IPPR

REPORT

FUTURE PROOF

BRITAIN IN THE 2020s

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December 2016

Institute for Public Policy Research

CONTENTS

INTRODUCTION

Brexit is the firing gun on a decade of disruption. As the UK negotiates its new place in the world, an accelerating wave of economic, social and technological change will reshape the country, in often quite radical ways. In this report, we set out five powerful trends that will drive change in the 2020s.

1. A demographic tipping point: As the population grows, the UK is set to age sharply and become increasingly diverse. Globally, the long expansion of the working-age population is set to slow sharply.

2. An economic world transformed: The economic world order will become more fragile as globalisation evolves, trade patterns shift, and economic power gravitates toward Asia. At the same time, developed economies are likely to struggle to escape conditions of secular stagnation. The institutions governing the global economy are likely to come under intense pressure as the American hegemony that underpinned the postwar international order fades and the Global South rises in economic and geopolitical importance.

3. Brexit – the aftershock: The economic implications of Brexit are likely to put the country on a lower growth, lower investment trajectory, worsening the public finances, with important consequences for the UK’s economy and living standards. Migration is likely to become more controlled. At the same time, politics – long subservient to a liberalising economic consensus – is likely to become increasingly assertive in seeking to reshape Brexit Britain.

4. Technological transformation – between Star Trek and the Matrix: Exponential improvements in new technologies – computing power, machine learning, artificial intelligence systems, automation, autonomous vehicles, health and resource technologies, and the Internet of Things, among others – are expected to radically transform social and economic life. These changes have the potential to create an era of widespread abundance, or a second machine age that radically concentrates economic power. Which path we take – a future between Star Trek and the Matrix – will depend on the type of politics and institutions we build.

5. The shock of the Anthropocene – instability in an age of natural systems decay: Climate change, biodiversity degradation, and resource depletion mean we will increasingly run up against the limits of the physical capacity of the Earth’s natural systems to reproduce life as at present. The natural constraints of the Anthropocene age – our new geological era in which humans are the primary shaper of the Earth’s ecology and ecosystems – will force us to build a collective, democratic politics of restraint. The alternative is systemic degradation in ecosystems and rising inequalities in the years ahead.

Together, these trends are going to reshape how we live and work, reorganise our social, economic and political institutions, and redistribute power and reward in society. In the longer term, as machine learning and computing power divorces intelligence from consciousness, as improving health technologies allow for biological enhancements and species divergence, and as the final frontier is conquered by space travel, technological and social transformation will increasingly change what it means to be human.

This is the world hurtling towards us, with very different futures and modernities becoming possible. Critically, there is immense potential for technological and economic change to be shaped to create a more abundant, democratic and equal society. However, we will have to better understand how our world is changing, and by what forces those changes are driven, if we are to build that future. As David Bowie said, ‘Tomorrow belongs to those who can hear it coming.’

EXECUTIVE SUMMARY: THE UK IN 2030

PART 1: FIVE MAJOR DISRUPTIVE FORCES DRIVING CHANGE IN THE 2020s

1. A demographic tipping point

The UK's population will grow, age dramatically, and become significantly more diverse, with the 2020s a tipping point to a radically different population structure in future decades.

2. A changing economic world order

Economic power will accelerate eastward even as global growth rates slow due to demographic and productivity trends. The nature of globalisation will evolve and trade patterns alter. Urbanisation will accelerate.

3. Brexit: the aftershock

Brexit was a profound shock to the UK's political and economic order. While its long-term effects remain uncertain, it is likely to set the UK on a permanently lower growth and living standards trajectory, reshape our trading relationships, and reduce European immigration. In the 2020s, the UK is likely to adopt an increasingly mercantilist economic strategy as a result of Brexit.

4. Tectonic technological shift

Accelerating technological change will cause dramatic shifts in the way we work, consume, and communicate. Politics, economics and power structures will be profoundly disrupted, and with it social relations.

5. Decarbonisation decade

The imperatives of avoiding systemic climate change will drive a transformation in how we produce and consume energy by 2030. Transport and cities will also change. Natural systems that reproduce materials of life will break down, causing largescale instability. Meeting the challenges of the Anthropocene age will be our greatest collective political task.

PART 2: 10 MAJOR CHALLENGES BY 2030

1. Stagnation the new normal?

Even as what we do and how we work changes, the UK is likely to remain trapped in a low growth, low interest rate decade driven by demographic shifts, productivity trends, weak investment, weak labour power, high levels of debt, and the headwinds of a slowing global economy.

2. A new economy: caring and creative?

Technological, social and demographic change will shape the economy. Brexit, and the likely depreciation of the currency, will accelerate this change. The service sector will grow, with creative and caring work surging. By contrast, manufacturing, administration, the public sector and insurance will likely shrink.

3. The end of the long twentieth century: work and business transformed

Technological and cultural shifts will transform how we work and reshape how businesses organise themselves. Work is set to become more insecure, more polarised and more freelance.

4. Automation: A brave new world

Intelligent automation will radically reshape how we work, but won't end work as we know it, at least in the 2020s. Who benefits and who loses out will be shaped by politics.

5. A state under strain: public finances in an ageing, low growth society

A combination of low growth, political choices and demographic change will shrink the state and put the UK on course for a structural deficit by 2030.

6. Public services – personalised, devolved, digital

Public services, particularly health and social care, will be under acute financial pressure as demographic changes increase costs. Decentralisation of control and personalisation of delivery will increase due to technological and political change. Devolution will mean local authorities have a greater role in funding and delivering public services.

7. Inequality unleashed: age, region & class

Technological, economic and demographic change will supercharge inequalities, with middle and low income households struggling through a low-growth living standards decade, even as the rich pull away.

8. Intergeneration strain game

Sharp, growing and unprecedented intergenerational differences over income and housing are likely to be a key feature of the 2020s, with powerful political and economic consequences.

9. Data: 'social'-ism for the 21st century?

The ubiquity of data collection and analysis will challenge political institutions, and create new models of ownership, economic activity and wealth. Building a public, democratic data infrastructure in 21st century will be a similar challenge to creating welfare state in 20th.

10. A decade of democratic distress

The political aftershocks of Brexit will reverberate. Growing inequalities in political voice, institutions of representative democracy under stress, and bumpily embedded devolution are all likely.

KEY FACTS ON CHANGE

1 in 3

Greying society: Between 2016 and 2030, the population aged 65+ will grow by 33%, while the 16–64 population will grow by only 3%.

population boom

The UK will have the fastest growing population of any major European country, and become the largest country in Europe by population in the mid-2040s.

<50%

Emerged markets? By 2030, almost half the world's large companies are expected to be based in emerging markets.

deficit

Due to demographic trends, a structural deficit is likely to re-emerge by the mid-2020s.

£13 billion

Social care crisis: The adult social care funding gap is expected to be £13 billion – 62% of the expected budget – in 2030/31.

2 in 3

Work, but not as we know it: Up to two-thirds of current jobs – 15 million – are at risk of automation.

11 x

The income of high-income households is forecast to rise 11 times faster than for low income households in the 2020s.

green revolution?

Low-carbon energy generation is expected to account for around 75% of energy generation by 2030.

$10.6 trillion

Data, the fifth factor of production? Globally, the 'Internet of Things' is expected to add US$10.6 trillion to real GDP by 2030

A CHANGING ECONOMIC WORLD ORDER

A decade of high debt, sluggish productivity, low interest rates and weak growth

- Advanced economies are likely to struggle to escape conditions of secular stagnation without co-ordinated action. Demographic headwinds will further slow global growth.

Economic power shifting to the global south

- The world will converge economically, and by 2030 emerging economies will account for almost half of global output.

Globalisation, but not as we know it

- Globalisation will evolve and plateau, trade patterns shift and urbanisation drive growth. The architecture governing the global economy will come under pressure as American hegemony frays.

BREXIT: THE AFTERSHOCK

Brexit will powerfully reshape the UK's political and economic order. Growth investment and immigration will be lower, the economy more managed, and the constitution remodelled relative to remaining in the EU.

DECARBONISATION DECADE

The UK is committed to slashing its carbon emissions by 2030

- Meeting this target will require a 31% overall reduction in current annual carbon emissions by 2032.

This will drive a radical change in how we produce and consume energy

- We will consume as much energy today as in 2030, but low-carbon energy generation is expected to account for around 75% of generation.

Climate change, resource depletion, biodiversity loss, and natural cycle disruption will accelerate – we will run up against the natural limits of our economic model

- We can only use a fifth of known known oil, coal and gas reserves if we are to avoid systemic climate change
- Two-fifths of the global population is predicted to live in water deficit in the next decade.
- Key resources for sustaining human society such as phosphorous – necessary to produce large quantities of food – will be radically depleted by 2030 and can't be produced synthetically.

A DEMOGRAPHIC TIPPING POINT

The UK's population will grow quickly in the 2020s

- The UK is set to be the fastest growing major country in Europe, with its population overtaking France by 2030.
- By 2030, the UK will be on course to become the biggest country by population in Europe by 2050.

The UK will age dramatically

- The 65+ population will surge from 11.6 million today to 15.4 million by 2030. By contrast, the working age population (16-64) will increase by only 3%.
- There will be a surge in the 'oldest old', with the over 85s population nearly doubling by 2030.

We will become more diverse

- Diversity will become commonplace, with nearly a third of the UK's population from a BAME background by 2030.

TECTONIC TECHNOLOGICAL SHIFT

Health technology:

- Nanotech and biotech
- Human divergence due to augmenting technologies
- Stem cell applications

Decarbonising resource technologies:

- Rapid improvements in battery improvements and renewable tech
- Nuclear fission
- Advanced new materials

Automation & manufacturing technologies:

- Advances in intelligent automation and machine learning ushering in a second machine age
- Networks of autonomous electric vehicles
- Rapidly improving robotic technologies

IT & digital technologies:

- Rise in quantum computing and super computer capabilities
- Ubiquitous digitalisation, data rich and growth of 'smart cities'
- Blockchain transforming finance

BRITAIN AT THE PERIPHERY?

Even as the global economy slows, other economic shifts will accelerate in the 2020s:

- economic power will gravitate eastwards, trade patterns will alter and comparative advantages shift
- the urban centres of the major emerging markets will be the driving force of the world economy
- the nature of globalisation itself will evolve, with a relative decline in the trading of goods but a rise in services traded
- globally, there will be an increasing premium on modernised institutions that can regulate new or evolved forms of risk, from climate change and mass migration, to tax evasion and terrorism.

China's rise means that it will have more large companies ($1bn+) than either the US or Europe in 2030 – by which time nearly half of these large companies will be headquartered in emerging markets.

Trump's election could signal America's withdrawal from its role underpinning the liberal economic world order, increasing global economic and political turbulence and weakening the US economically. The US will retain very significant strengths in innovation, technology, services and advanced manufacturing, with tailwinds from its natural resources base, demographic trends and geopolitical power. Its economy is projected to be larger in 2030 than those of the UK, Germany, India and Japan combined.

By 2030 it will also have **17 of the global top 50 cities** by GDP – more than North America and four times more than Europe.

However, a rapidly ageing population, credit bubbles, political uncertainty, and the transition to an open and consumption-led economy may undermine its rise.

South-to-south trade will have risen sharply by 2030, and while trade in goods will have doubled by that time, trade in services will have more than quadrupled.

Africa rising

By 2030, Africa's working-age population is expected to almost have overtaken China's.

59%

By 2030 emerging economies will account for almost half of global output, up from around just over a quarter today, with 59% of global middle-class consumption coming from Asia.

Sources:

Oxford Economics 2015; Dobbs et al 2015; PwC 2015; PwC 2011; Dobbs et al 2012; Economist Intelligence Unit 2015, WTO 2014; ESPAS 2016; Bughin 2016.

FROM STUFF TO SERVICES

The value of trade in services will soar from $1.6 trillion to $8 trillion between 2012 and 2030. Given the UK's comparative advantage in services, this represents a significant exporting opportunity.

URBANISATION

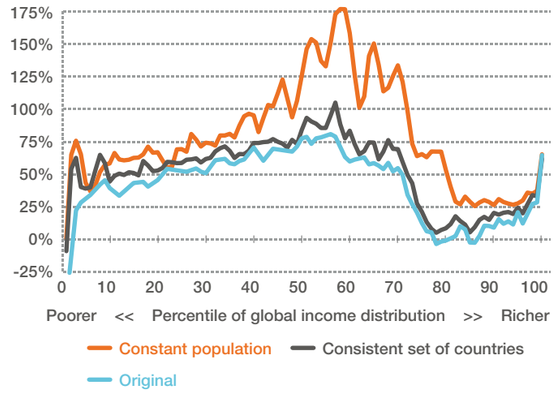
The largest 750 cities will drive growth between now and 2030, by which time they will contribute 61% of global GDP – up from the mid-50s today.

DIVERGING FORTUNES

The below chart shows the global income incidence curve if the relative size of each country had remained unchanged over the period 1988–2020.

This is likely to be repeated in the 2020s – the majority will experience growth, but middle income households in developed economies will continue to struggle, even as the top decile does well. This suggests that globalisation brings challenges but domestic policy is critical to shaping outcomes.

