

# THE GREAT BRITISH BREAKTHROUGH

Driving productivity growth in the UK

September 2017



The Great British Breakthrough  
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# About the Centre for Social Justice

Established in 2004, the Centre for Social Justice (CSJ) is an independent think-tank that studies the root causes of Britain's social problems and addresses them by recommending practical, workable policy interventions. The CSJ's vision is to give people in the UK who are experiencing the worst disadvantage and injustice every possible opportunity to reach their full potential.

Since its inception, the CSJ has changed the landscape of our political discourse by putting social justice at the heart of British politics. This has led to a transformation in government thinking and policy. The majority of the CSJ's work is organised around five 'pathways to poverty', first identified in our ground-breaking 2007 report, *Breakthrough Britain*. These are: family breakdown; educational failure; economic dependency and worklessness; addiction to drugs and alcohol; and severe personal debt.

In March 2013, the CSJ report *It Happens Here*, shone a light on the horrific reality of human trafficking and modern slavery in the UK. As a direct result of this report, the government passed the Modern Slavery Act 2015, one of the first pieces of legislation in the world to address slavery and trafficking in the 21st century.

The CSJ delivers empirical, practical, fully-funded policy solutions to address the scale of the social justice problems facing the UK. Our research is informed by expert working groups comprising prominent academics, practitioners, and policy-makers. Further, the CSJ Alliance is a unique group of charities, social enterprises, and other grass-roots organisations that have a proven track-record of reversing social breakdown across the UK.

The 13 years since the CSJ was founded has brought with it much success. But the social justice challenges facing Britain remain serious. Our response, therefore, must be equally serious. In 2017 and beyond, we will continue to advance the cause of social justice in this nation.

# Chairman's foreword

The CSJ's remit has always been to approach a subject with a blank slate, research the root causes of a problem, and build a significant body of evidence to support a programme for change. We have done just that with this report, and what is presented here is a programme that will radically change the shape of our economy, putting us back on a growth path that delivers improved living standards for the British people.

There is no doubt that the stagnation in productivity poses a serious threat to our economy. If productivity had continued to grow at 2 per cent, the pre-crisis rate, our economy would be a fifth larger. Our debt burden would be smaller, our budget deficit would have become a surplus, wages would be higher, and poverty levels would be even lower.

This report sets out to counter the claim that productivity stagnation began in 2008. We argue it has been going on for up to two decades, and has been most damaging for those at the bottom of the income scale. The report sets out three main drivers of productivity; innovation across British business, human capital and regional dynamics. We set out 51 recommendations that, if enacted promptly and properly, will help boost British productivity growth.

The message in this report is simple; investing in transport infrastructure, digital networks and technical skills is important, but unless you target policy to support the least advantaged in society, we cannot return productivity growth to pre-crisis levels. More must be done to support children who drop out of school without any qualifications and boost opportunities for students in STEM education. We must re-invest in our Further Education sector as an alternative to Higher Education. Better support for entrepreneurs from disadvantaged backgrounds is essential. We can no longer let people languish on low paid and low skilled work, without any access to training for up-skilling, and no opportunity for progression. Finally, the Government needs to take seriously the gap between London and the rest of the country, and recognise that too often productivity growth has been at the expense of employment and poverty.

I would like to thank members of the working group, whose contributions to this report have been invaluable. They brought with them experience from across the British economy that helped mould our understanding of the productivity problem and make recommendations which will help change our country.

**Rt Hon. Iain Duncan Smith MP**

# Working group

## **Rt. Hon Iain Duncan Smith MP (Chairman)**

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Iain Duncan Smith served as Secretary of State for Work and Pensions from 2010 to 2016, during which time he led the reform of the welfare and pensions systems. He is founder of the Centre for Social Justice, and led much of the work into setting up Universal Credit. Iain was elected Member of Parliament for Chingford in 1992, and held positions of Shadow Secretary of State for Social Security and Shadow Secretary of State for Defence.

## **Sir Ian Cheshire**

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Sir Ian is one of Britain's most prominent businessmen. He is currently Chairman of Barclays UK, Debenhams plc, and Maisons du Monde; a senior independent director at Whitbread plc; and is a lead non-executive director for the government. He was previously Chairman of the British Retail Consortium, Chairman of the Prince of Wales Corporate Leaders Group on Climate Change and President of the Business Disability Forum President's Group.

## **Andrew Churchill**

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Andrew is Managing Director of JJ Churchill Ltd, a 79-year-old family owned precision engineering firm based in the West Midlands. He sits on the board of EEF The Manufacturers Organisation, is a member of the IET Manufacturing Policy Panel, remains a fellow of the IET, and has been part of the All Party Parliamentary Groups for both Manufacturing and Trade & Investment. Andrew read chemistry at Oxford University.

## **Dr Gerard Lyons**

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Dr Lyons is one of Britain's most celebrated economists. Currently Chief Economic Strategist at Netwealth Investments, he was previously Chief Economic Advisor to Mayor of London Boris Johnson, Chief Economist at Policy Exchange and held senior roles at Standard Chartered Bank, Swiss Bank and DKB International. He sits on the advisory boards at Warwick Business School and the Grantham Institute. Gerard has recently published a book entitled '*Clean Brexit*'.

### Dr Sarah Main

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Dr Main is the Executive Director of the Campaign for Science and Engineering (CaSE). A molecular biologist by training, Sarah has worked for Cancer Research UK and the Medical Research Council. She also completed a secondment to the Department for Business, Innovation and Skills where she wrote a report on the leveraging power of public investment in science and research for the UK economy.

### John Mills

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John Mills is Chairman of JML Ltd, one of the largest import-export distributors in the UK. Other roles include the Chairman of the Economic Research Council and Chairman of the Pound Campaign. John is an economist by training, and has over 50 years' experience as a commentator on British economic policy making. Author of nine books, he is also a Labour Party member, and played a significant role on the board of Vote Leave during the EU referendum.

### Carole Willis

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Carole is the Chief Executive of the National Foundation for Educational Research (NFER). One of the countries most respected voices on education, she was previously Director of research at the Department for Education, and the Department's Chief Scientific Adviser. She worked on productivity growth at the Department of Trade and Industry, has helped deliver pension reform at the Department for Work and Pensions and worked on poverty reduction programmes at the World Bank.

### Patrick Spencer (CSJ Researcher)

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Patrick Spencer is Head of the Work and Welfare Unit at the Centre for Social Justice where he conducts research into the most effective policies that increase employment and reduce welfare dependency across Britain. Prior to working at the Centre for Social Justice, he worked in financial services and stood as the Conservative Party candidate in West Ham during the 2017 general election.

With thanks to our sponsors.



Disclaimer – Participation in the working group does not indicate that each participant agrees with all recommendations in the final report.

# Executive summary

Britain's productivity problem is well known, if little understood, in Westminster and across the UK. In August 2017, Office for National Statistics (ONS) data showed output per hour (the most commonly used term for productivity) had declined by 0.1 per cent in the second quarter of 2017, after a 0.5 per cent decline in the first quarter of 2017 leaving the UK economy half a per cent less productive than it was in 2007. Britain today is 20 per cent less productive than the pre-crisis trend in productivity growth.<sup>1</sup>

Why does this matter? After all the UK has 32.1 million people in work, strong economic growth and declining levels of poverty.<sup>2</sup> It matters because productivity growth is the most important determinant of living standards over time. It allows an economy to produce more for less, and to a better quality than before. Productivity growth drives wage growth, and only long-term wage growth across society can reduce absolute poverty.

