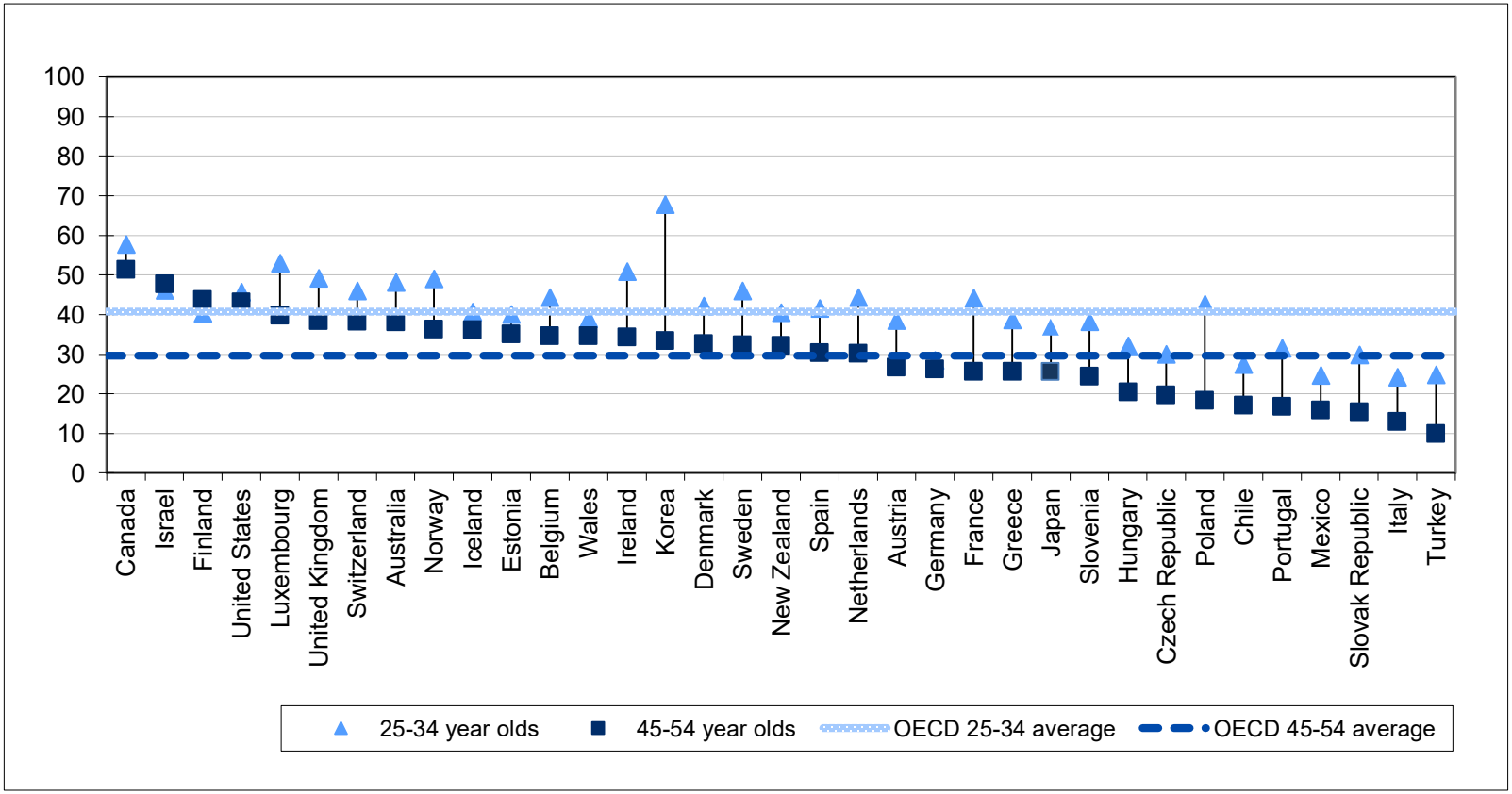


The share of graduates in the working age population in Wales is similar to many parts of England, despite some out migration of young people