Figure 1: Global income growth incidence curve if the relative size of each country had remained unchanged, 1988-2008



Source: Cortlett 2016

THE 2020s: A DEMOGRAPHIC TIPPING POINT FOR THE UK

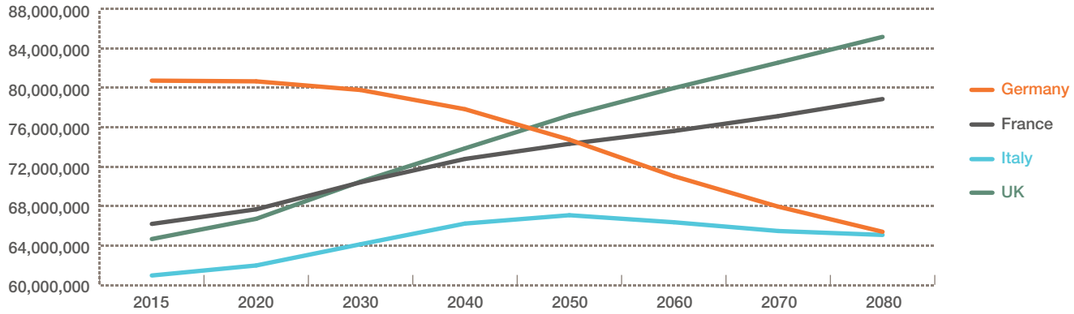
The UK's population will grow significantly, age dramatically, and become increasingly diverse.

Despite Brexit, net migration rates are likely to remain high, albeit more controlled, driven by social and economic pressures. By 2030, the UK will be on course to become the largest country by population in Europe with one of the most diverse populations in the world.

THE UK'S POPULATION WILL GROW QUICKLY IN THE 2020S

- The UK will be the **fastest growing major country** in Europe, with its population overtaking France by 2030.
- Population growth will be **centred in the cities** – London is projected to grow to 10m people by 2030, up from 8.5m.

Figure 1: The UK's population will grow rapidly in the 2020s, relative to other European countries.

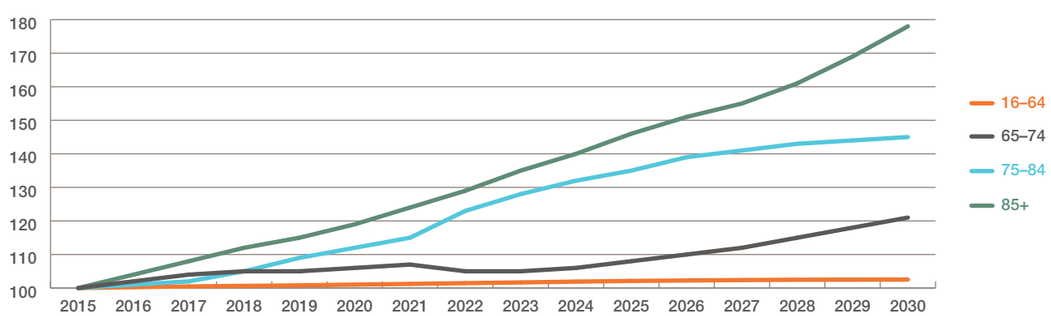


Source: IPPR analysis (2016) for population project of largest EU countries

THE UK WILL AGE DRAMATICALLY IN THE 2020S

- The **65+ population will grow by 33% between 2016 and 2030** – from 11.6 million to 15.4 million. By contrast, the working age population (16-64) will increase by only 2%.
- There will be a **surge in the 'oldest old'.** The over 85s population will nearly double by 2030.
- **One in three babies born in 2016 are expected to live to 100 or more. By contrast, if born in 1916 there is only a 1% chance of still being alive.**

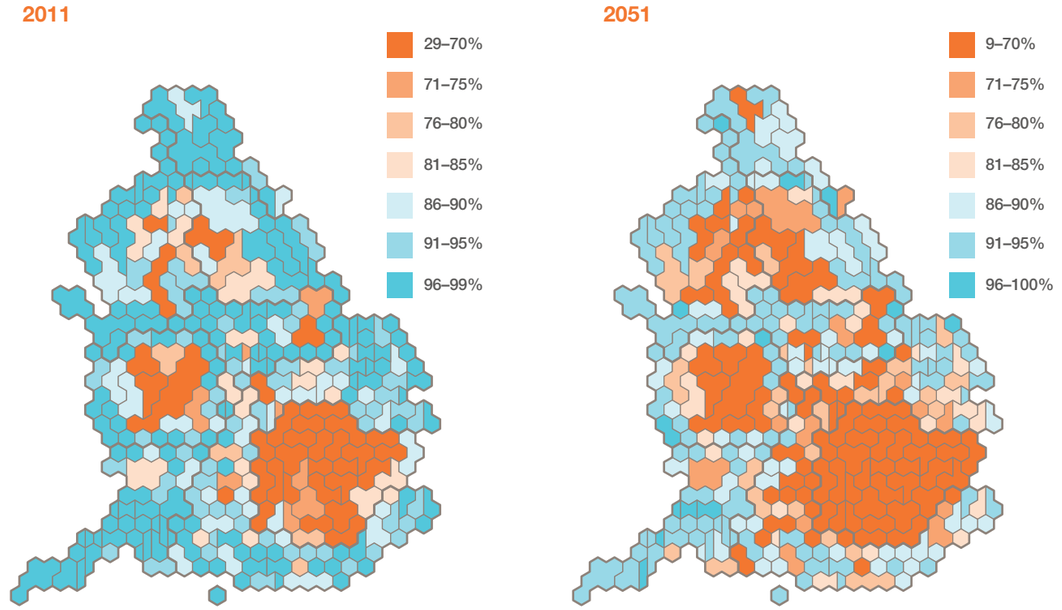
Figure 2: The older population will surge relative to the working age population. This will put pressure on the care system and the public finances, and reshape household and working patterns.



Source: IPPR analysis of ONS (2015) National Population Projections: 2014-based Statistical Bulletin

Diversity will spread beyond the cities.

Figure 3: Share of white population in local authority populations in England in 2011 (left) and projections for 2051



Source: Griffith and Halej 2015

DIVERSITY WILL BECOME COMMONPLACE

- Britain in 2030 is expected to be almost as diverse as the USA is today. The non-white population is expected to rise from 14% in 2011 to about 21% by 2030 and a third of the population by 2050.
- Net migration is expected to account for almost half of population growth in the 2020s.
- While immigration is expected to be lower and more controlled after Brexit, economic and social demand are likely to continue to drive relatively high levels of immigration to the UK.

33%

While the working age population will barely grow, the 65+ population is expected to increase by an estinated 33% between 2016 and 2030

Sources:
Rajeswaran and Sunak 2014; ONS 2015b; Eurostat 2016; Richards 2016.

STAGNATION BLUES?
A GLOBAL LOW GROWTH DECADE

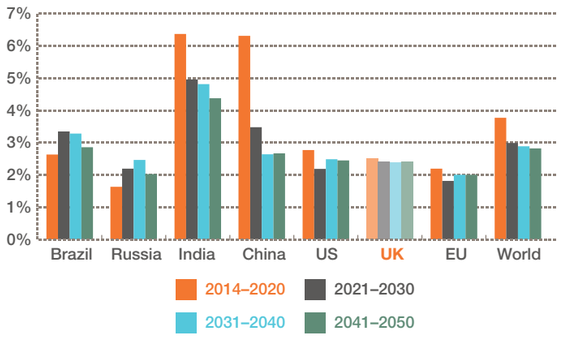
Global growth will slow in the 2020s. Demographic change, weak productivity growth, environmental degradation, high levels of debt, inequality, and sluggish demand will all act as economic headwinds.

A more fragile, less dynamic world economy will increase geopolitical competition. Economic abnormalities will multiply, from negative yields to deepening secular stagnation. Major risks including unsustainable credit bubbles, climate crises, and energy shocks will pose further threats to the global economy. The near-stagnation of advanced capitalist economies– despite extraordinary monetary policy stimulus – and the slowdown of emerging economies will sharpen the need for co-ordinated reform of global economic institutions and open up space for heterodox, radical policy action.

A GLOBAL DEMOGRAPHIC CRUNCH WILL SLOW WORLD GROWTH

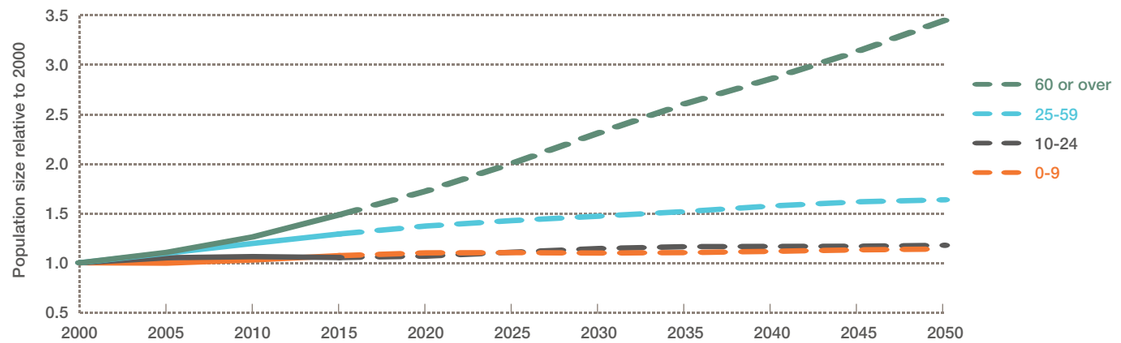
- **An ageing global population will slow the world's growth trajectory.** Due to demographic change the global economy is forecast to expand roughly threefold between 2014 and 2030, compared to almost six fold in the preceding 30 years.
- **The global working age population will shrink.** For example, China is expected to lose 10% of its working population by 2030.
- As indicated in Figure 1, **global growth is expected to slow.**
- In marked contrast, the demographic conditions of the 'Great Moderation' era, Figure 2 demonstrates how sharply the global population will age in the 2020s.

Figure 1: Average annual % change in real GDP



Source: PwC, 2015

Figure 2: Increase in world population relative to 2000, by broad age group, 2000-2050

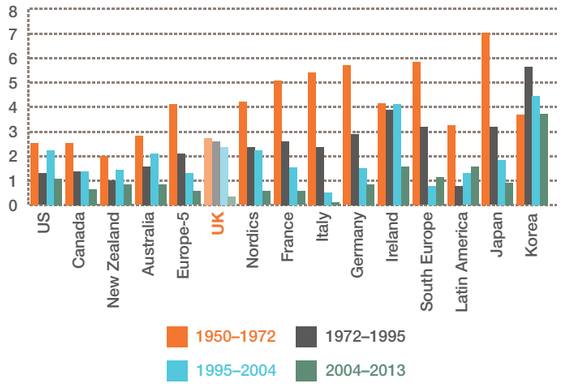


Source: UN, 2015

DESTINATION STAGNATION: WEAK PRODUCTIVITY AND DEMAND

- **Most productivity forecasts suggest the recent slowdown in productivity growth is due to continue.**
- **Advanced economies appear to be settling into the trap of secular stagnation.** Without significant and co-ordinated policy action they will struggle to escape the trap in the 2020s.
- $13 trillion of government debt – more than half the outstanding stock of developed economy public borrowing – now has a negative yield. Abnormalities like this are expected to multiply.
- Global current account imbalances are expected to return to their pre-crisis peaks by 2030, in part driven by global monetary policy.

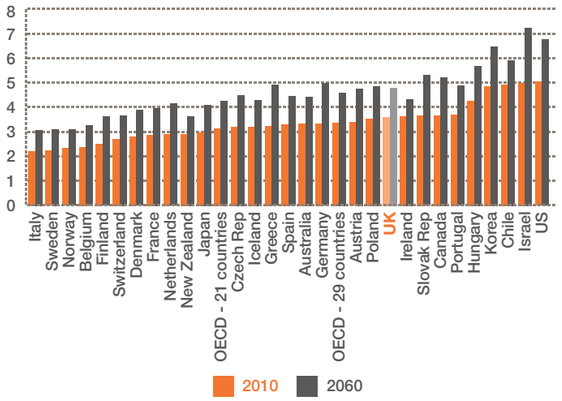
Figure 3: nnual average growth (%) in GDP per hour worked



Source: OECD 2015

Income inequality is set to surge.

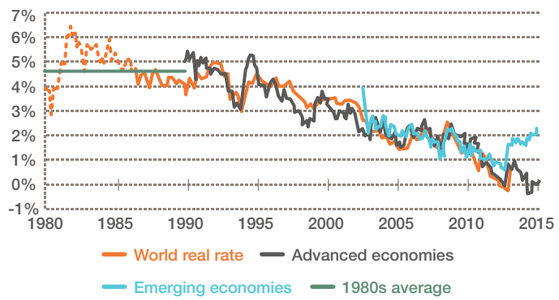
Figure 4: OECD Gross earnings inequality 2010–2060



Source: OECD 2014

Despite the long-term decline of global interest rates, ***developed economies appear unable to generate strong, sustainable growth.***

Figure 5: Comparison of real rates in AEs & EMEs



Source: Rachel and Smith 2015

RISING INEQUALITY AND HIGH LEVELS OF DEBT WILL CONSTRAIN DEMAND

- Income inequality **within OECD countries is expected to rise by upwards of 30% in the coming decades.** On current trends, the gender pay gap will take 170 years to close.
- Global debt is $57 trillion higher than in 2007, and total debt levels are not expected to return to pre-crisis levels until the mid-2020s. This will constrain consumption and investment.