The current consensus on the UK's productivity problem understands it as a result of the 2007/09 financial crisis which triggered a recession, a period of low investment, easy monetary policy and relative strength in the labour market. This paper argues, however, that these short term factors have only contributed to existing economic pressures and there have been longer term drivers of productivity stagnation. This paper seeks to define these long term drivers of productivity stagnation under three headings:

1. **Innovation** – In the short term, a decline in capital investment has reduced productivity growth; however, in the long term there has been a systematic decline in the level of innovation across the UK economy. The UK spends less than Germany, Sweden or South Korea on research and development (R+D), and UK businesses exhibit a lower take-up of new generation technologies including robotics and the internet of things (IoT) applications. Polling published for the first time in this report found that 42 per cent of business leaders believe investing in new technology is the most important business activity for the future of their business, whilst financial support for R+D was the fourth most favoured Government policy designed to boost productivity. Among other things this report calls for:

- Increases in capital investment across the British economy.
- An increase in Government spending in R+D.
- Simplification of the tax system to encourage capital investment.
- Greater support for entrepreneurs, especially from disadvantaged backgrounds.
- Support for management to increase take up of new generation technologies (robotics, AI, IoT).

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1 ONS, Labour productivity: Jan to Mar 2017 (July 2017) [accessed via: [www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/bulletins/labourproductivity/jantomar2017](http://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/bulletins/labourproductivity/jantomar2017)]

2 ONS, Persistent Poverty in the UK and EU: 2015 (June 2017)

2. **Human capital** – No wage growth for the bottom 20 per cent of the income scale and low levels of occupational progression for over two decades suggests there has been little productivity growth for the most disadvantaged in society since well before the financial crisis. This report establishes that the education system is failing a majority of disadvantaged students, many of whom are not reaching the basic level of attainment at GCSE level, and that there are too few alternative routes through education and into employment for school leavers today. The CSJ also highlight the low levels of professional development training and in-work progression. This report calls for:
- A rethink of Professional and Technical Education (PTE) in the UK.
  - Diversification of routes through education and into employment.
  - Better support for the FE college sector.
  - Employers to better support professional training, better terms of employment and support for occupational healthcare schemes.
3. **Regional dynamics** – The gap in productivity performance between London and the rest of the UK is growing, as are the gaps in performance along many of the metrics that influence productivity growth (educational attainment, infrastructure spending, start-ups and financial investment). There is also evidence showing that productivity growth has been largely exclusive, often occurring in areas with high density of poverty and social breakdown. Understanding productivity growth requires understanding the regional dynamics that have shaped the British economy. This report calls for:
- Building local competitive advantage across regional city based clusters.
  - Spending on physical and social infrastructure.
  - Attracting ‘Big Employers’ to a cluster.
  - Pairing a local growth plan with a radical anti-poverty agenda, ensuring inclusive productivity growth.

Lastly, this report calls for a major review of how productivity is measured at an international level. The UK is often cited for having productivity levels two percentage points behind Spain, 11 percentage points behind Germany, 14 percentage points behind France, and 37 percentage points behind the United States of America. This report argues that many of these countries have higher rates of productivity in part because of either high unemployment rates (France) or high inactivity rates (US). The CSJ is committed to keeping the UK employment rate at record levels. For many, work is the best route out of poverty, a means of escaping welfare dependency, avoiding a life of crime and building self-respect and esteem. This report calls for a new measurement of productivity that includes both those registered as unemployed and those between the ages of 18–64 who are not in the labour market. This measure would never prioritise productivity over employment, and would reward the economy that delivered growth in both.

This report is a call for Government to reconsider productivity as an issue that can be best solved by breaking down social injustices that cause poverty and empowering the most disadvantaged by giving them opportunity to thrive. Productivity is so often seen as an abstract economic phenomenon, when in fact it is shown here to have dire social consequences for those most in need across our society.

This report therefore sets out to better understand the UK’s productivity problem, and build a policy programme that can help drive productivity growth higher whilst improving

the life chances for many of the poorest in society. It is split into 3 parts: Part I provides a background to our productivity performance in the UK and a brief overview of the existing literature on productivity. In Part II, we develop three drivers of productivity: innovation, human capital and regional dynamics. Part III details a blueprint of policy proposals, which enacted together will work towards improving national productivity growth.

# Aims

The CSJ has arrived at the subject as productivity stagnation has become an issue for our core demographic: the bottom 20 per cent, the least advantaged in society, and those that are most at risk of falling into poverty. The aim of all our reports is to better understand the root causes of injustice and find pragmatic policies that protect the most vulnerable and disadvantaged. This report is no different in its mission. We aim to:

- Outline the drivers of productivity stagnation in the UK, understanding this complex phenomenon in terms of human behaviour and social indicators.
- Develop a policy platform that directs government towards improving productivity growth in the UK, and improve living standards for people across the country.

# Introduction

If any one term has come to define the post-recession economic zeitgeist it has been productivity. The Coalition Government, faced with a record budget deficit, low growth and low employment rates, put in place reforms (predominantly to the welfare system) that had, by the 2015 general election, created over 2 million jobs, halved the deficit and got the British economy growing at the fastest rate in the G7. However, despite this success, debt levels increased and aggregate wage growth stagnated, exposing a consistently low rate of productivity growth across the British economy.

In 2012, the media intensified coverage on the slow growth in productivity and the risk it posed to both wages and living standards. Financial Times columnist Martin Wolf commented in 2012 on the fall in average hours worked per employee and blamed this on labour hoarding by corporates.<sup>3</sup> Chancellor of the Exchequer George Osborne cited disappointing rates of productivity growth in his 2013 autumn statement,<sup>4</sup> and newly appointed Governor of the Bank of England Mark Carney caused a popular stir during a speech in the Midlands by saying “*Productivity growth has been anaemic and, remarkably, the UK is no more productive than it was back in 2005. And to put it in context, that was before Nottingham’s own Jake Bugg got his first guitar*”.<sup>5</sup>

Policy reaction was tepid, while deficit reduction and employment growth remained supreme aims in a Government that had an election to contest in under 18 months. After Prime Minister David Cameron returned to Downing Street in May 2015 with a parliamentary majority, the focus turned to what was undermining the economy in the long term. In July of that year, Chancellor George Osborne and Secretary of State for Business, Innovation and Skills Sajid Javid released ‘*Fixing the Foundations; Creating a more prosperous nation*’ which had productivity growth at its heart.<sup>6</sup> Included in the release were provisions for a Government review into productivity led by Sir Charlie Mayfield which reported in 2017. The Government had by this time launched the Northern Powerhouse initiative which sought to rebalance growth away from London and the South East. After the EU Referendum and consequent ascendance of Theresa May as Prime Minister and Philip Hammond as Chancellor, the Government had firmly committed itself to the problem of low productivity growth. The 2016 Autumn Statement had the productivity gap at its core, and made commitments to spend £23 billion on a National Productivity Investment Fund with the aim of reducing that gap.