Source: Annual Population Survey

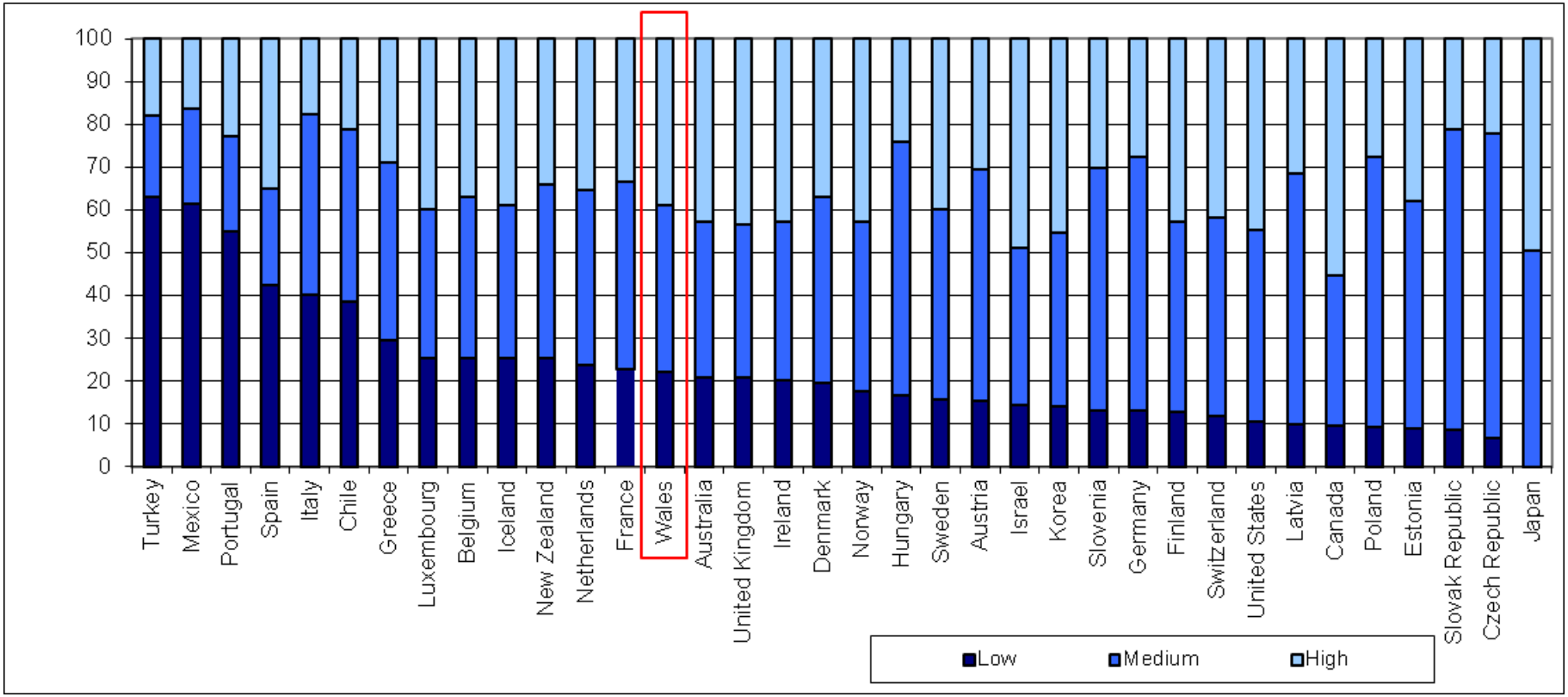
Across developed countries, similar patterns are observed, with upgrading of education and skills being almost universal……however, this pattern is not seen in Wales, with Wales falling behind amongst 25-34 year olds:

Population that attained tertiary education – age 25-34 compared to age 55-64, 2014 (Wales: average 2012-2014)