MAJOR ECONOMIC RISKS

Demographic and productivity trends point towards a slow growth, low inflation decade. On top of this, there are a series of major risks that could significantly worsen the health of the global economy in the 2020s:

- A global energy price shock driven by geostrategic instability and resource conflict.
- Economic instability and lack of demand through the premature de-industrialisation of emerging economies due to automation. Biodiversity degradation, water management crises, and major natural catastrophes.
- Asset bubbles, created by excessive private credit growth.
- China experiencing a 'hard landing', failing to transition smoothly to a more mature, consumption led growth model and deleverage its credit bubble.
- Largescale involuntary migration caused by climate change, interstate conflict, or internal displacement.

Sources:
Dobbs et al, 2015; UN, 2015; PwC, 2015; Manyika et al, 2015; OECD, 2012; Summers, 2015; OECD, 2014; OECD, 2014; Turner, 2014; World Economic Forum; 2016a

BREXIT: THE AFTERSHOCK

Brexit will profoundly reshape the UK. It will be a fundamental break in the existing political-economic order. Painful trade-offs are almost certain. Growth is expected to be lower, investment rates worse, and the public finances weaker as a result of Brexit.

Given the likelihood of significant new barriers to trade, a managed depreciation of the currency is also likely. A more mercantilist, interventionist political economy will drive sectoral change, increase consumer costs, and hit living standards. Socially, migration is likely to decline and become more controlled. Politically, Brexit underscored the UK's economic, social and cultural divisions and is likely to be the trigger for a decade of constitutional and political upheaval.

Sources:

Dhingra et al 2016; IFS 2016; Richards 2016; PwC 2016; Clarke and Whittaker 2016; OBR 2016; Bank of England 2016.

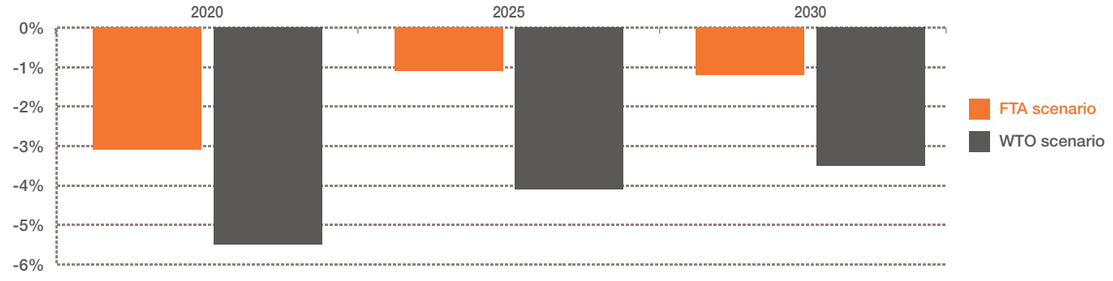
£55bn

A 'hard' Brexit could cost the UK £55 billion by 2030

BREXIT IS EXPECTED TO REDUCE GROWTH AND LOWER LIVING STANDARDS

- By 2030 the economy is forecast to be up to **£55 billion smaller** than it would have been without Brexit.
- In a 'pessimistic' scenario, where trade costs increase significantly, **households are expected to be £1,700 worse off per year by 2030.**

Figure 1: The UK economy is expected to be smaller by 2030 than if it had remained an EU member.



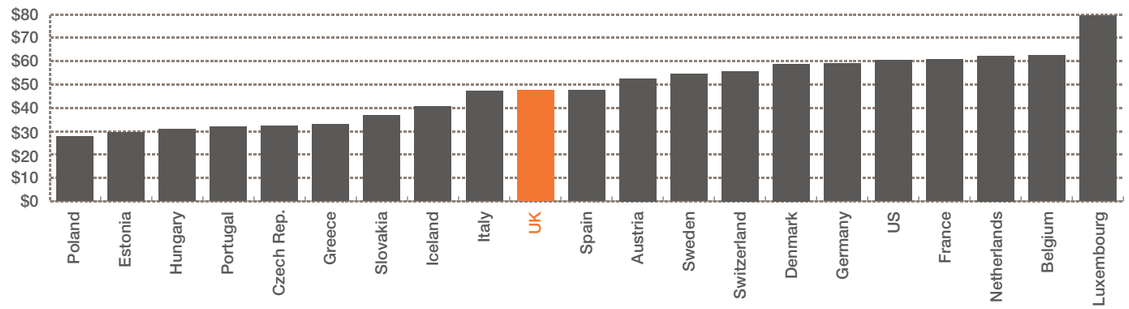
Source: PwC 2016

THE UK'S POLITICAL ECONOMY WILL BECOME MORE MANAGED IN RESPONSE TO BREXIT

- Given the painful trade-offs involved in Brexit, and the political emphasis placed on controlling freedom of movement, it is likely that UK goods and services will face higher export costs in the 2020s.
- To offset these costs, the UK is likely to pursue a managed depreciation of the currency. Brexit is consequently likely to lead to a more managed, neo-mercantilist political economy.
- **A depreciating currency will reshape the sectoral balance of economy** and hit the living standards of the poor hardest.

Brexit is likely to exacerbate longstanding economic weaknesses. The UK's low productivity rates compared to most other advances economies means we are likely to rely on a weaker currency as a key route to retaining competitiveness in the 2020s.

Figure 2: Productivity levels (GDP per hour worked, US$, 2010 prices, purchasing power parity) for Europe-24 nations and the US, 2014*



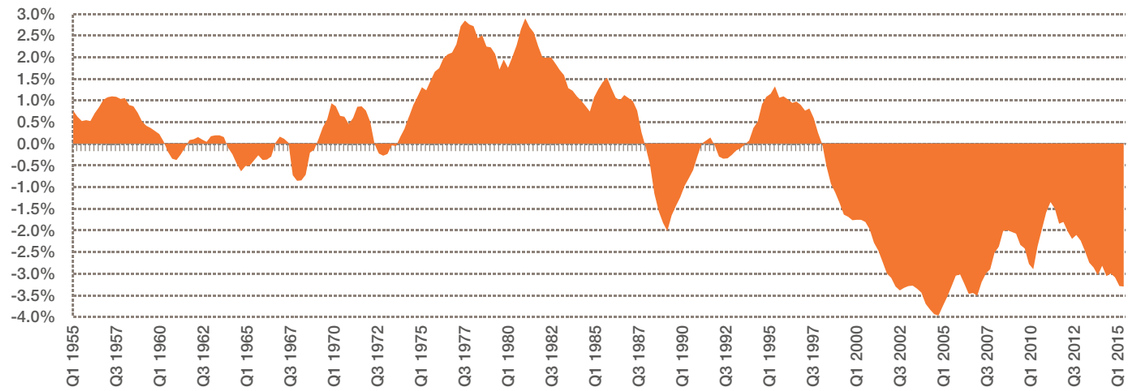
Source: Jacobs et al 2016

MIGRATION IS LIKELY TO FALL IN THE SHORT WHILE THE DIVISIONS THE REFERENDUM EXPOSED WILL ENDURE

- **Net migration is likely to fall in the short term due to economic shocks.** In the 2020s, overall net migration is likely to be more controlled but remain relatively high by historic standards due to economic and social demand.
- **Brexit exposed a nation divided by education, age, region, income, housing tenure and occupation – these divisions will endure.** Attitudes to migration, identity and place – central to the referendum – are likely to continue to reshape traditional political coalitions.

The UK's poor trade performance is unlikely to improve in the wake of Brexit. If it does, it is likely to be primarily due to a decline in imports, not a significant increase in exports.

Figure 3: Balance of trade, percentage of UK GDP, Q1 1955–Q1 2016



Source: Jacobs et al 2016

TECTONIC TECHNOLOGICAL CHANGES: A BRAVE NEW WORLD

Accelerating technological change will transform how we live and work, communicate and consume. Political institutions will be reshaped, social norms changed, and economic relationships restructured. Radical advances in four key areas – automation and manufacturing, information technologies, resource technologies, and health technologies – will make the dreams of science fiction increasingly the reality of ordinary life by 2030.

There is nothing inevitable though about how these forces will reshape our world, or who will win and lose from change. This will depend on the choices we make and the demands we put forward. The development, deployment and impact of technology is a collective choice, mediated by political, social, economic and cultural institutions, values and preferences. Progressives should therefore seek to get the 'future in their bones', embracing and accelerating technological change while building the institutions that mean its benefits are widely and fairly shared.

KEY AUTOMATION AND MANUFACTURING TECHNOLOGY TRENDS

- Developments in **automation, machine learning and general systems artificial intelligence** could transform the workforce, and create new and as yet unimagined occupations.
- By **2030 robots or smart machines are forecast to have on average an IQ higher than 99% of humans.** The explosion in non-human intelligence has enormous economic potential, while also raising profound political and ethical questions.
- A surge in **autonomous or near autonomous vehicles** is forecast by 2030, becoming ubiquitous by the mid-2030s. This will transform transport systems, urban design, and personal mobility.
- The development of **3D printing** will change the economics of manufacturing, reducing role of labour costs in location decisions, and increasing the importance of proximity to the customer. **Additive manufacturing will create networks of micro-factories akin to craft guilds,** but with modern manufacturing capabilities, with radical discontinuities in trade as need for global supply chain eliminated.
- Emergence of **'smart factories' cyber-physical** systems and decentralised models of production.

2050

By 2021, the average desktop PC will have the processing speed of a single human brain. By 2050, the average desktop computer is predicted to have more processing power than all of humanity combined

KEY INFORMATION TECHNOLOGY TRENDS

- Rapid advances expected in supercomputers, quantum computing, cloud computing, complexity theory, intelligent sensor networks and ubiquitous computing will create a revolution in computer capabilities.
- The **Internet of Things** and the **digitisation** of more areas of life, which will generate unprecedented volumes of data.
- **Smart cities** will use data and digital technologies to increase productivity, quality of life and improve the environment.
- The rise of the **sharing economy** (or 'platform economy'). By 2030, the sharing economy is forecast to be worth almost $2 trillion globally.
- **Blockchain technology** could radically transform the financial sector over time, dramatically reducing the cost of financial transactions, improving the transparency, speed and reach of the financial system, and eventually ending the need for many financial intermediaries.

KEY RESOURCE TECHNOLOGY TRENDS

- The **energy sector** will see dramatic improvements in smart electric grids, microgeneration, advanced batteries and energy storage, hydrogen energy, CCS, nuclear fission, renewable tech. This will facilitate the localisation, democratisation and decarbonisation of the energy system.

KEY HEALTH TECHNOLOGY TRENDS

- **Biotech and medical** breakthroughs including genomic and epigenetic innovation, synthetic biology, stem cell advances, regenerative medicine and tissue engineering.
- Mental and physical augmentation technologies will raise the possibility of species divergence by 2030, with humans bioengineering different physical and mental capabilities.

Sources:

UK Commission for Skills and Jobs, 2014; World Economic Forum, 2016b; World Economic Forum, 2015; Dobbs et al, 2015; Susskind and Susskind, 2015; Manyika et al, 2013; Davarzani and Purdy, 2015; EY, 2015; Ford, 2015

TECHNOLOGICAL MILESTONES BY 2025

1 trillion

Data in the fabric of everyday life:
1 trillion sensors connected to the internet

AI on the map

The first Artificial Intelligence machines sitting on boards

5%

Micro production accelerating:
5% of consumer products printed in 3D

world 1st

Medical breakthroughs:
First successful 3-D printed organs, rapid improvements in nano-technology, and significant advances in cryopreservation

30%

Surging AI displacing white collar work:
30% of corporate audits performed by AI

10%

New systems of value:
10% of global gross domestic product stored on blockchain technology

an increase

The rise of the sharing economy: Globally more trips/journeys via car sharing than in private cars

10%

A non-human transport system emerging:
Driverless cars equalling 10% of all cars on US roads with the UK close behind.

BINDING PROMETHEUS: DECARBONISATION DECADE

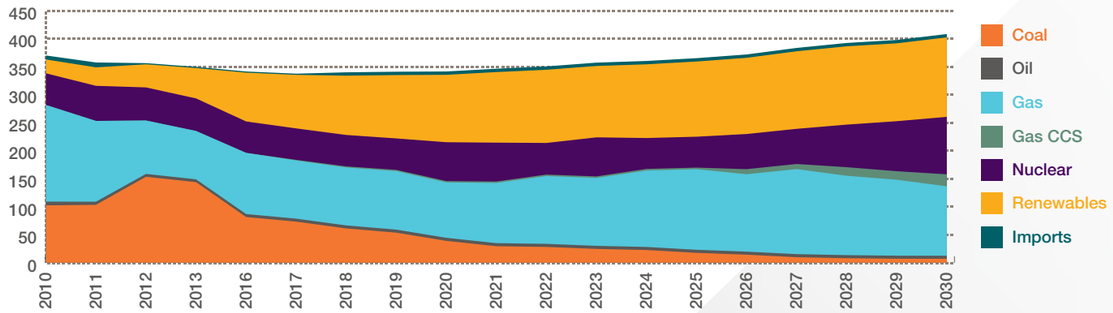
Humankind's Promethean capacity to dominate and reshape the natural environment for its own benefit will hit a limit in the coming decades.

The Anthropocene age – the new geological epoch in which human activity is the central and destructive influence on the Earth's ecosystems – will require us to fundamentally change how we produce and consume energy in the 2020s. This imperative will set the UK on a trajectory towards a radically different, low-carbon and increasingly local and decentralised energy system. This change will – if a just transition to a low carbon future can be effectively managed – bring immense social, environmental and economic benefits. In the process, responding to climate change will change how we work, consume, travel and live.