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3 Martin Wolf, *Puzzle of falling UK labour productivity* (Ft.com, 20 September 2012), [accessed via: [www.ft.com/content/f4ee26a8-0262-11e2-b41f-00144feabdc0?mhq5j=e3](http://www.ft.com/content/f4ee26a8-0262-11e2-b41f-00144feabdc0?mhq5j=e3)]

4 George Osborne Autumn Statement 2013, [accessed via: [www.gov.uk/government/speeches/chancellor-george-osbornes-autumn-statement-2013-speech](http://www.gov.uk/government/speeches/chancellor-george-osbornes-autumn-statement-2013-speech)]

5 Mark Carney speech (28th August 2013) [accessed via: [www.bankofengland.co.uk/publications/Documents/speeches/2013/speech675trans.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2013/speech675trans.pdf)]

6 UK Government, *Fixing the foundations: creating a more prosperous nation* (Gov.uk, July 2015)

Today, productivity, measured as output per hour, is below pre-crisis levels. *“Productivity is now 0.4 per cent below the pre-downturn peak and 0.4 per cent below the post-downturn peak”*.<sup>7</sup> The other most commonly used measure, output per worker, is just 0.7 percentage points higher than at the end of 2007. To put things in historical perspective, if productivity growth had continued to grow at its pre-crisis rate, output per hour would be approximately 20 per cent higher today.

### What is productivity?

Broadly speaking, at any one time there are a fixed number of resources (capital and labour) in the world. In the near to medium term, we engage in work, and what we produce (known as output) depends on how productively we utilise those resources.

Productivity is most routinely measured using output against hours worked. This is simplistic because capital is also used in any production process. Multifactor productivity (also known as Total Factor Productivity) is a residual that can't be explained by an increase in either capital or labour. However, for the sake of keeping this report readable, and rooted in understanding productivity as a social justice issue, I will refrain from confusing the reader with TFP or MFP, and use output per hour to measure productivity.

Productivity growth has three root causes: a worker becomes inherently more productive, more capital is available to increase workers utility, and lastly the interaction between a worker and the technology around him/her combines to reap exponential increases in output capacity.

Why is productivity growth important? Without increasing our output capacity, we are unlikely to see great improvements in wages or our quality of life. A great (if chronologically shortened and simplified) example of when productivity grew was the 19th century. It was during this time that the Industrial Revolution and Enlightenment combined to improve the quality of human capital and advance technology, thereby increasing our productive capacity and greatly improving our quality of life.

## Productivity and social justice

Productivity is not often considered a social justice issue. At the CSJ, we are driven to better understand the drivers of injustice and develop policy that supports the least advantaged in society to live a life with meaning and dignity. Productivity growth has been the preserve of macroeconomists, the Bank of England and abstract statistical analysis. However, three issues brought the CSJ to productivity:

- Productivity growth can often come at the risk of employment and poverty – the CSJ was founded on the principle that the best route out of poverty is in work. Job growth and getting people into work is essential for the long term economic and social health of a country. However, productivity growth has historically come at the cost of employment. Reducing employment is not good policy and any effort to boost UK productivity should incorporate a pro-employment and poverty reduction agenda.

<sup>7</sup> ONS, Labour productivity: Jan to Mar 2017

- This paper comes at a time of record employment rates in the UK, a consequence of work on welfare reform for which the CSJ and its founder Iain Duncan Smith MP were largely responsible. These reforms have helped 3.1 million people into work since July 2010, some for the first time in generations. As employment has reached record levels, the policy question now turns to how we help improve the quality of jobs and quality of working life for the 32.1 million people in work today.
- It is the CSJ's belief that productivity stagnation has been partly driven by issues facing the bottom 20 per cent. Whether it is in employment or wage data, regional growth rates, and survey polling, the problem of low productivity is being driven by problems faced by the least advantaged in society, the CSJ's core demographic.

# 1

## HISTORY OF PRODUCTIVITY



## chapter one

# Miracle or mirage: UK productivity performance from the '70s to today

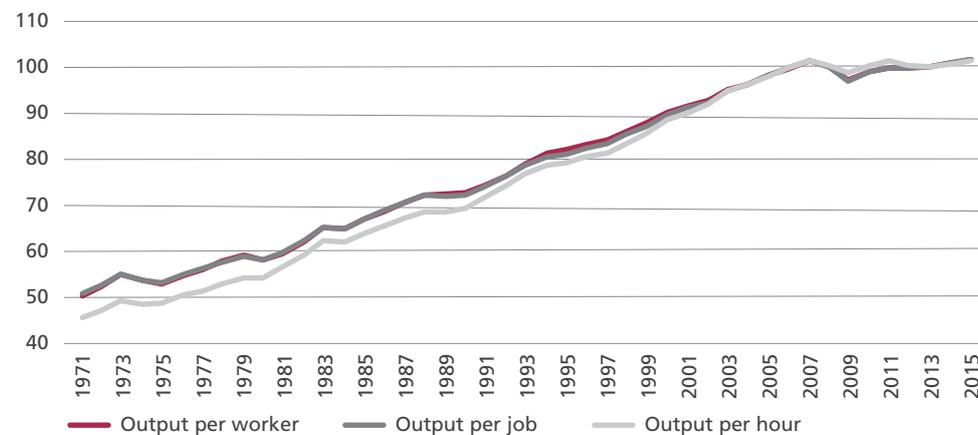
For the past decade, average productivity growth has been negative. This is unusual, if not unique, historically. You would have to go right back to the 18th century to see a similarly lengthy period of stagnant productivity.

Andy Haldane (March 2017)

## Pre-crisis UK productivity

Prior to the global financial crisis and recession between 2008 and 2009, the UK economy recorded a sustained period of productivity growth. In the 1970s, a decade defined by industrial strife, annual output per hour growth averaged at 1.9 per cent. In the 1980s, this grew to 2.39 per cent, in the 90s it was 2.26 per cent, and between 2001 and 2007 productivity growth was 2.14 per cent.<sup>8</sup>

Figure 1. Historical productivity growth 1971–2015 (2013 = 100)



Source: ONS

<sup>8</sup> ONS, Labour Productivity Historical Estimates (February 2017), CSJ Calculations

British economic policy-making in the 1980s was revolutionary. The Conservative Government reduced union power, removed subsidies for failing sectors, deregulated labour and capital markets, privatised national industries and ushered in the 'Big Bang'. Dennis Healey had overseen a top rate of income tax at 83 per cent and an investment income tax of 15 per cent in 1978. This was reduced to 60 per cent by Conservative Chancellor Geoffrey Howe in 1979 and then to 40 per cent by his successor Nigel Lawson in 1988. Combined with the acceleration of globalisation as a market force, and advances in communication technology, the ability to buy, sell and invest around the world grew.

Alongside this surge in economic activity, unemployment rose and average working hours declined across the UK, putting upward pressure on productivity. Business investment wage growth almost doubled in the '80s compared to the '70s.<sup>9</sup> Average annual productivity growth between 1979 and 1989 was 2.38 per cent.<sup>10</sup> This was equivalent to the economy growing by a third in this period and becoming 25 per cent more productive.<sup>11</sup>

Where the 1980s was a period of economic upheaval, the 1990s heralded an age of further economic integration between states and great advances in technology. The fall of the Soviet Union in 1991 and greater integration amongst members of the European Community contributed to the lowering of trade barriers, harmonisation of trading relationships and increased movement of ideas and people. Business investment increased 101 per cent between 1990 and 2000. New ideas that included cellular technology, the Internet, World Wide Web and email changed how individuals and businesses interacted. The corporate landscape of the UK changed as US consumer products such as NIKE, Apple Mac computers, and Microsoft Windows became more available. In America, the 1990s was the '*Economy of Bill*'... Bill Gates, not Bill Clinton.