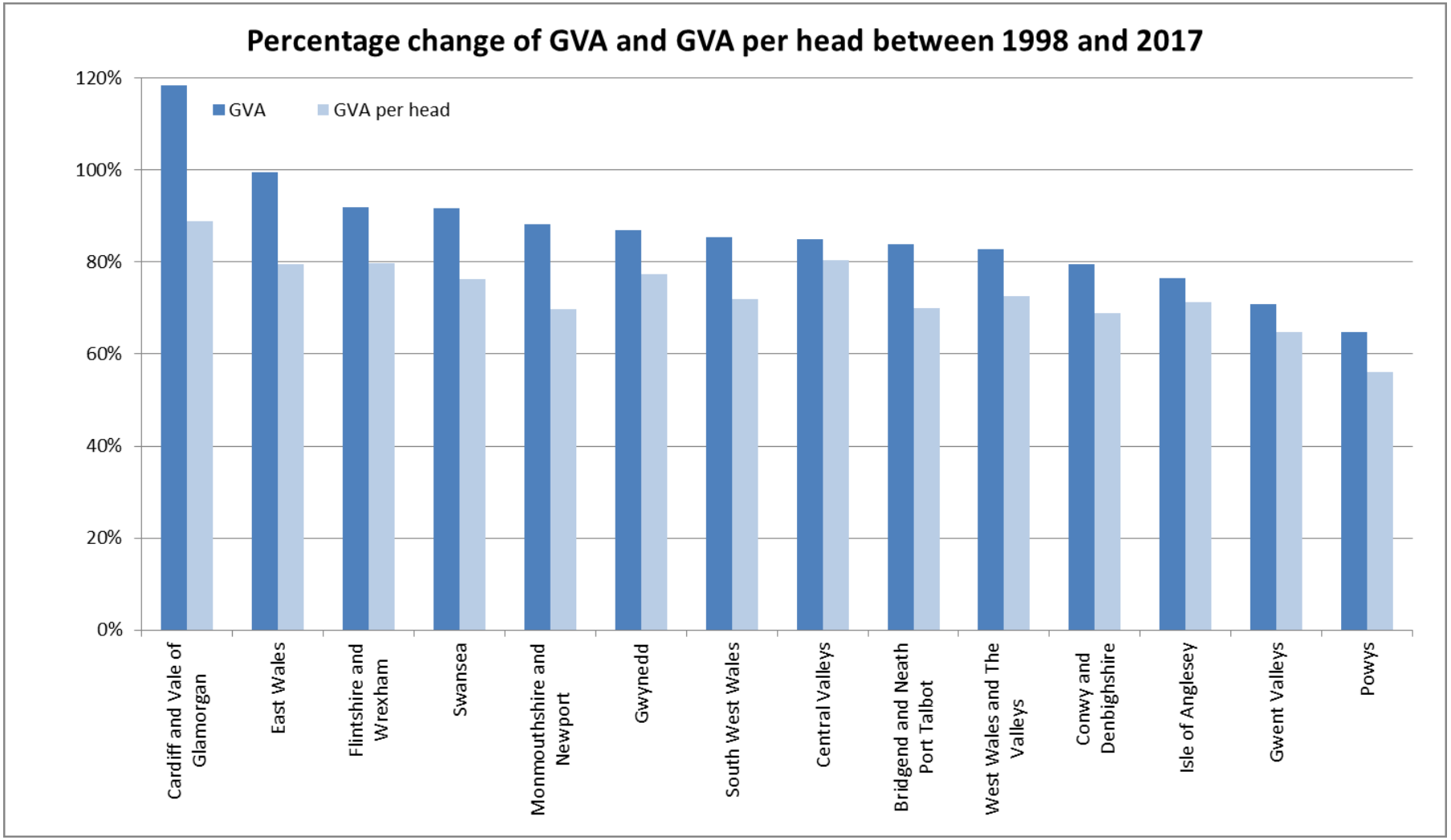
Source: OECD and Welsh Government

Wales (and the wider UK) has issues at the bottom end of the skills distribution Wales