THE UK IS COMMITTED TO SLASHING ITS CARBON EMISSIONS BY 2030

- The UK is legally obliged to cut its current annual carbon emissions by 31% by 2032.
- To meet its 2050 target of reducing annual carbon emissions by at least 80% on 1990 levels, the UK will have to reduce annual carbon emissions by 4% per year from 2030-2050

Figure 1: CO_2 from electricity generation will fall to a sixth of current levels by 2030; low-carbon energy generation will surge.
Projection of electricity generation by source (TWh)

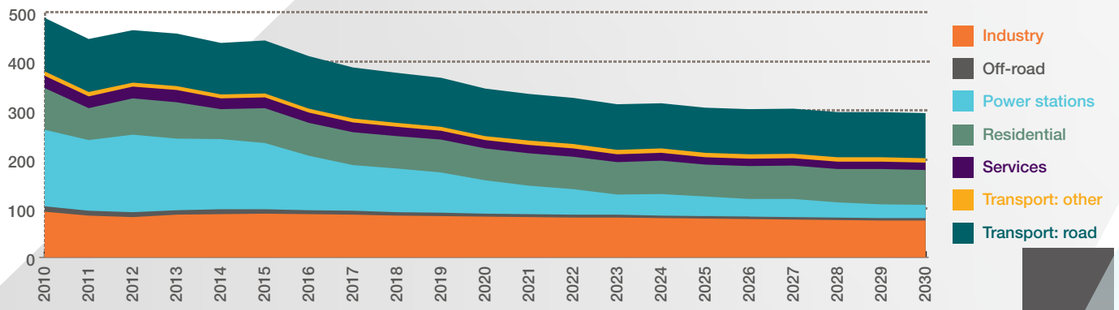


Source: Department of Energy and Climate Change (2012) 'DECC Updated Energy & Emissions Projections – October 2012'

THIS WILL DRIVE A RADICAL CHANGE IN HOW WE PRODUCE AND CONSUME ENERGY

- **We will consume as much energy today as in 2030.** However, energy will become dramatically greener and more efficiently used.
- By 2030, **low-carbon energy generation is expected to account for around 75% of generation.** The energy infrastructure – production, storage, and distribution – will be more localised and decentr d.
- **Transport systems will decarbonise.** Non-traded emissions from vehicles will fall by over 50% by 2030. The rise in electric, driverless transport will help decarbonise the UK and transform how we organise our towns and cities.

Figure 2: Carbon emissions will be significantly reduced by 2030, particularly in power generation.
Carbon dioxide emissions ($MtCO_2$) by source (DUKES categories)



Source: Department of Energy and Climate Change (2015) 'Updated energy and emissions projections: 2015'

RESPONDING PROACTIVELY TO CLIMATE CHANGE WILL CREATE LONG TERM SOCIAL, BENEFITS

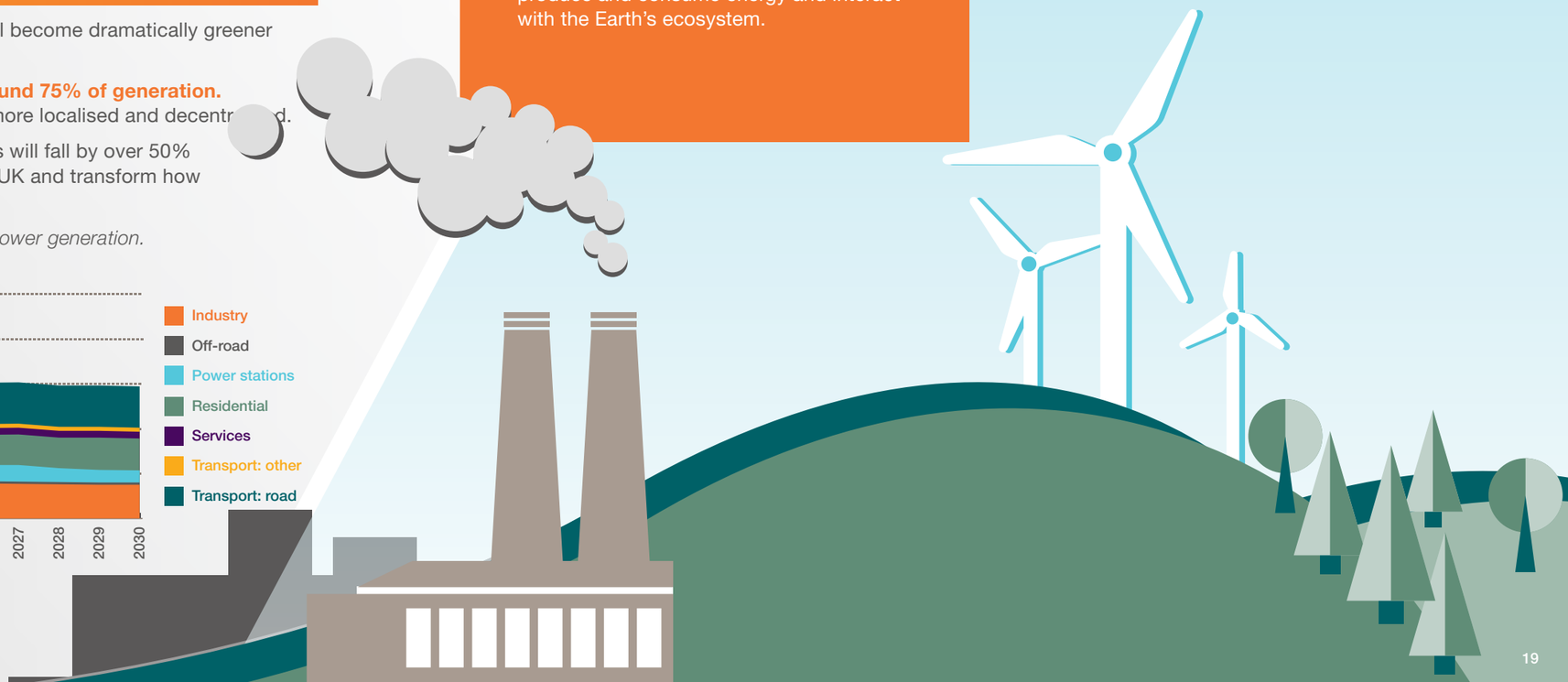
- The average household is expected to be £565 better off a year by 2030 due to climate change policy.

THE LIMITS OF THE ANTHROPOCENE: MOVING BEYOND A CARBON-BASED ECONOMIC MODEL

- We live in the Anthropocene age, where human activity has a decisive impact on Earth's ecosystems and across the planet's entire biota and geology. These include biodiversity loss, resource depletion and natural cycle disruption:
- Due to land-use conversion to produce food, fuel, fibre and fodder, along with targeted hunting and harvesting, it is likely that we are living through the sixth mass extinction event, the last being the dinosaurs.
- Two fifths of the global population is predicted to live in water deficit in the next decade.
- The UN estimates that only a fifth of known oil, coal and gas reserves can be used if we are to avoid systemic climate change.
- Building a collective politics fit for the challenges of the Anthropocene will be crucial in the 2020s and beyond. Ultimately, it will require a radical transformation in how we produce and consume energy and interact with the Earth's ecosystem.

60

At currents rates of soil degradation, the world has only 60 harvests left according to the UN.



PART 2:
10 CHALLENGES IN THE 2020S

> “We are called
> to be architects
> of the future,
> not its victims

R Buckminster Fuller

WEAKENED ECONOMIC FOUNDATIONS

The 2020s is likely to be a low-growth decade. Brexit will exacerbate this trend, but not cause it. The UK's productivity performance is likely to continue to disappoint. Demographic change will constrain growth, as will the broader slowdown of the global economy. Fiscal policy is likely to remain unsupportive in the medium term, while monetary policy will reach the limits of its capacity to stimulate an economy that will be increasingly vulnerable to economic shock.

Without significant reform, longstanding weaknesses in the UK's economic model will remain: poor productivity performance, weak real wage growth compounded by surging Brexit-related consumer inflation, sluggish public and private investment rates, yawning trade deficits, heavily indebted households, regional disparities, extensive financialisation and rent-seeking. In the process, morbid symptoms will multiply: negative yields, interest rates near the lower bound, underinvestment and stagnant living standards.

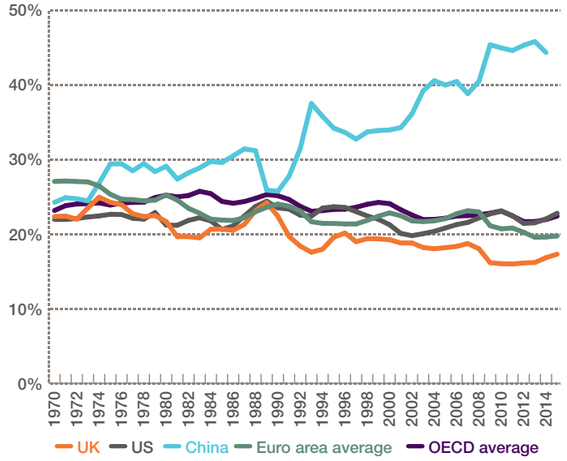
Of course, real pockets of strength will continue to exist. However, the UK will have to undertake deep reform of its economic model – structurally as well as fiscally – to thrive as a more equal, prosperous and open economy in the decades ahead.

WEAK FOUNDATIONS

- The economy will remain unbalanced, over-reliant on consumption over investment and trade, with significant regional disparities, and with services dominating over manufacturing. Brexit is expected to worsen these trends.
- Morbid symptoms will multiply, reflecting structural flaws in the UK's economic model: weak investment rates, rising indebtedness, and chronic fiscal and trade deficits are set to continue.
- Financialisation is forecast to deepen. The UK's bank sector assets are forecast to rise from around 400% of GDP to 600% by 2030 and 950% by 2050.
- As indicated in figure 2, low investment is a symptom and cause of the UK's poor productivity – nine out of 10 cities in the UK are below the European average for city productivity, with more than half among the bottom quarter for productivity.
  While this partly reflects the part-time nature of the UK's labour market, the UK will have to address this gap if it is to prosper in the 2020s.

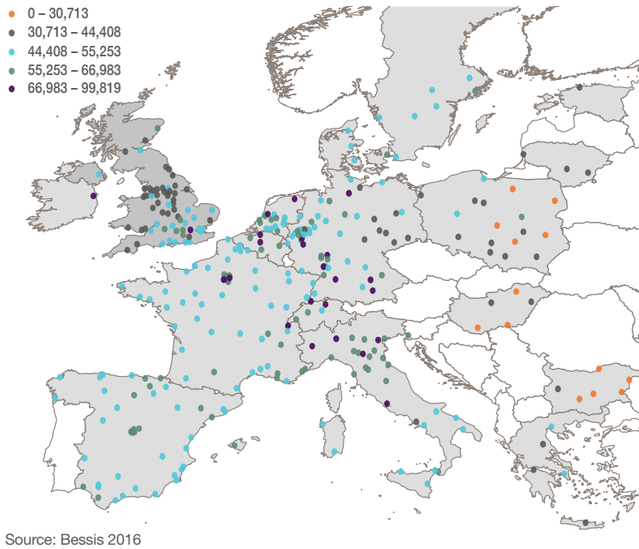
UK investment is comparatively low by international standards, and disproportionately concentrated in London and the South-East.

Figure 1: Gross fixed capital formation (% of GDP), selected countries and aggregates, Q1 1997–Q1 2016



Source: data from World Bank 2016

Figure 2: GVA per worker (£) for European cities, 2011

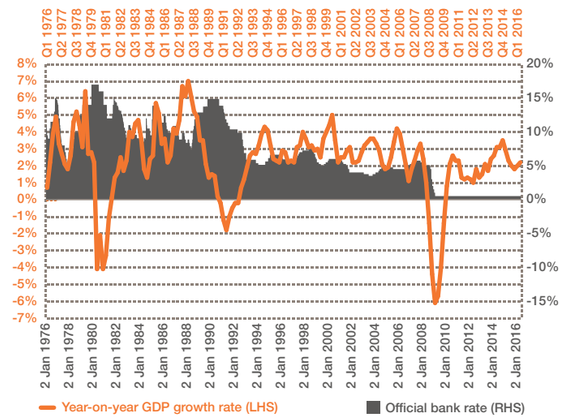


Source: Bessis 2016

A LOW GROWTH DECADE

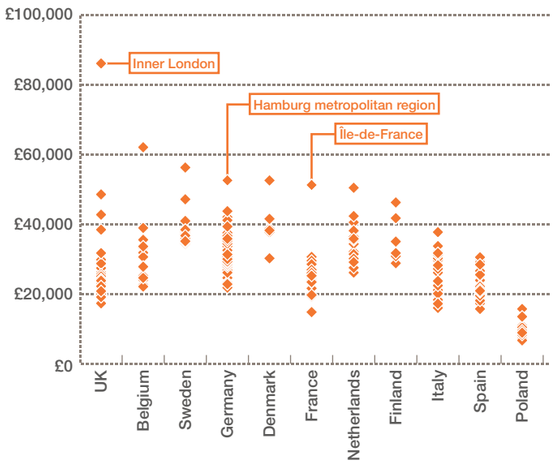
- The UK is consequently likely to settle into a low growth, low productivity equilibrium.
- This is likely to mean many working age households will have experienced two decades of weak income growth by 2030.
- As figure 3 indicates, growth has stuttered even as interest rates approach zero, with monetary policy failing to generate adequate demand. The 2020s is likely to be a low-growth, secularly stagnant decade unless expansionary demand-side policies are pursued alongside structural reform to boost investment.
- Figure 4 shows that without reform, whatever growth the UK achieves is likely to be unevenly distributed, given that the UK is the most unbalanced major economy in Europe, even after accounting for variations in population.