The effect was exponential productivity growth. The 1990s and 2000s saw 18 successive years of productivity growth between 1990 and 2008. Productivity growth averaged 2.04 per cent during this period. By 2008, the economy was nearly 45 per cent more productive than it had been in 1990.<sup>12</sup>

Our quality of life improved dramatically too. Unemployment fell considerably in the 1990s. Individuals had access to personal computers, mobile phones and the Internet. Life expectancies for all demographics also improved. In 1982, the life expectancy in England for a male and female at birth was 71 and 77 years respectively; by 1992 it was 73 and 79 years.<sup>13</sup> In the most recent ONS release, the life expectancy for a male and female born between 2012–2014 was 79 and 83 respectively.<sup>14</sup> Our material wellbeing changed significantly too. Between 1990–2008, mean household income rose by more than a third, while median income increased by 40 per cent.<sup>15</sup> The S80/S20 ratio, indicating the ratio of

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9 ONS, UK labour market: Feb 2017 [accessed via: [www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/feb2017](http://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/feb2017)]

10 ONS, Labour Productivity Historical Estimates (February 2017), CSJ Calculations

11 ONS, CSJ Calculations

12 ONS, CSJ Calculations

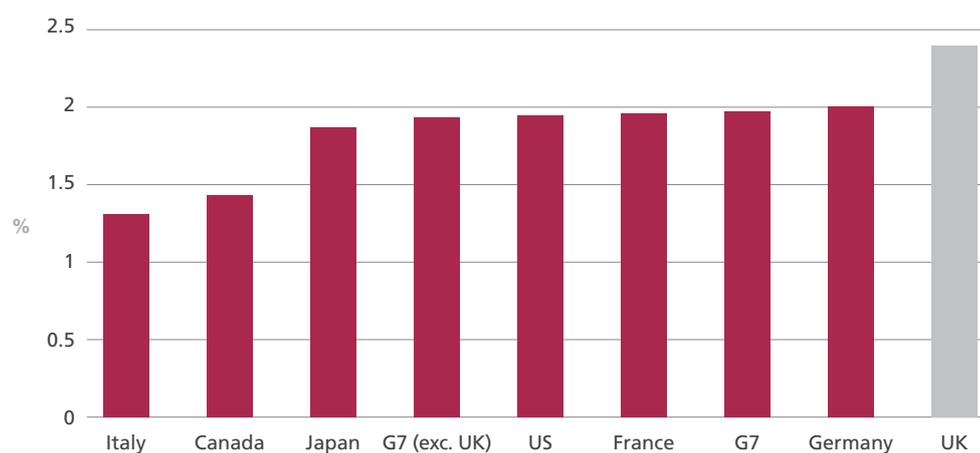
13 ONS, UK Interim Life Tables, 1980–82 to 2008–10 (September 2011) [accessed via: [http://webarchive.nationalarchives.gov.uk/20160107151419/www.ons.gov.uk/ons/dcp171780\\_234021.pdf](http://webarchive.nationalarchives.gov.uk/20160107151419/www.ons.gov.uk/ons/dcp171780_234021.pdf)]

14 ONS, Life Expectancy at Birth and at Age 65 by Local Areas in England and Wales: 2012 to 2014, November 2015 (November 2015) [accessed via: [www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/bulletins/lifeexpectancyatbirthandage65bylocalareasinenglandandwales/2015-11-04#national-life-expectancy-at-birth](http://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/bulletins/lifeexpectancyatbirthandage65bylocalareasinenglandandwales/2015-11-04#national-life-expectancy-at-birth)]

15 ONS, Household disposable income and inequality: financial year ending 2015 (February 2016) [accessed via: [www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/householddisposableincomeandinequality/financialyearending2015](http://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/householddisposableincomeandinequality/financialyearending2015)]

the total disposable income of the wealthiest fifth of the population to that of the poorest fifth, increased from 4.2 in 1980 to 6.4 in 1990.<sup>16</sup> However, this fell over the following 15 years to 5.3 in 2014/15.<sup>17</sup> With increased wealth, demand for home ownership rose. There were 11.9 million owner-occupied households in the UK in 1980, 15.5 million by 1990, 17.4 million by 2000 and 18.1 million by 2007.<sup>18</sup> The UK had lived through what seemed to be a productivity miracle.

Figure 2. Average annual productivity growth (1991–2007)



Source: ONS

## The great divergence

Whilst productivity across the UK economy skyrocketed in the 80s, 90s and early 00s, pro-market globalist policies had the effect of rapidly changing the economic structure of the UK. The coal industry saw employment fall by approximately 80 per cent,<sup>19</sup> while big employers like British Leyland went into administration and steel works in regional towns like Shotton and Corby were shut down. The mining industry lost 110,000 or 56 per cent of jobs between 1979 and 1989.<sup>20</sup> The basic and fabricated metals manufacturing industry saw job losses in the same period of 448,000, or 39 per cent.<sup>21</sup> Most concerning was this decline continued after growth and employment surged in the mid-90s. Between 1990 and 2007 the mining industry halved in size again and the metals manufacturing industry lost another 308,000 jobs. In 1979, manufacturing accounted for 25.4 per cent of total employment in the UK; by 1990 it was 17.8 per cent; by 2007, it was just 9.6 per cent; in March 2016, it was less than 8 per cent.<sup>22</sup>

16 Ibid

17 Ibid

18 ONS Digital, UK Perspectives 2016: Housing and home ownership in the UK (May 2016) [accessed via: <http://visual.ons.gov.uk/uk-perspectives-2016-housing-and-home-ownership-in-the-uk/>]

19 Statista Number of people employed in the coal mining industry in the United Kingdom (UK) from 1920 to 2015 [accessed via: [www.statista.com/statistics/371069/employment-in-coal-mining-industry-in-the-united-kingdom-uk/](http://www.statista.com/statistics/371069/employment-in-coal-mining-industry-in-the-united-kingdom-uk/)]

20 ONS, Employee Jobs by Industry (March 2017), CSJ Calculations

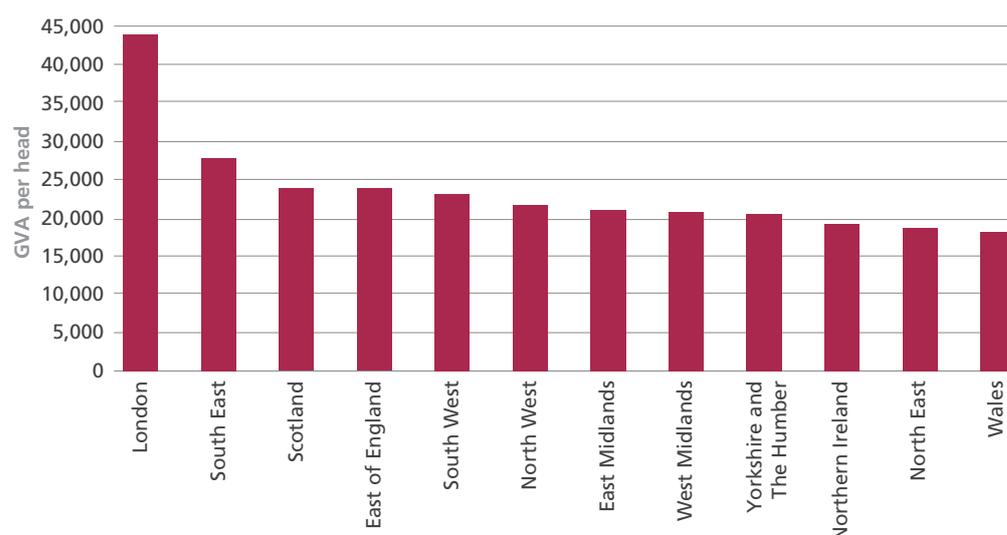
21 ONS (March 2017), CSJ Calculations

22 ONS (March 2017), CSJ Calculations

As the process of deindustrialisation continued through the 80s and into the 90s, an economic divergence emerged between the industrial North and service orientated South East. By 1997, the North East, which relied on the coal and steel industry for employment in cities such as Newcastle, Middlesbrough and Hartlepool, contributed just 3.16 per cent of UK output, whereas the South East, home to the professional service sector workers employed in London and not a single British Steel Corporation plant, contributed 14.5 per cent of output.<sup>23</sup> By 2014, this imbalance had worsened. The North East today contributes just 2.9 per cent of output, while the South East contributes 14.8 per cent.