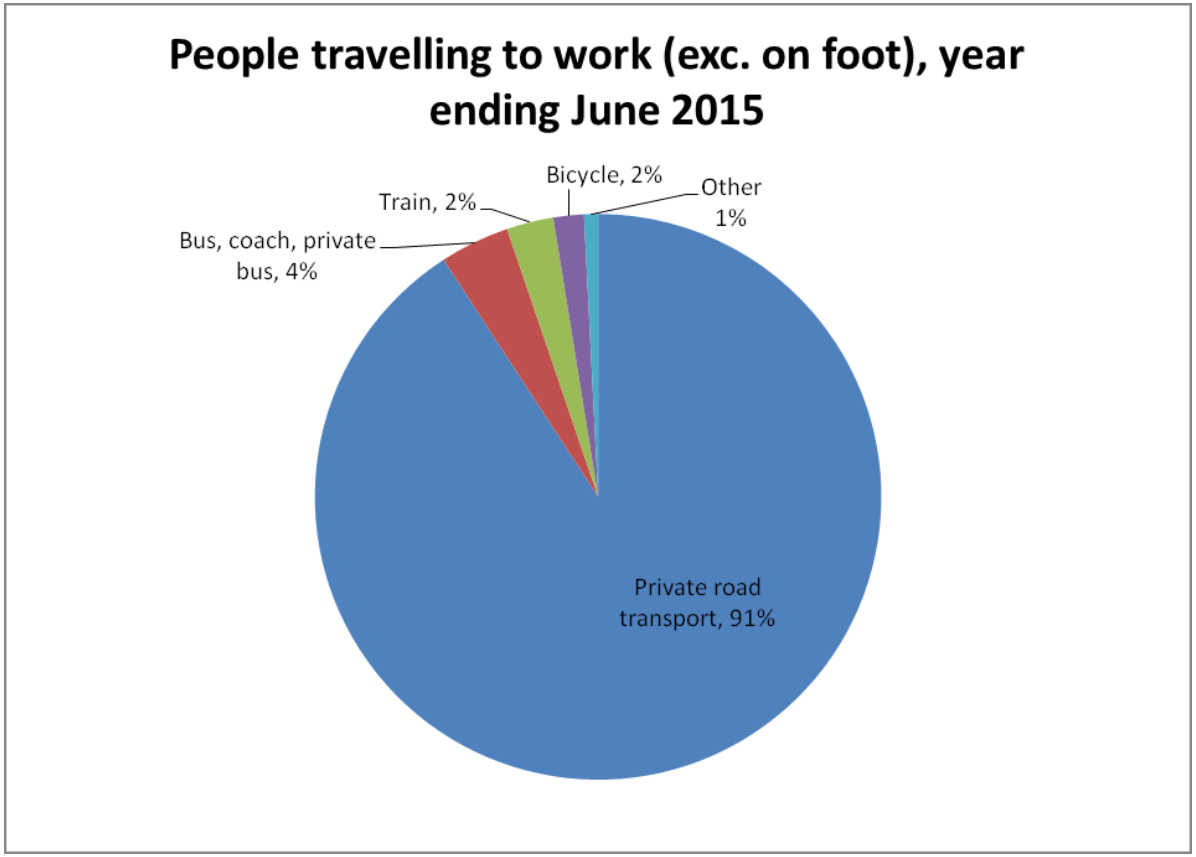
- Across countries, employment rates and wages are much lower for those poor qualifications
- Generally, such disadvantages are increasing over time

Total GVA has increased across Wales in a way which does not suggest that Welsh cities have been the driving force:



Source: Gross Value Added, ONS

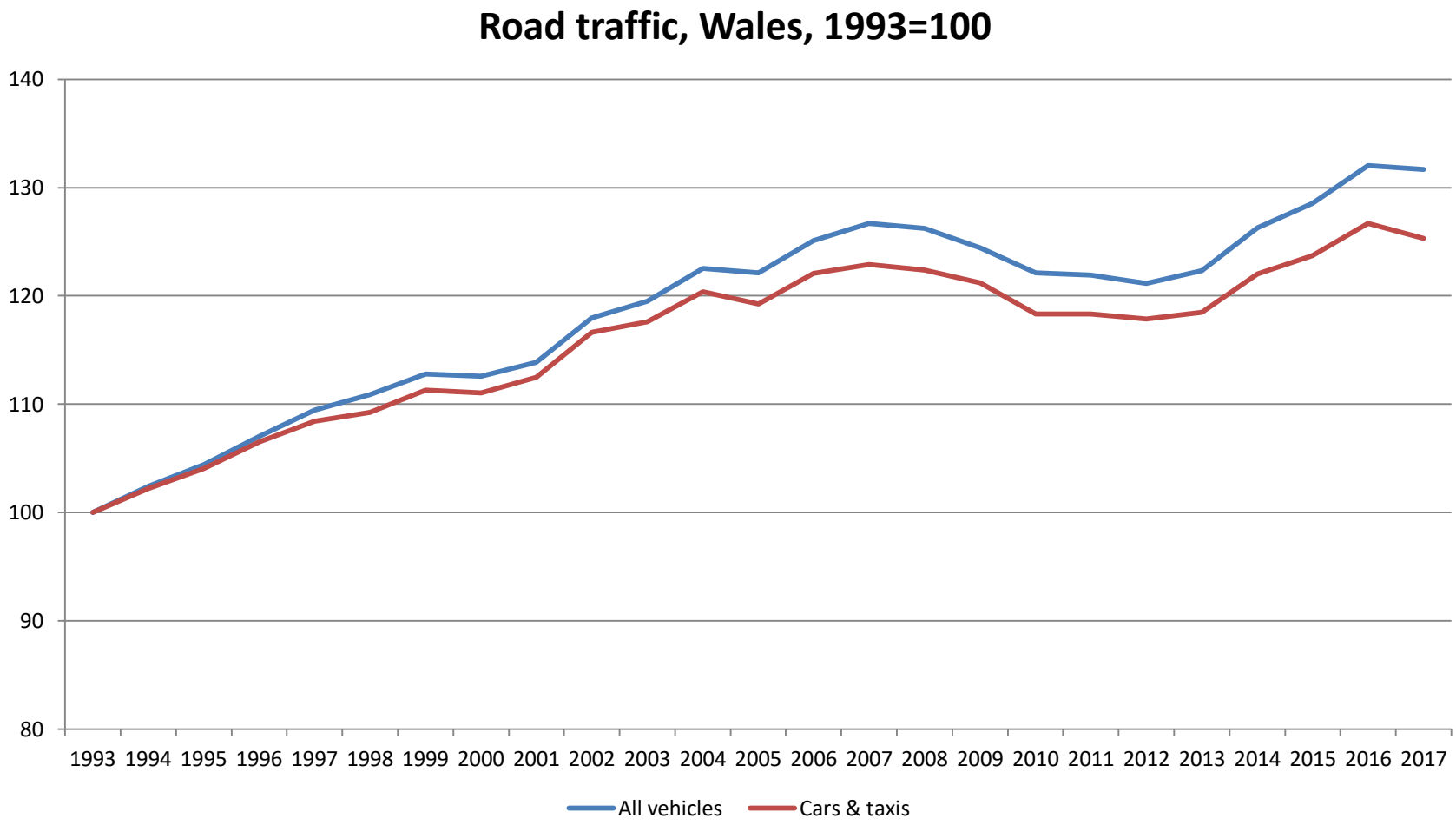
Private transport is the dominant mode in Wales (as elsewhere):



- Private transport use tends to be higher in less densely populated areas
- Studies suggest that public transport improvements alone achieve only limited modal shift

Source: Annual Population Survey

No real sign of growth in road use stalling across Wales prior to recession; traffic peaked in 2008, before falling back and then recovering.



Note: decline for Wales in 2017 is provisional and reflects a reduction only on minor roads where data is volatile

Key uncertainties for the future: Uber; home working; home delivery of goods and services; (semi) autonomous vehicles; zero emission vehicles

Source: Department for Transport

Traffic volumes continued

- Growth in traffic in Wales has been rather higher than much of the rest of UK
- Within Wales, Cardiff had the slowest growth in traffic
- Car ownership in Wales is typical amongst UK countries and regions
- The development of autonomous, semi-autonomous and low carbon vehicles could affect vehicle use in ways that are difficult to predict

Digital communications services: availability in Wales similar to much of the rest of the UK, other than the fastest broadband and 4G mobile services (as at September 2018)