Figure 3: Bank of England base rate and quarterly GDP growth compared with the same quarter in the previous year, January 1976 to June 2016



Source: Jacobs et al 2016

Figure 4: GVA per capita by region for selected European countries, purchasing power parity



Source: Jacobs et al 2016

2016

GDP

London and the South East are the only regions of the UK where GDP per head has surpassed its pre-crisis peak

2030

A RADICALLY RESHAPED ECONOMY

Demographic, technological and global economic trends are likely to reshape the economy's structure by 2030. Brexit, whatever deal is secured, is likely to accelerate this trend. The service sector is expected to grow, producing 'good' and 'bad' jobs even as mid-skilled work decline. Manufacturing will shrink as a share of the economy, though a depreciating currency might lead to reshoring in some areas. The benefits of sectoral change will be spatially divided, creating winners and losers, socially and geographically.

The UK's comparative advantage will be as a global hub for high-skilled creative and technical work, and providing remote, high-quality syndicated services and luxury goods for emerging consumer markets. Success in these areas is partly dependent on the type of trading relationship the UK secures with Europe and the wider world. The 'sharing' and 'circular' economy is set to surge, while the growth of a digital, zero-marginal-cost commons will support an emerging post-capitalist economy in terms of ownership and exchange.

SERVICES

Education, health and care are expected to add over 1 million jobs by 2030, business services around 1.5 million, and the creative sector 1 million jobs.

MANUFACTURING

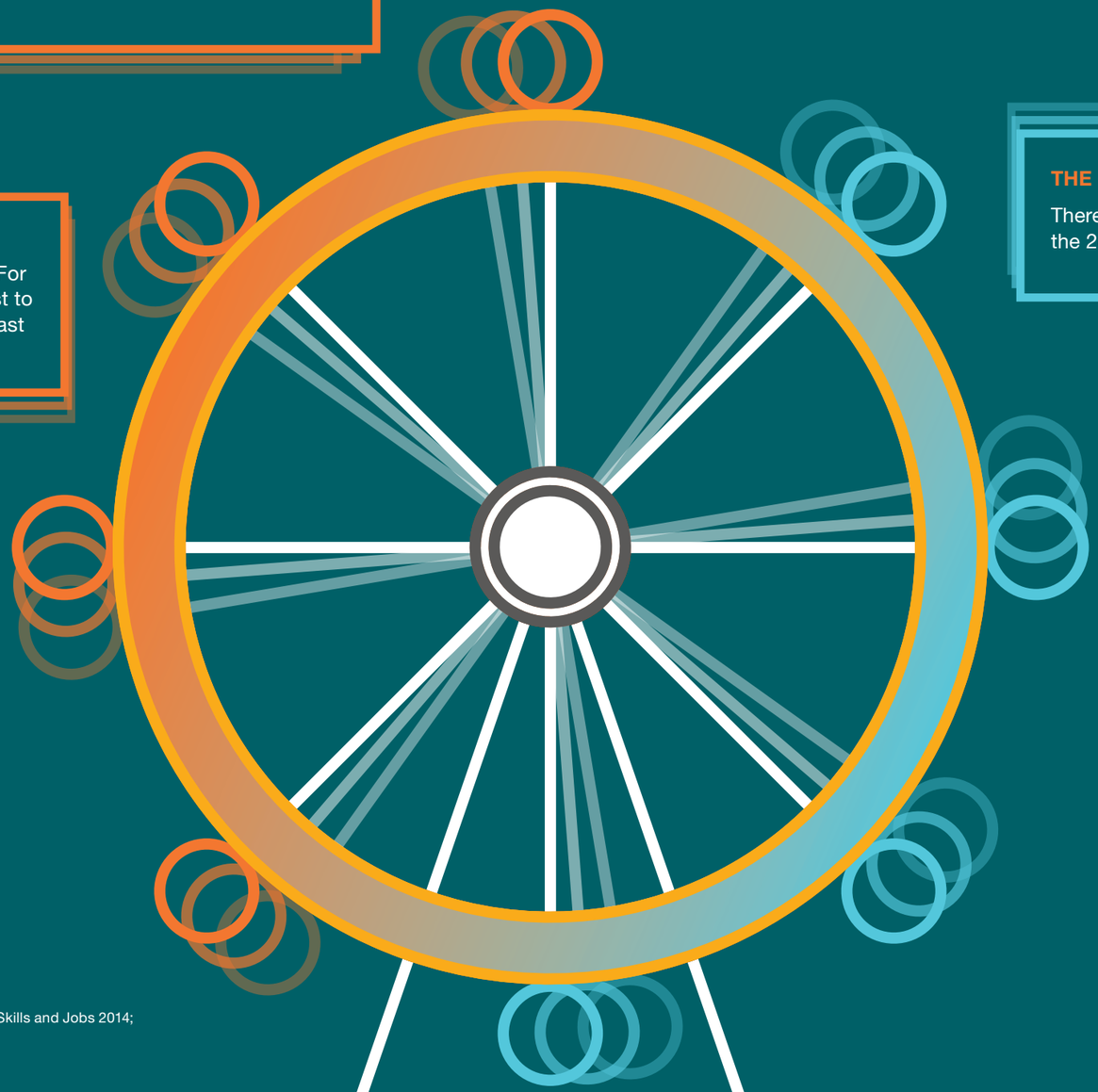
Manufacturing will shrink relative to the overall economy. Employment in the sector is forecast to decline by 600,000 to 2 million, yet advanced and additive manufacturing are likely to expand.

TECHNOLOGY & EMPLOYMENT

Technological change will displace some forms of work. For example, 60% of retail jobs – 2 million roles – are forecast to go by 2030. However, cumulatively the economy is forecast to create around 3 million new jobs by 2030.

THE PUBLIC SECTOR

There will be more self-employed workers in the 2020s than public sector employees.



EMERGING INDUSTRIES

The **space sector** is forecast to grow from £8 billion to £40 billion by 2030.

The design and management of **'smart cities'** will be worth £40 billion by 2030.

The UK's **app economy** is projected to increase 10-fold between 2013 and 2025, to £30.8 billion.

REGIONAL IMPACTS

As the sectoral mix of the economy evolves, employment growth will vary by region, with London and the South East benefitting most.

£97bn

Digital, health innovation, energy and advanced manufacturing could add up £97 billion to the north of England's economy in the coming decades

Sources:

Transport for the North 2016; IFS 2016; Dhingra et al 2016; PwC 2016; UK Commission for Skills and Jobs 2014; Hatfield 2017 forthcoming; UK Government 2014; UK Government 2013; Kelly 2016.

DIFFERENT JOBS, DIFFERENT LIVES

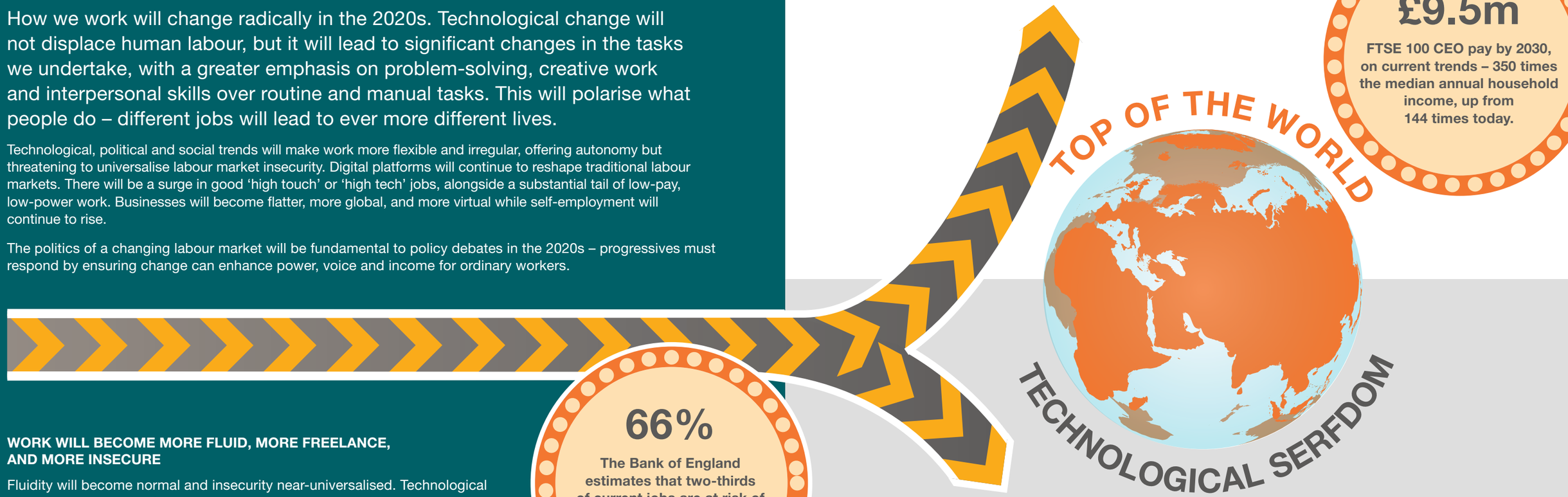
How we work will change radically in the 2020s. Technological change will not displace human labour, but it will lead to significant changes in the tasks we undertake, with a greater emphasis on problem-solving, creative work and interpersonal skills over routine and manual tasks. This will polarise what people do – different jobs will lead to ever more different lives.

Technological, political and social trends will make work more flexible and irregular, offering autonomy but threatening to universalise labour market insecurity. Digital platforms will continue to reshape traditional labour markets. There will be a surge in good 'high touch' or 'high tech' jobs, alongside a substantial tail of low-pay, low-power work. Businesses will become flatter, more global, and more virtual while self-employment will continue to rise.

The politics of a changing labour market will be fundamental to policy debates in the 2020s – progressives must respond by ensuring change can enhance power, voice and income for ordinary workers.

£9.5m

FTSE 100 CEO pay by 2030, on current trends – 350 times the median annual household income, up from 144 times today.



66%

The Bank of England estimates that two-thirds of current jobs are at risk of automation, with the lower paid generally most at risk.

WORK WILL BECOME MORE FLUID, MORE FREELANCE, AND MORE INSECURE

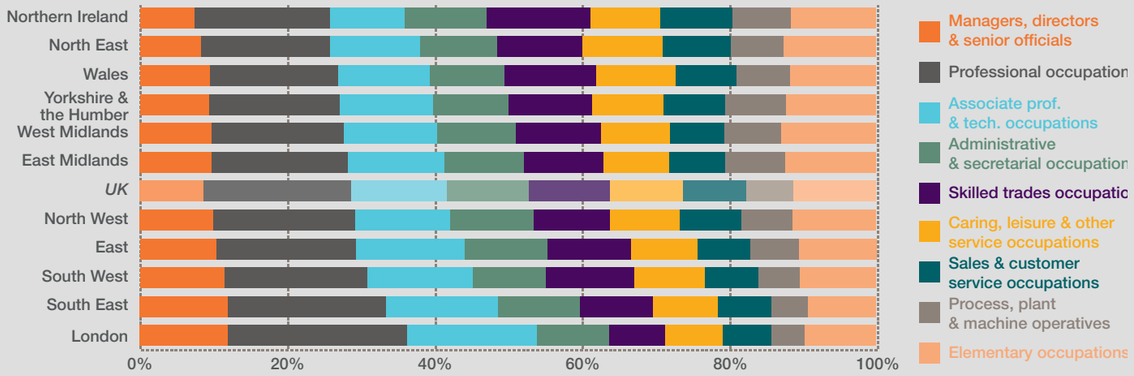
Fluidity will become normal and insecurity near-universalised. Technological advances combined with changing working cultures will drive an increase in mobile working, with fewer locational constraints on work. Portfolio careers will become increasingly common. Flatter managerial structures will give greater responsibility to individuals in shaping and controlling their work. Labour market insecurity, already prevalent for many, will be the experience of work for the majority of people by 2030.

Technological change, including the advance of algorithmic management and mobile technologies, will mean digital Taylorism for some, and increased autonomy for others. The growth of digital platforms will facilitate the rise of the gig economy, with work more piecemeal and task-based. Without effective regulation it will worsen working conditions for many while reducing wages. Work will be polarised between those with greater control and flexibility, and those whose time is ever more controlled.

There will be more high–tech, high touch roles involving greater skills and more creative, non-repetitive forms of work (where humans will retain comparative advantages over robots for the foreseeable future). At the same time, a long tail of low-skilled work is likely to remain in place, with a growing divide in terms of autonomy, agency and reward at work.

The divergence between those with 'privileged' and 'insecure' work looks set to continue, with stark disparities in both the quality of work and rewards for it. London, for example, is the only region in which more than half of jobs are managerial or professional.

Figure 1: Percentage of all employees within UK regions/nations by Standard Occupational Classification, 2010



Source: Jacobs et al 2016

HOW TO REPRESENT AND EMPOWER LABOUR IN A CHANGING LABOUR MARKET WILL BE A CRUCIAL QUESTION:

15m

The number of jobs at risk of automation in the next two decades

14m

The number of people who are already 'independent workers' – a number that is expected to surge

90%

Percentage of private sector workers, on current trends, that won't be unionised by 2030

Sources:
Haldane 2015; O'Connor 2016; UK Commission for Skills and Jobs 2014; Manyika et al 2016; IPPR analysis of BIS 2016.