This imbalance in economic activity has had negative repercussions for regional levels of productivity. Whilst the UK average GVA per head (the most conventional measure to judge productivity at a snapshot in time) was £24,958 in 2014, workers in the North East had a GVA per head £18,927 and workers in London had GVA per head of £43,629, a multiple of over two. In Yorkshire and the Humber, it was £20,351 whilst in the North West it was slightly higher at £21,867. Welsh workers, home to a large portion of the production and manufacturing sector that disappeared during the 80s and 90s, are 30 percent less productive than British workers, and less than half as productive as someone in London.

Figure 3. Regional GVA (2015)



Source: ONS

Of the 20 least productive local authorities<sup>24</sup> in the UK, six are in the North West, three are in the North East, four are in Wales and three are in Scotland. None are based in London, the South East, or East of England. The second least productive county in the UK is Gwent Valleys (GVA per head of £13,681), the home to the now defunct Ebbw Vale Steel Iron and Coal company and Blaenavon Ironworks. Durham and Northumberland are eleventh and eighteenth least productive counties in the UK with GVA per head of £15,475 and £15,950 respectively. Northumberland and Durham were also two of the densest coal mining areas in the country, with seven pits operating in the late '70s and early '80s alone,

<sup>23</sup> ONS, CSJ calculations

<sup>24</sup> Note: NUTS3 region

each employing between 500 and 2,000 workers.<sup>25</sup> The last operating mine, Ellington Colliery, was closed in 2005.

On the other side of the productivity divide are the boroughs of London. The five most productive and nine of the 20 most productive areas in the UK are in London.<sup>26</sup> Camden and the City of London is the most productive area in the country with GVA per head of £292,855. They are also home to tech giants Google, YouTube and Facebook, the largest music publishing company in the world, Universal, and one of the largest marketing and advertising companies Havas. Tower Hamlets is the third most productive local authority in the country with GVA per head of £98,134. It is also home to the UK headquarters for many of the world's largest financial institutions including KPMG, Morgan Stanley, Barclays, HSBC and Credit Suisse.

Figure 4. Productivity by region

Least productive regions		Most productive regions	
Region name	2015	Region name	2015
Isle of Anglesey	£13,411	Camden and City of London	£292,855
Gwent Valleys	£13,681	Westminster	£221,103
North of Northern Ireland	£13,919	Tower Hamlets	£98,134
Wirral	£14,523	Kensington & Chelsea and Hammersmith & Fulham	£62,431
Outer Belfast	£14,592	Haringey and Islington	£45,611
Sefton	£14,769	Milton Keynes	£41,581
East Lothian and Midlothian	£15,128	Berkshire	£40,248
East Ayrshire and North Ayrshire	£15,200	Hounslow and Richmond upon Thames	£37,087
Blackpool	£15,372	Edinburgh, City of	£36,963
Central Valleys	£15,429	Aberdeen City and Aberdeenshire	£36,726
Durham CC	£15,475	Berkshire, Buckinghamshire and Oxfordshire	£35,550
Torbay	£15,600	Belfast	£35,023

Source: ONS

The productivity story of Britain in the '80s, '90s and into the '00s is one of industrial and geographic divergence. The deindustrialisation of the British economy, away from manufacturing and towards knowledge intensive service industries, had a huge impact on the communities that relied on steel works, coal mines, and industrial factories for employment. The growth in knowledge intensive industries that drove output and productivity growth in London and the South East masked the decline in living standards across the North West, North East, Scotland and Wales.

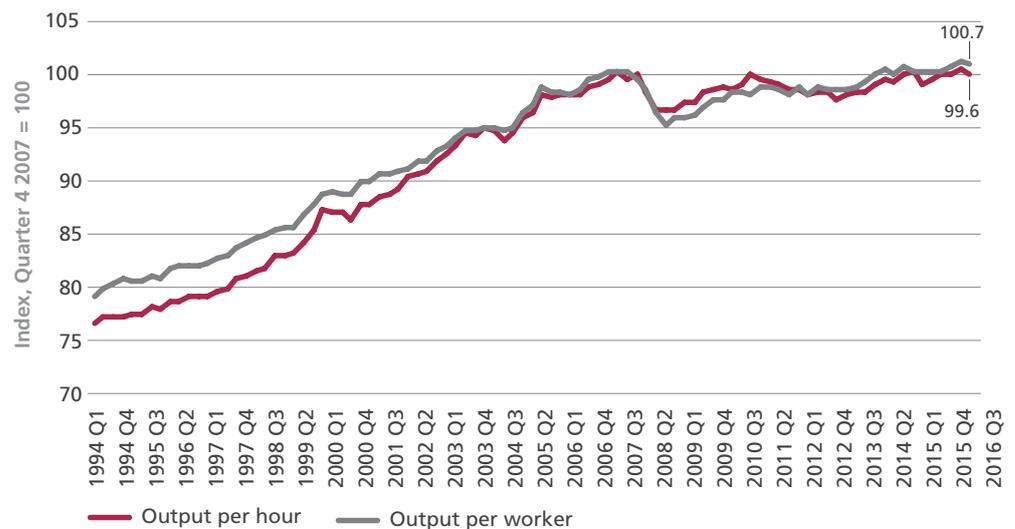
<sup>25</sup> Durham Mining Museum

<sup>26</sup> Note: Measured as a NUTS3 statistical area

## The productivity slowdown post-2009

The productivity boom that was visible from the early '80s into the mid to late '00s ended abruptly in 2008. Since then productivity growth has stagnated, whilst other countries have seen relative growth, causing alarm amongst British policymakers and politicians. Between 2000 and 2007, average annual productivity growth was 1.8 per cent. Between 2008 and 2015, this average had shrunk to 0.1 per cent.<sup>27</sup> Real median weekly earnings<sup>28</sup> declined from £480 in August 2007 to a low of £450 in March 2014.<sup>29</sup>

Figure 5. UK productivity performance (2007 = 100)



Source: ONS

The risk posed by low rates of productivity growth are clear when you map the effect of persistent low rates over the period of a decade. Assuming the UK economy continues to generate the same low rates of productivity growth (0.16 per cent) from the post-financial crisis years, we will be just 3.3 per cent more productive by 2025. However, if we return our productivity growth rates to those seen between 2000 and 2007 (2.14 per cent) the economy will be 25 per cent more productive by 2025.<sup>30</sup> Assuming the population and average working hours per week per worker remain the same, we would expect this increase in productivity to add £466 billion to our GDP by 2025.<sup>31</sup>