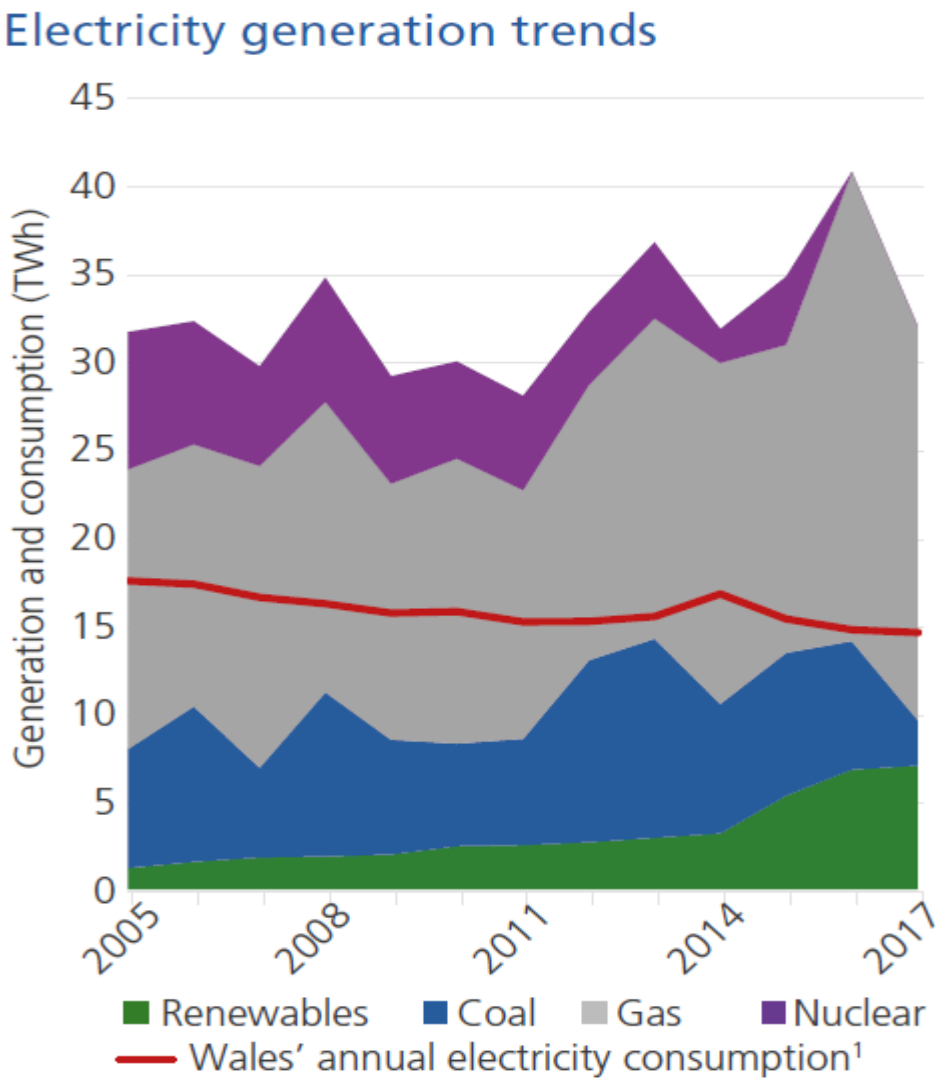
	Wales	England	Scotland	N Ireland	UK
Fixed broadband services (premises)					
Access to download speed of >=10Mbit/s	97%	98%	96%	95%	98%
Access to download speed of >=30Mbit/s (superfast)	93%	94%	92%	89%	94%
Access to download speed of >=300Mbit/s (ultrafast)	29%	51%	44%	38%	49%
Access to full fibre service	7%	6%	4%	12%	6%
Does not meet universal service minimum*	3%	2%	4%	5%	2%
Mobile services – 4G					
Premises covered by all operators	69%	78%	75%	57%	77%
Geographic area covered by all operators	57%	82%	38%	79%	66%
Geographic area not covered by any operator	10%	2%	22%	2%	9%
Coverage of major roads (Motorways and A roads) by all operators	53%	70%	46%	61%	64%
Major roads (Motorways and A roads) not covered by any operator	5%	1%	8%	2%	3%
Telephone services (voice) – 2G, 3G and 4G					
Premises covered by all operators	88%	93%	91%	80%	92%
Geographic area covered by all operators	75%	91%	54%	88%	78%
Geographic area not covered by any operator	5%	1%	13%	1%	5%
Coverage of major roads (Motorways and A roads) by all operators	75%	88%	65%	78%	82%
Major roads (Motorways and A roads) not covered by any operator	3%	0%	3%	1%	1%

*download speed of 10Mbit/s and upload speed of 1Mbit/s

Source: Ofcom Connected Nations 2018 (December 2018)

A mixed picture, but Wales is broadly in line with much of the rest of the UK in terms of the availability of digital services

Electricity generation from renewables in Wales:



Wales generated an estimated 32.5 TWh of electricity in 2017, more than twice what it consumes. Wales is, therefore, a significant net exporter of electricity to England, Ireland, and the wider European network.

Approximately 22% of total electricity generated in Wales is from renewables. This generation is the equivalent of 48% of electricity consumed in Wales annually, a five percentage point increase compared to 2016.

For more information on the Welsh Government Future Trends Report 2017, please visit the following address:

http://gov.wales/statistics-and-research/future-trends/

Background data slides are also available on the website for the other Themes of the Future Trends Report: Population; Health; Climate Change; Land Use & Infrastructure; and Society & Culture.