INTELLIGENT AUTOMATION: A FUTURE BETWEEN STAR TREK AND THE MATRIX

Automation is both a promise and a threat, offering the possibility of material abundance and greater leisure set against the risk of growing economic inequality and mass unemployment.

Yet the reality is likely to be somewhere in between the post-scarcity promise of Star Trek and the hierarchical machine world of the Matrix. Work will be increasingly transformed but not wholly displaced, at least in the 2020s. Many occupations will disappear but new industries will emerge. Automation and AI networks will reshape how we live and play and, in the process, our social institutions and built environment.

There will be economic winners and losers. At its extreme, automating technologies risk entrenching a new form of economic feudalism: those who own the robots will reap the rewards, the rest will struggle as human labour becomes less and less important in the production process. Ownership of capital is therefore likely to become increasingly critical in the future. However, the bigger immediate challenge is not the imminent rise of the robots but that too many people will remain trapped in robotic, drudgery-filled and low-productivity jobs. In this context, accelerating automation is a key political project.

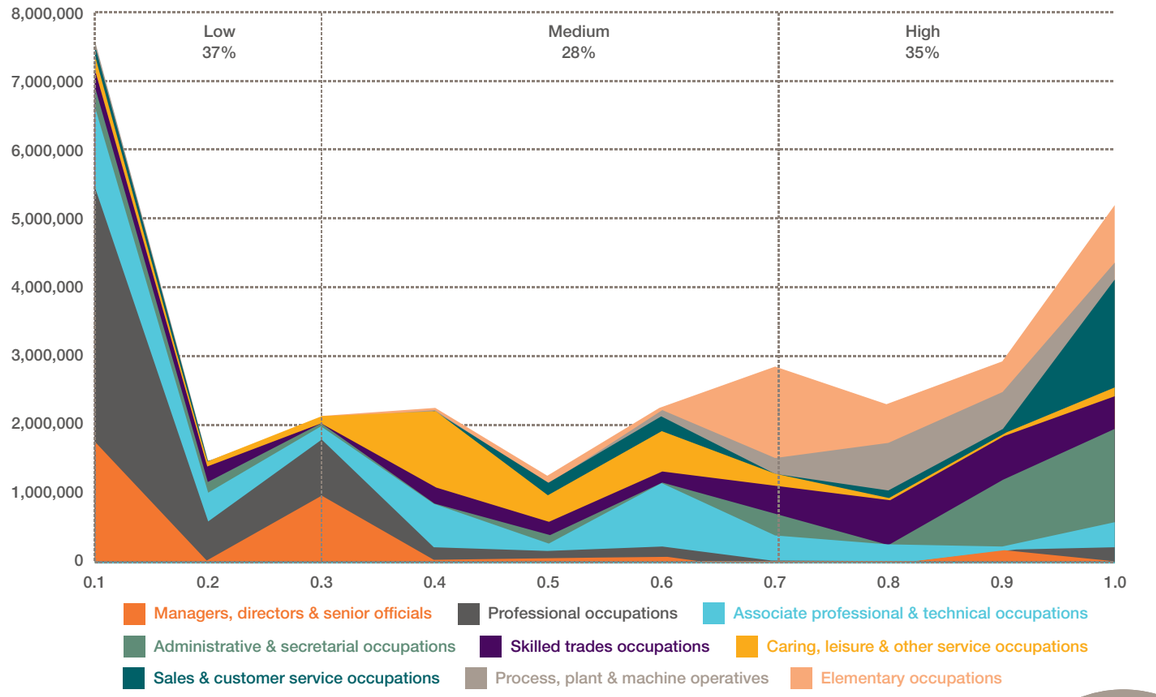
The goal should be to embrace the technological potential of modernity, accelerating into the future with all its liberating possibilities, while building new institutions around ownership, work, leisure and investment, where technological change is shaped by the common good.

Sources:
Frey and Osborne 2015; Srnicek and Williams 2015; Varoufakis 2016; Arntz et al 2016; Berg et al 2016; Frey and Osborne 2013.

WORK AND AUTOMATION: NOT POST-HUMAN, BUT PEAK HUMAN?

- **Human work will not disappear by 2030. Technology will, however, radically transform how we work.** The OECD estimate that almost half of all jobs will change significantly due to automation.
- Nonetheless, up to **15 million jobs – two-thirds of the total – are at medium to high risk of being automated** in the coming decades. Both routine and non-routine work will be displaced.
- Over time there will be fewer and fewer tasks – and in time, jobs – where humans can outperform machines. Given this, it is likely we are at **'peak human' in terms of human labour being the most important factor of production.**
- The speed and impact of automation is though ultimately a political choice.

Figure 1: Distribution of occupational employment in the UK by probability of automation



Source: Haldane 2015

REACHING FOR ABUNDANCE: SHAPING TECHNOLOGICAL CHANGE FOR THE COMMON GOOD

- **Technology is not neutral; politics and culture shape its use and who benefits.** Technological change could increasingly support a world of Star Trek-like abundance. The alternative will be the growing concentration of economic power – a neo-feudal machine age.
- As technological capabilities accelerate the liberating potential of AI and robotics will grow. We should demand the world of Star Trek, beginning to build the social and economic institutions in the 2020s that will prepare for a world – still distant – when human labour becomes increasingly obsolete, when work is divorced from economic compensation, and when the price system breaks down as technology allows for a world of near-zero-cost production and distribution.
- We should therefore seek to accelerate technological change – rapid automation should be a political project – while building institutions that ensure that its benefits are widely shared and democratically governed.
- This will require **new models of ownership, higher wage floors to incentivize automation and boost the wage share,** an education system that promotes creativity and skills that complement machines, **a shorter working week to fairly share** productivity gains, and potentially a universal basic income to supplement labour market income.

50%

Two-thirds of existing jobs are at risk of automation in the next two decades, while 50% are set to be radically reconfigured by automating technologies

A STATE UNDER STRAIN PUBLIC FINANCES IN THE 2020s

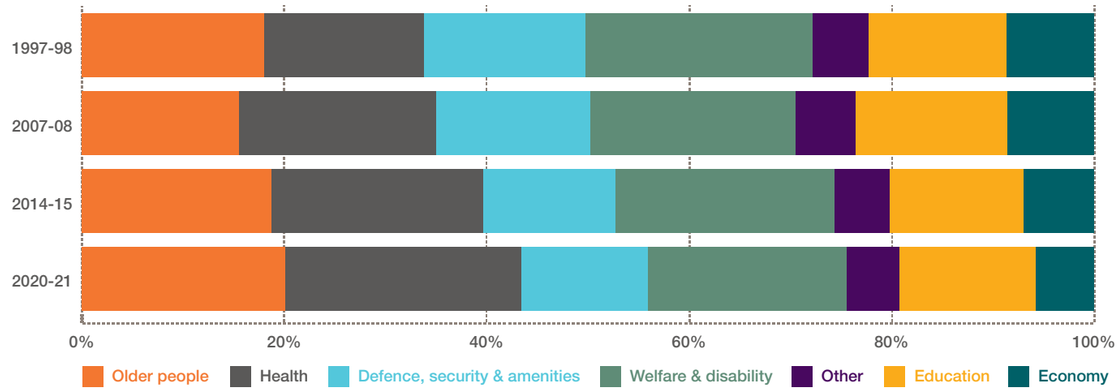
Brexit will put the public finances under significant short-term strain. Two longer-term trends will further reshape the state and health of the public finances in the 2020s.

Falling expenditure as a share of GDP will reduce the size of the state while the composition of expenditure will shift towards older people and health spending. At the same time, the deficit will strike back. Due to demographic change, a structural tax gap will emerge by the mid-2020s on current trends. Fiscal fragility, whether due to weak economic growth, falling rates of migration, or stagnant wages, are all further risks. Given this, a strategic review of taxation – both of revenue and expenditure – will be critical if the public finances are to sustainably meet the challenges of the future.

THE STATE WILL BE SMALLER AND MORE FOCUSED

- Government spending as a share of GDP is projected to fall to its lowest postwar level (around 36%) by 2019/20. This trajectory will continue into the first half of the 2020s unless fiscal policy changes significantly post-Brexit. At the same time, spending will be more focused on pensions and health.
- Even with lower expenditure, the public finances will be acutely vulnerable to shock. Brexit is expected to significantly worsen the state of the public finances. On top of this, current forecasts of the relative health of the public finances in the 2020s rely on significant improvements in wage and GDP growth.
- What and who the government spends money on will have shifted significantly by the early 2020s. Without policy change, it means the state will be very different in size and scope by 2030 compared to the 2000s.

Figure 1: Composition of government non-debt interest spending over time.



Source: Cortlett et al 2015

THE DEFICIT STRIKES BACK: THE PUBLIC FINANCES ARE NOT SUSTAINABLE OVER THE LONGER TERM

- An ageing society will drive demand for public spending from the mid-2020s onwards. For example, spending on health, long-term social care, the state pension and other old-age benefits are forecast to increase annual spending by around 2.5 per cent of GDP between 2019/20 and 2030.
- The tax gap between receipts and expenditure is forecast to grow over the back-half of the decade as a result. This should not be overstated; by 2030 the gap will only be 1.2% of GDP, and due to return to 2015/16 levels only after 2050.
- Over the longer term, the difference between expected spending and forecast tax receipts would rise to £341 billion by 2050 – almost double the expected 2016/17 deficit as a percentage of GDP.

A structural tax gap will emerge in the late 2020s as spending liabilities exceed tax revenue due to demographic shifts. At some point, this will likely require either increasing tax revenues, reducing expenditure, or a combination of the two. Which route the UK takes to put itself on a path to long-term fiscal sustainability will be a key political debate in the 2020s.

Figure 2: Projected total government managed expenditure and total government receipts (% of GDP), 2014/15–2030/31

Source: Jacobs et al 2016

£100bn

Public borrowing is forecast to be £100 billion higher by 2020/21 as a result of Brexit than it otherwise would have been

THE FUTURE OF PUBLIC SERVICES: UNDER PRESSURE

Public services are set for a difficult decade. Demographic change will drive increasing demand at the same time as public expenditure tightens. The NHS and social care will face an acute funding challenge. The education system will grapple with equipping people for the digital age. Childcare is likely to remain patchy and inadequate. The digitalisation of government will transform the relationship between citizen and state.

At the same time, how we design and deliver public services will change. Fiscal, demographic and technological trends will drive a transformation in public services away from a centralised model of provision towards more personalised, devolved and cost-effective provision. The potential for more democratic models of public service governance and delivery – beyond marketisation and new public management – will increase as technological and cultural change facilitate greater participation and voice for users and professionals alike. Amid the challenges, then, there is an opportunity to create more democratic and effective public services.

10.7m

Number of people in the UK expected to have inadequate retirement incomes, putting significant pressure on care, housing and welfare

HEALTH AND SOCIAL CARE WILL FACE A FUNDING CRISIS

- Demographic change will increase demand. With revenue not expected to increase, this will create a funding gap. The projected health funding gap for the NHS is £9 billion in 2030/31. This is 5% of the projected total budget for that year.
- More worryingly, for adult social care the funding gap of £13 billion is equivalent to 62% of the total expected budget for 2030/31. On current trends, adult social care is unsustainable.
- An ageing society will drive significantly increased spending on health, long-term social care, the state pension and other old-age benefits. The OBR suggests this could increase annual spending by almost 2.5% of GDP between 2019/20 and 2030.

EDUCATION WILL BECOME MORE PLURALISTIC AND DIGITAL

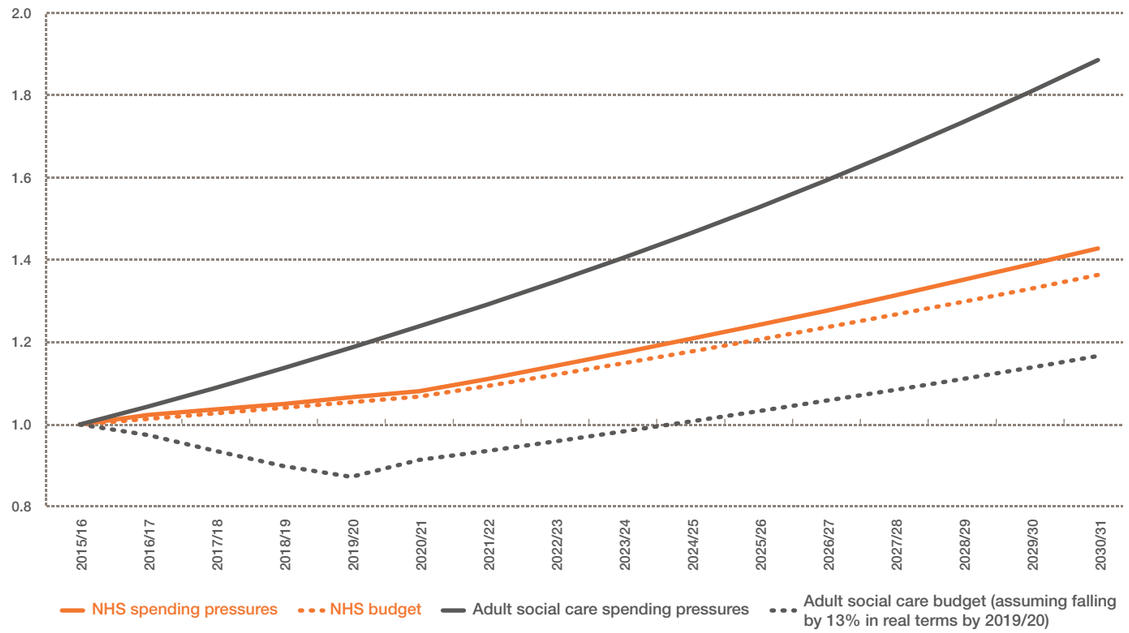
- The school system will become more diverse but its funding will remain relatively secure. The pivotal further education system is likely to continue to suffer from underinvestment and a lack of political support.
- Higher education will come under significant pressure due to Brexit, but should remain a major strength of the UK.