27 ONS, International Productivity Comparisons (April 2017), CSJ calculations

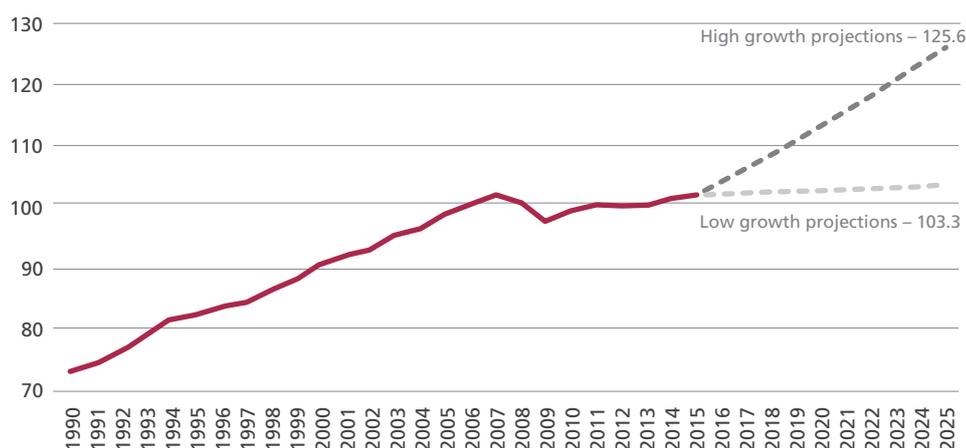
28 2015 GBP Sterling

29 ONS, Real Average Weekly Earnings (*seasonally adjusted*) (May 2017)

30 CSJ Calculations

31 CSJ Calculations

Figure 6. High vs low productivity growth projections



Source: ONS

## The employment miracle

The stagnation in productivity has coincided with the other significant story of the last 7 years; a surge in employment to record levels. The UK employment rate for working age individuals between the ages of 16–64 hit 74.8 per cent in the first quarter of 2017.<sup>32</sup> This is the highest rate of employment on record<sup>33</sup> and corroborates the theory that, with 32.1 million people in work, Britain has one of the strongest labour markets in the developed world. The EU's average employment rate is 66.9 per cent, while Germany's employment rate is 75.1 per cent, the US is at 69.6 per cent, and France is at 64.2 per cent.<sup>34</sup> The UK also has a lower unemployment rate than Sweden, the Netherlands, and France and a lower rate of economic inactivity than the G7 and EU averages.

What has driven these strong jobs figures? First and foremost, there has been a large increase in the rate of employment amongst women. Employment rates for women increased from 53 per cent in 1971 to 70 per cent in 2016. A phenomenon replicated in other Western economies that largely reflects both changes to welfare provisions that incentivise female participation in the labour market and changing socio-economic trends that have seen a rise in both single mothers<sup>35</sup> and households with both couples working. Employment rates for men decreased from approximately 92 per cent in early 1971, to 79 per cent in December 2016.

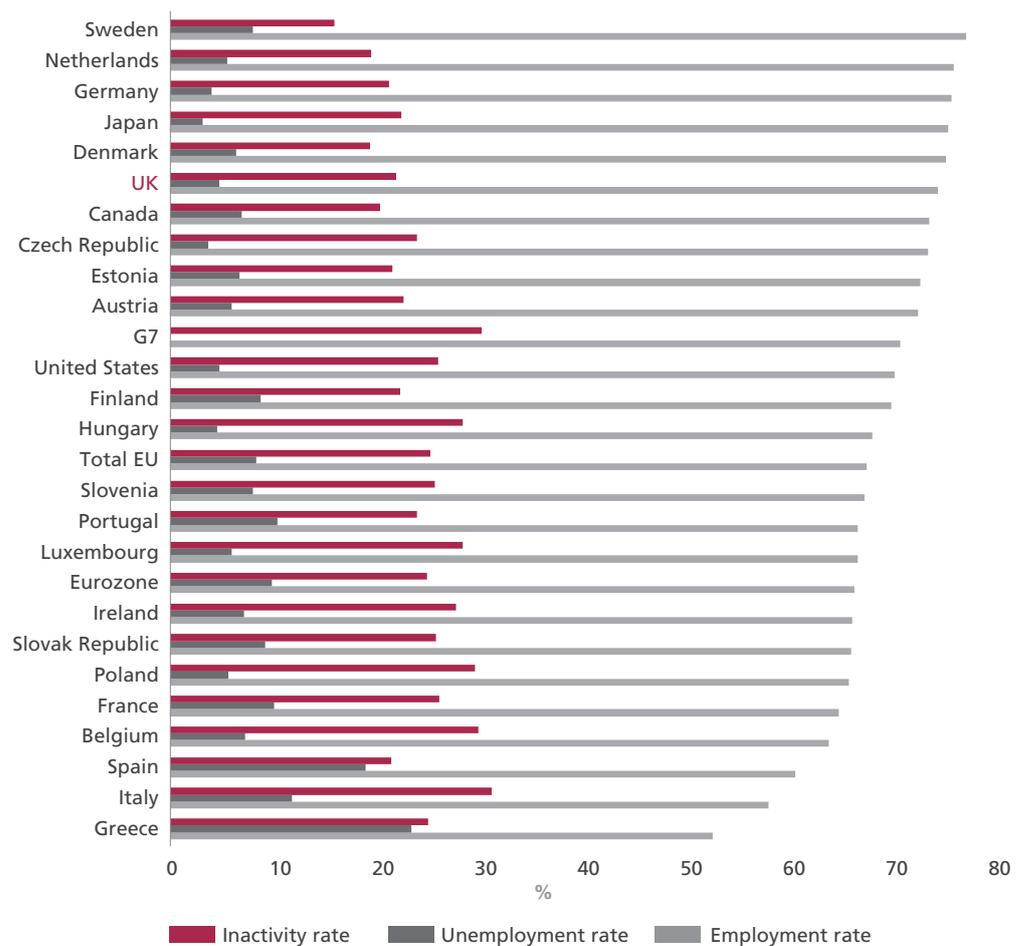
32 ONS, UK Labour market (May 2017) [accessed via: [www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/timeseries/lf24/lms7](http://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/timeseries/lf24/lms7)]

33 Records began in 1971.

34 OECD Data, International Employment Rate [accessed via: <https://data.oecd.org/emp/employment-rate.htm>]

35 ONS, Families and households in the UK: 2016 (November 2016) [accessed via: [www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/bulletins/familiesandhouseholds/2016#main-points](http://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/bulletins/familiesandhouseholds/2016#main-points)]

Figure 7. OECD international employment rates



Source: OECD

The increase in employment has also been driven by an increase in the number of self-employed workers in the workforce. The share of the labour force who define themselves as self-employed has increased from 11.9 per cent in 2001 to 15.1 per cent in 2016.<sup>36</sup> This increase in share was driven by a 45 per cent increase in the number of self-employed workers of which an increasing number were part-time. The number of self-employed part-time workers within the UK economy grew by 191 per cent between 2001 and 2016. There has also been a marginal increase in part-time working and job-sharing across the UK economy. The share of the total workforce that define themselves as part-time workers has increased from 25 per cent to 27 per cent between 2001 and 2016 (of which self-employed part-time workers have increased in size relative to part-time employees).

Job growth in the UK has heavily tilted towards England, specifically in the South East and London. Between 1997 and 2016, roughly 6.1 million jobs were created.<sup>37</sup> Of those 43.6 per cent were created in London and the South East (1.7 million jobs were created in London and 928,000 in the South East).<sup>38</sup> The two areas with the lowest number of jobs

36 ONS, EMP14: Employees and self-employed by industry (February 2017) [accessed via: [www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employeesandselfemployedbyindustryemp14](http://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employeesandselfemployedbyindustryemp14)]

37 ONS, JOBS05: Workforce jobs by region and industry, December 2016 [accessed via: [www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/workforcejobsbyregionandindustryjobs05](http://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/workforcejobsbyregionandindustryjobs05)]

38 Ibid

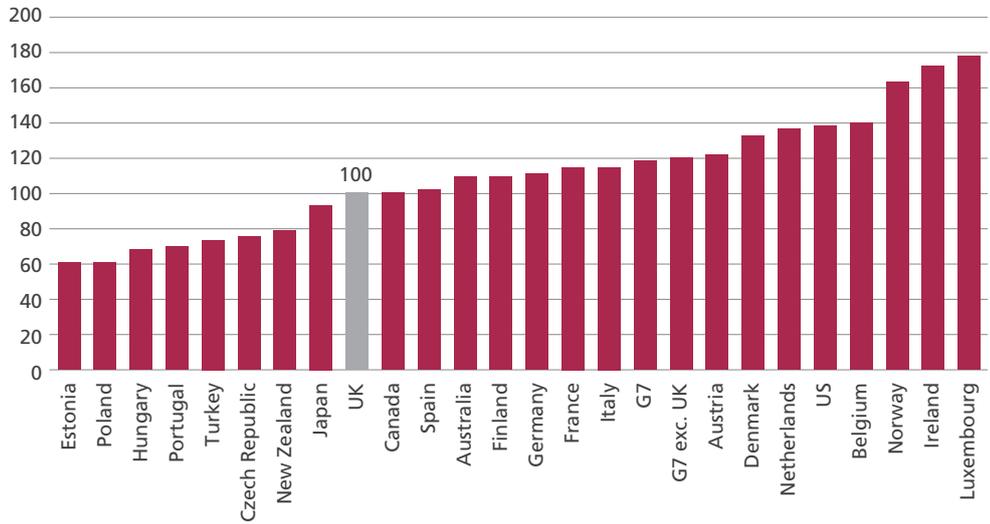
created over this period were the North East (a net increase of just 87,000 jobs, roughly 1.4 per cent of total job creation in the UK) and Northern Ireland (166,000 jobs created, 2.7 per cent of the UK total increase). There have also been wider sectoral shifts in the labour market, however we cover these in the next section of this chapter.

The relevance of these developments in productivity terms is two-fold: firstly, the increase in aggregate employment (largely by part-time and self-employed workers) has occurred concurrently with a decline in hours per worker. Full time workers in the UK work on average one hour less per week in 2016, at 37.5 hours, than they did 20 years ago, in 1996, at 38.7 hours per week. Secondly, the regional imbalance in job creation is replicated in regional output and productivity figures, with areas of low job growth also registering low levels of productivity growth. These factors contribute to the overall productivity puzzle faced by the UK economy.

Theory dictates that employment growth is associated with slow growth in productivity. More people in work increase the risk of inefficiencies which hamper productivity, and an increase in employment has a lag effect on productivity growth in the near term. John Van Reenen said of US unemployment affecting its productivity performance:

US productivity did do much better than in Europe, but again this is the flipside of what happened in the jobs market. Although the magnitude of the initial GDP shock was similar in the US and the European countries, American unemployment rose much more severely (from 4.4 per cent in late 2006 to 10 per cent in late 2009) compared to the UK and Germany. Part of the reason for the faster rise in US unemployment compared with the UK may be because of lower US firing costs, the extensions of unemployment benefit and deeper problems in the housing market.<sup>39</sup>

Figure 8. International comparisons on productivity (2015) (UK = 100)



Source: ONS

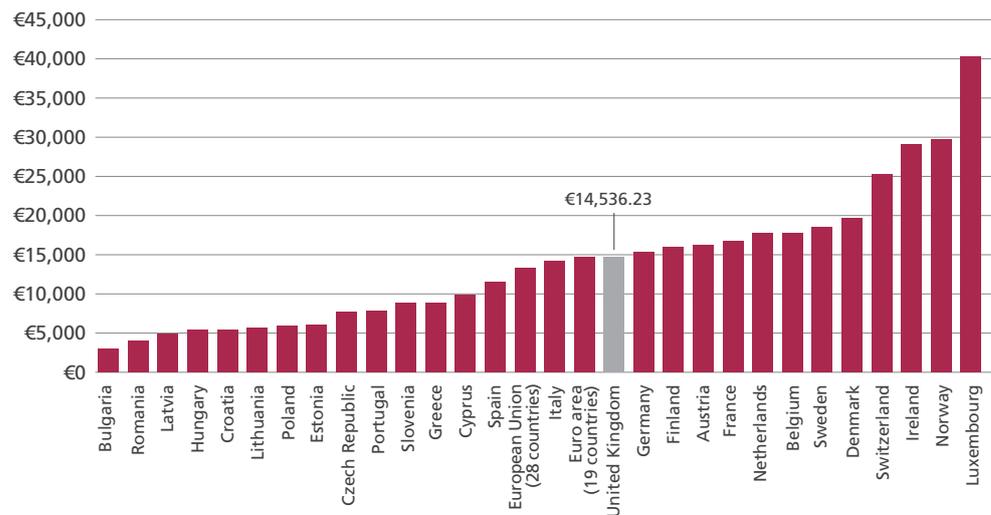
39 Pessoa, J. and Van Reenen, J. *The UK Productivity and Jobs Puzzle: Does the Answer Lie in Labour Market Flexibility*, (ESRC, LSE: 2013)

## International comparisons

ONS raw data shows the UK lagging behind other developed economies. Chancellor of the Exchequer Philip Hammond regularly points to our productivity gap with Germany and France, claiming that it takes workers in Germany four days to complete what a British worker completes in five. Crude ONS data does show that UK industries are less productive than our European and G7 competitors. Using ONS statistics, we estimate a 15 per cent productivity gap with France, an 11 per cent productivity gap with Germany and 38 per cent productivity gap with the US.<sup>40</sup> Eurostat figures show that UK industries across both manufacturing and service sectors are less productive than international competitors. Most concerning is that these gaps have grown since the financial crisis. A 2012 Department for Business, Innovation and Skills (BIS) paper remarked that:

Historically, the UK economy has performed relatively well in comparison to its major competitors. However, during the last decade growth was increasingly driven by household consumption and government activity while the contributions of business investment and net trade both declined significantly. Now, like other developed economies across the world, the UK economy is struggling to return to a sustained growth path following the recent financial crisis and the deepest recession since the 2nd World War.<sup>41</sup>

Figure 9. International productivity – GVA (Euro) (2016)



Source: Eurostat

ONS data shows the UK manufacturing industry is 20 per cent less productive than the manufacturing industry across a basket of EU comparables (France, Germany, Sweden, Italy and the Netherlands). In services, the UK is 10 per cent less productive.<sup>42</sup> Granular detail comparing individual industry productivity by country is hard to extract for the manufacturing sector, but easier for the service sector. It is worth pointing out that other, more productive, countries have large variation in productivity across their industries. In high value service industries the UK's financial and insurance industries performs adequately