COMPLETING THE REVOLUTION: DE-GENDERING CARE

- Childcare is likely to remain patchy and expensive. This will continue to be a barrier to gender equality and equal life chances.
- This makes de-gendering childcare and social care through investment in universal public provision and expanded shared parental leave pivotal to advancing equality and fairly meeting the pressures of demographic change.

Very significant gaps between expected demand and forecast funding are expected to emerge in health and social care. The gap is not insurmountable, but will require significantly increasing expenditure and improving productivity if health and social care are not to deteriorate.

Figure 1: Relative growth in projected spending pressures and budget for UK publicly funded health and adult social care



Source: Roberts et al 2015

NEW HEALTHCARE PRESSURES

obesity

One third (33%) of women and 36% of men are forecast to be obese in 2030

2x

The number of people who will need daily physical assistance to wash, feed or clothe themselves will double between 2010 and 2030 to 2 million

2m

By 2030 there will be an estimated 2 million additional adults in the UK with mental health challenges. Ensuring parity with physical care will be vital

80%

Over 80% more people aged 65 and over with dementia in 2030 in England and Wales compared to 2010

INEQUALITY UNLEASHED: LIVING STANDARDS, POVERTY AND WEALTH

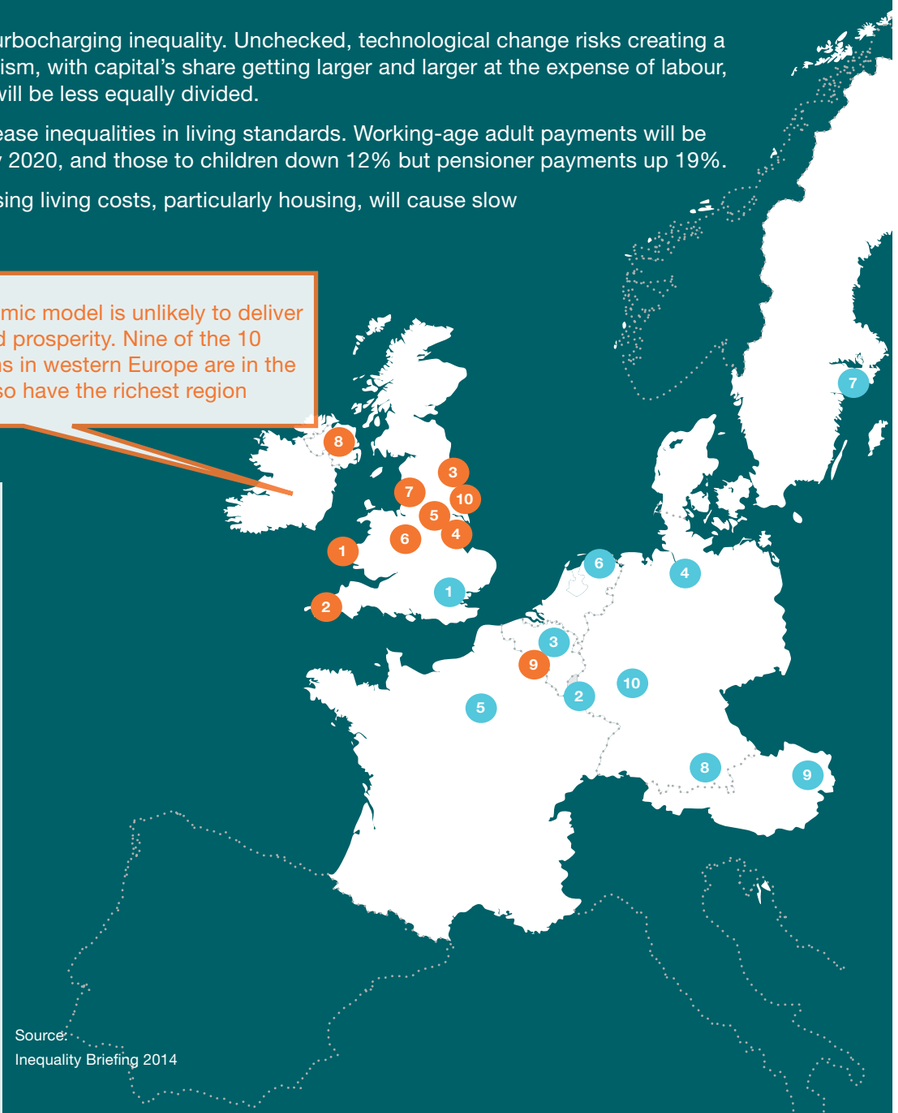
Inequality will be unleashed in the 2020s. Technological change will strengthen returns to capital while reducing labour power. The cost of living, especially housing, will rise faster than income for many. The fiscal direction of the UK will accentuate trends towards inequality, with relative poverty rates rising and the working poor losing ground. Wealth inequalities, already high, will increase due to technological, demographic and economic trends.

As a result, living standards and life chances will divide by age, region, and class. Low- and middle-income households will experience a 'lost decade' as richer households pull away. Restoring broadly shared prosperity will be a key challenge for politics and policymakers. If they fail to do so, the 2020s could mark the start of a new gilded age.

INEQUALITY WILL BE TURBOCHARGED BY CHANGES IN TECHNOLOGY, WORK, WEALTH AND WELFARE

- Technological change risks turbocharging inequality. Unchecked, technological change risks creating a new form of economic feudalism, with capital's share getting larger and larger at the expense of labour, while labour's smaller share will be less equally divided.
- Welfare reform will likely increase inequalities in living standards. Working-age adult payments will be 9% below pre-crisis levels by 2020, and those to children down 12% but pensioner payments up 19%.
- Sluggish wage growth and rising living costs, particularly housing, will cause slow income growth for many.

The UK economic model is unlikely to deliver broadly shared prosperity. Nine of the 10 poorest regions in western Europe are in the UK, but we also have the richest region



RICHEST

1. Inner London UK
2. Luxembourg Luxembourg
3. Brussels Belgium
4. Hamburg Germany
5. Ile de France France
6. Groningen Netherlands
7. Stockholm Sweden
8. Oberbayern Germany
9. Vienna Austria
10. Darmstadt Germany

POOREST

1. West Wales UK
2. Cornwall UK
3. Durham and Tees Valley UK
4. Lincolnshire UK
5. South Yorkshire UK
6. Shropshire and Staffordshire UK
7. Lancashire UK
8. Northern Ireland UK
9. Hainaut Belgium
10. East Yorkshire & North Lincolnshire UK

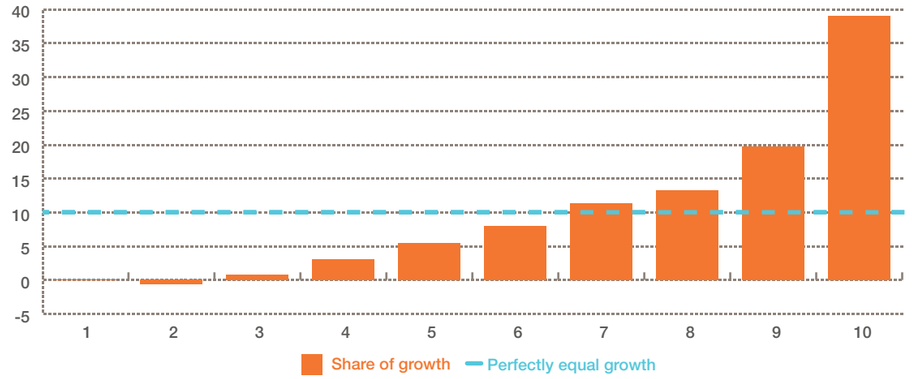
Source:
Inequality Briefing 2014

INEQUALITY, POVERTY AND SOCIAL MOBILITY WILL WORSEN

- **Living standards will rise slowly for middle- and low-income households.** Real disposable income is forecast to rise by **just 9% in total by 2030** for the former and just 2% for the latter.
- **Inequality is expected to surge.** The income of high-income households is forecast to rise 11 times faster than the incomes of low-income households during the 2020s.
- **Relative poverty is expected to rise sharply.** Between 2015 and 2030 an **extra 3.6 million people are forecast to fall into poverty, including 1.2 million children.**
- **Wealth inequality, already high, is likely to surge. The richest 10% of households own 45% of the UK's wealth, the poorest 50% only 8.7%.** As returns to capital increase relative to labour, wealth inequality will increase.

The poorest half of the population have barely benefitted from economic growth in recent decades. 70% of the UK's population had flat or declining income over the last decade, while 6million low-income families are worse off than 10 years ago.

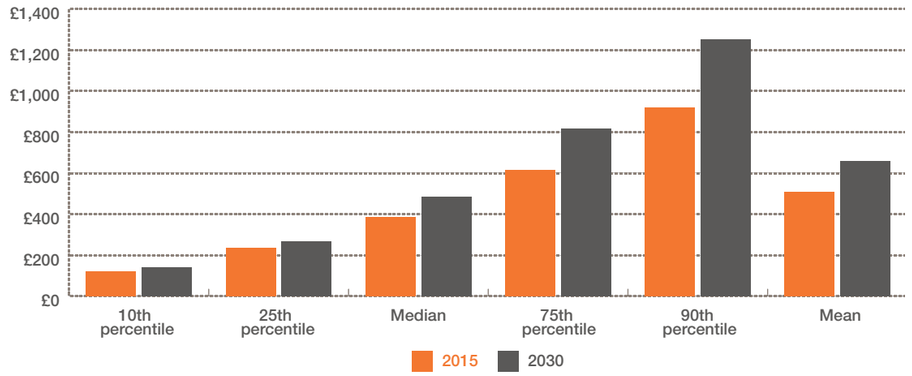
Figure 1: Share of the growth in real original incomes between 1979 and 2012 (%), by income decile



Source: Jacobs et al 2016

A combination of rising housing costs, slow income growth, and a less supportive welfare system mean for many the 2020s is set to be another decade of stagnation in living standards on current trends.

Figure 2: Projections for weekly earnings in 2030 (2014 prices)



Source: Harrop and Reed 2015

Sources:
Harrop and Reed 2015; Cortlett et al 2015; ONS 2015a; Dobbs et al 2016

INTERGENERATIONAL STRAIN

Sharp and growing intergenerational differences over housing, income and work will be key a feature of the 2020s. Younger generations are expected to be at the sharp end of a less secure labour market and the housing crisis. By contrast, as owner-occupier status increases among older cohorts, many pensioners will become ‘ordinarily’ wealthy. Politically, this could sharpen the demand for a more active state in redressing housing concerns, while also increasing the political importance of policies around the fair distribution of wealth, assets, benefits and pensions.

70%

The percentage of 25–34-year-olds living in the private rental sector is due to increase from roughly 20% in 2003 to nearly 70% in the 2020s

THE GAME OF LIFE

MILLENIALS

Forecast to be the first postwar generation to have lower total lifetime earnings than their predecessors.

GENERATION X

A typical member of generation X working throughout her 20s will have earned £8,000 more than a typical millennial, and is far more likely to own her home.

BABY BOOMERS

Winners in the housing boom: since 1969, house prices for first-time buyers have increased 48 times over, while incomes have grown 29 times.

OLDER PENSIONERS

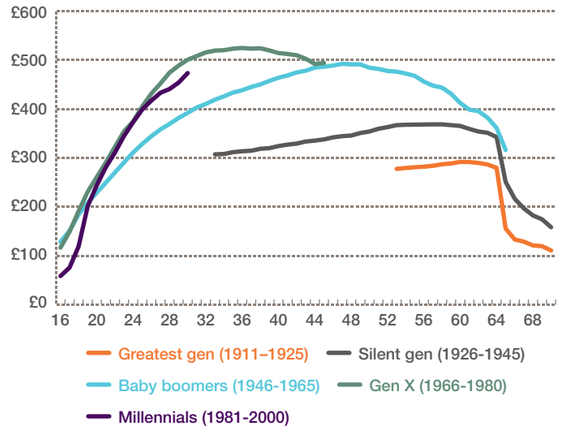
Pensioners now earn more after housing costs than those in work – whereas in 1990 they were 30% poorer.

Sources:
Shelter 2015a; Shelter 2015b; Gardiner 2016; Belfield et al 2015.

NO LABOUR MARKET FOR YOUNG (WO)MEN

The most recent cohort entering the labour market are earning significantly less than their predecessors. This is likely to have a scarring effect: younger cohorts will struggle to catch up with older, better paid generations. It could also set a precedent: the generation entering work in the 2020s could start at a historically low rate relative to postwar cohorts.

Figure 1: Median pay by age for each generation: UK, 1975–2016, median real weekly pay for all employees (RPIJ-adjusted to 2016 prices)

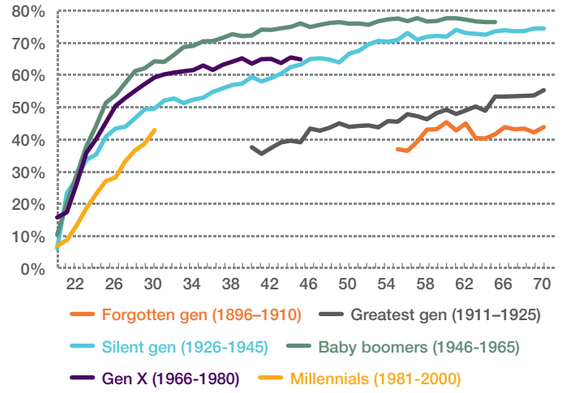


Source: Gardiner 2016

NOWHERE TO CALL HOME

The 2020s will see a transformation in housing tenure. Private sector renting will surge among the young, often in substandard conditions. By 2030, almost 40% of all under-40s are forecast to be living back at home with their parents, up from around 14% today. Homeownership will decline overall as rising prices put it out of reach for many.

Figure 2: Homeownership rates by age for each generation: UK, 1961–2016



Source: Gardiner 2016

A NEW ‘SOCIAL’-ISM?: DATA UBIQUITY AND THE POLITICS OF THE NETWORK

The future will be networked. Ubiquitous digital connection and the capture and analysis of ever-more data will transform our built environment, create new models of governance, and disrupt and reshape business models and sectors. In the process, the ‘whole of society will have become a single office and a single factory’, generating immense economic value and power.

Who reaps the benefit of a networked society will be a key political question. If data is a key resource of the future, and it is socially produced, a new ‘social’-ism could be possible in the 2020s, through democratic ownership of our collective data. As Stafford Beer, designer of the visionary cybernetic system Project Cybersyn, said, ‘information is a national resource’. Moreover, a world of ubiquitous real-time data could help create fundamentally different models of production and distribution. Building a democratic and open data infrastructure is therefore a challenge for progressives akin to delivering the physical infrastructure of the 19th century and the welfare state of the 20th.

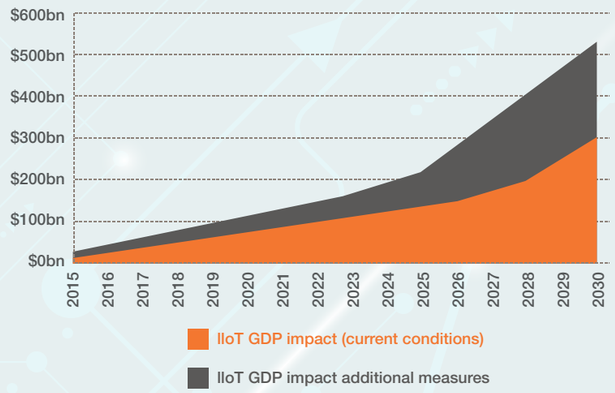
DATA WILL BECOME INCREASINGLY UBIQUITOUS, VALUABLE AND ENCLOSED

- Physical and social infrastructure will be increasingly digital and networked, capturing data and generating immense economic value. The ‘Internet of Things’ alone has a total potential global impact of $11.1 trillion a year by 2025.
- Who captures the economic windfall from socially generated data will be a key political question. Currently, networks effects means the data economy is likely to be marked by oligopolistic consolidation and cartelisation.
- The enclosure of socially created data by extractive network monopolies is analogous to the enclosure of the commons in the 19th century. If so, how we do we build an open, democratic data infrastructure?

FACEBOOK, THE NEW SOCIAL FACTORY? FROM COMMAND TO CONTROL

- Production will evolve from physical labour to immaterial, knowledge-based labour, with more and more people performing unremunerated data-generating labour. This will generate a new type of network capitalism that relies on public data and powerful network effects, and tends towards monopoly.
- The boundaries between work and leisure will increasingly blur as the **‘whole of society will have become a single office and a single factory’**. Who benefits from this will be determined by the institutions and models of ownership we can collectively develop: how is the data infrastructure built, who controls it, and who owns the data produced?
- **Economic and political power will become less about command and more about control.** The ubiquity of sensors networks will allow for powerful forms of surveillance, control, ‘apolitical’ evaluation and measurement as models of governance. This will raise vital questions around the ownership and control of these technologies, and about what we should measure.

FIgure 1: The data economy will create immense value.
The ‘Internet of Things’ is expected to add up to $303 billion in real terms to the UK economy alone by 2030.



Source: Davarzani and Purdy 2015

Sources:

Manyika et al 2015; Srnicek and Williams 2015; Lenin 1917, Intel 2016; UK Government Office for Science 2016; Hardt and Negri 2004

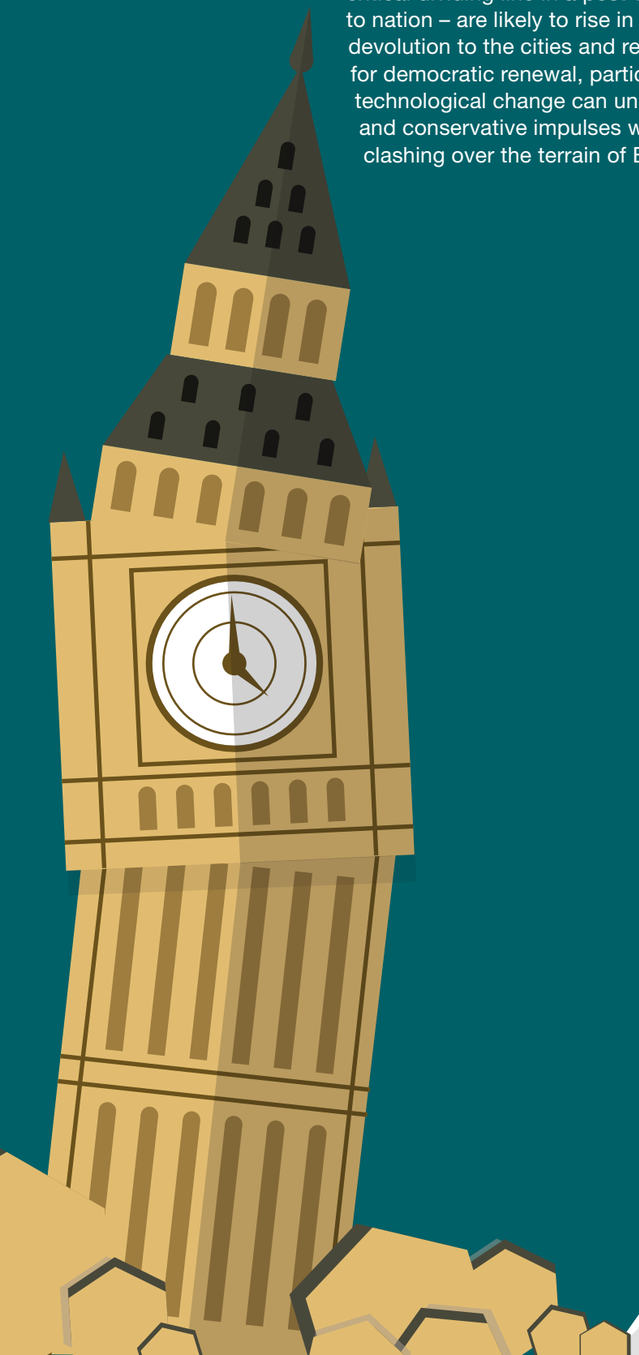
A NETWORKED, DATA RICH WORLD WILL TRANSFORM CITIES, BUSINESSES AND PUBLIC SERVICES

- The ever increasing ubiquity of real time data could have transformative effects on the allocation of goods, services and broader social resources in coming decades.
- Ubiquitous data could help overcome Friedrich Hayek’s famous ‘socialist calculation’ critique of planning systems, opening up a 21st century built along fundamentally different models of production and distribution
- Digital networked technologies will facilitate the widespread adoption of decentralized energy production and consumption.
- Improved data and analysis will help reframe transport systems and vehicle technology, radically altering built environments, transport, and logistics
- Digitally networked, data rich cities will transform how we interact with the built environment, offering more effective management of scarce resources, and improving urban transport, energy, social policy and healthy systems.

A DECADE OF DEMOCRATIC DISTRESS

Brexit will reshape a democracy already divided by age, class and region. Deep shifts in politics and culture will continue to overturn old certainties as group ties and identities structure political commitment and attitudes. Fragmentation and constitutional upheaval are likely to accelerate as Westminster's institutions struggle to reflect the fluidity of 21st century politics and identity.

Signs of democratic distress will multiply, straining the legitimacy and effectiveness of the UK's political institutions. A mood of anxiety, insecurity and declining trust in public institutions is set to be the backdrop. Divides over migration and the management of globalisation will be continue to be a critical dividing line in a post-EU Britain. The politics of place – from neighbourhood to nation – are likely to rise in salience after Brexit. At the same time, substantive devolution to the cities and regions of the UK is set to continue, offering an avenue for democratic renewal, particularly when combined with the democratic energy technological change can unleash. Politically, a complex mix of liberal, solidaristic and conservative impulses will shape the decade, with regional and sectoral interests clashing over the terrain of Brexit.



By significant majorities, individuals in occupation classes C2 (-18) and DE (-38) think that democracy serves their interests poorly. Without revitalisation, democratic norms will continue to be challenged in the 2020s.

THE END OF 'BRITISH POLITICS': A DEMOCRACY DIVIDED BY AGE, REGION AND CLASS

- The UK's first-past-the-post electoral system will struggle to represent an increasingly diverse political landscape. The idea of a unitary 'British' electoral map is going to become redundant on current trends given the decline of unionist parties in Scotland.
- The average voter in the 2020s is likely to be older, richer and more likely to be an owner-occupier than the population as a whole. Politics will tilt towards their interests as a result.
- Attitudes to migration and the management of globalisation are sharply divided by age, class and region. This will continue to shape politics and divide traditional political coalitions, particularly on the left.

DEVOLUTION AS A ROUTE TO DEMOCRATIC RENEWAL?

- The next decade will see extensive devolution to the cities and regions of the UK. Political power and decision-making will become more diverse, yet devolution will remain patchy and incomplete.
- Cities, not Westminster, are likely to be where political experimentation takes place in the 2020s.
- The politics of place and identity, whether neighbourhood, city, region, or nation, are therefore likely to rise in political importance, fragmenting politics but also offering routes to democratic renewal.
- Political divergence will drive further devolution to Scotland – or potentially even independence. The political aftershocks of Brexit could outlast the economic effects.

CONCLUSION

'We are called to be architects of the future, not its victims.'

R Buckminster Fuller

In a world increasingly transformed, the status quo will prove inadequate. The UK's current economic model is likely to deliver weak and unstable growth, rising inequality and stagnant living standards for many. Without reform, our political and fiscal system will struggle to build a more democratic, healthy society in the decades ahead, even as Brexit accelerates us towards a radically different institutional landscape.

In the conditions of the 2020s and beyond, politics cannot return to the strategies of the past. The old approaches will not be robust enough to mitigate against growing insecurity, ambitious enough to reform Britain's economic model, or sufficiently innovative to affect deeper social and political transformation. The old toolkit can only get us so far in the new times ahead.

Instead, the radical disruption of the coming decades should be met with new institutional solutions if we are to flourish collectively and as individuals. This will require rethinking notions of work, value and how they connect to identity and culture, as well as reimagining the institutions underpinning ownership, production, consumption and distribution. Above all, it will require the re-embedding of economic policy within political objectives, shaping the economy through democratic institutions and practices. IPPR's newly launched Commission on Economic Justice will seek to give practical expression to that impulse, developing new approaches and policies to ensure that we build an economy that works for all of us.

The goal of reform in the decade-and-a-half ahead should be to recommence what Raymond Williams called 'the long revolution' – the steady, irreversible expansion of democratic voice and power through building or reforming institutions of society, market and state in pursuit of a more equal, prosperous and powerful society (Williams 1961). This would respond to the sentiments widely expressed in the EU referendum, that society should democratically order the market: that it should be the servant, not the master.

It will require building a new 'common sense' that reclaims a different type of modernity to that envisioned by neoliberalism – one that deepens and broadens economic and social freedom for everyone, not just a privileged few. This will require collectively shaping social, economic and technological change to extend democracy and deepen human flourishing, creating institutions that harness the growing power of technology to promote shared abundance, and building a common life that rewards purpose and kindness.

In short, we will need to be the architects of a better future, not archivists preserving an old order.

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ACKNOWLEDGMENTS

The author would like to thank Steve Morrison, Len Collinson, and Trevor Chinn for their generous support of the project.

He would also like to thank colleagues at IPPR – both past and present - for their comments and advice, particularly Tom Kibasi, Michael Jacobs, Carys Roberts, Alfie Stirling, Joss Garman, Sofie Jenkinson, Nick Pearce, and Laurie Laybourn-Langton. Finally, he would ike to thank Elizabeth Mellor and Ross Fulton for bringing the report to visual life, and Adebusuyi Adeyemi, Alvin Carpio, Ellie Groves, Joe Jervis, Sophia Morrell, Oliver MacArthur and Jessica Toale for their contribution.

The future remains ours to make; I hope this report helps in a small way for us to make that future well.

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This paper was first published in December 2016.

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