40 ONS, International Productivity Comparisons (April 2017)

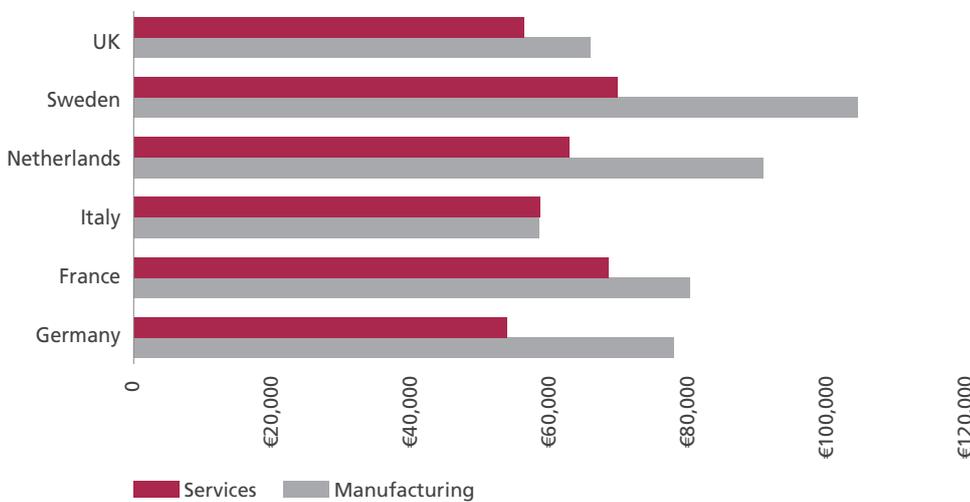
41 BIS, *Benchmarking UK Competitiveness in the Global Economy* (October 2012) [accessed via: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/34647/12-1207-benchmarking-uk-competitiveness-in-the-global-economy.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/34647/12-1207-benchmarking-uk-competitiveness-in-the-global-economy.pdf)]

42 ONS and CSJ Calculations

but are less productive than Sweden's and the Netherlands'. Our Information and Communication industry (which includes the high value tech industry) is less productive than Sweden, the Netherlands, Italy, France and Germany. The UK's real estate industry has a GVA per head of £315,768, roughly the same as Sweden and marginally lower than the Netherlands. However, Italy has a real estate industry with GVA per head of £780,695.

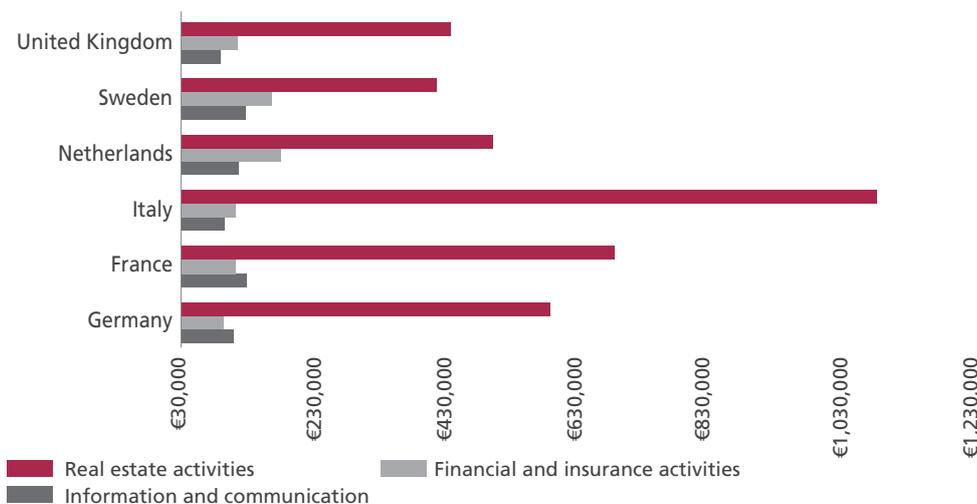
The UK's public sector is more productive than Germany's. However, due to measurement ambiguity (which we will touch on later) public sector productivity is difficult to interpret. Poor performing industries include retail, accommodation, food and transport services, where UK GVA per head is below that of Sweden, France, Italy and the Netherlands (but marginally ahead of Germany). The UK productivity in the retail sector is £29,811, whereas Sweden's retail sector has per head productivity of £47,999.

Figure 10. Service vs manufacturing sector productivity



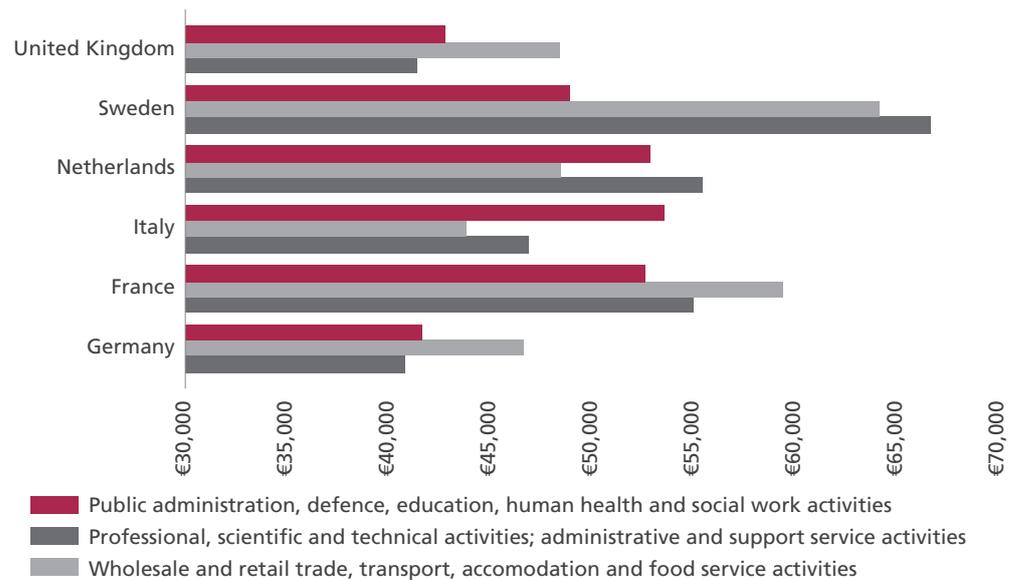
Source: Eurostat

Figure 11. High value service sector productivity



Source: Eurostat

Figure 12. Low value service sector productivity



Source: Eurostat

We are critical of international comparisons because comparing countries with different employment and inactivity rates, different currencies and different means of measurement lends itself to mismeasurement, misinterpretation and conflicting policy goals. We speak later of issues regarding productivity measurement in service industries, specifically the digital industries. Our analysis found problems related to measuring productivity and comparing across countries. Firstly, countries with high productivity growth rates have either high unemployment rates or high levels of economic inactivity. Both high levels of inactivity and unemployment are socially and economically perverse policy goals. Secondly, researchers have commented on the poor measurement of productivity in other countries' public sectors. There was little indication that public sector size and productivity were correlated, let alone causal.

## Conclusion

There has clearly been a slowdown in productivity since the 2007/2008 financial crisis, before which productivity growth rates outstripped our international competitors. However, when you dig into the data, the productivity miracle of the pre-crisis years seems more like a mirage. Parts of British industry such as ex-industrial towns have seen productivity stagnation since the '80s and '90s. Towns in the North East, North West and devolved regions of Wales and Scotland have large productivity gaps with London and the South East. A cluster of industries now employ over half of the UK workforce in the least productive parts of the UK economy. In the next chapter, we review the current literature that looks to explain the causes of the UK's productivity stagnation.

## chapter two

# Literature review

### The decline of British manufacturing

A popular theory used to explain the slowdown in productivity has been the structural shift across the UK economy from manufacturing to services. The size of the UK manufacturing sector has decreased from above 20 per cent of economic output in the '80s to approximately 10 per cent today.<sup>43</sup> In 2010, a Government report found the entire UK manufacturing sector was smaller than both the UK retail sector and business services sector.<sup>44</sup> The post-financial crisis trend has not differed either; ONS statistics show that the manufacturing sector has contracted by 6.1 per cent since 2008, whereas the service sector has grown by 10.7 per cent over the same period. Proponents of this theory include popular economist Dambisi Moyo, who cites Kansas City Fed<sup>45</sup> analysis from 2016 which finds that manufacturing employees are 10 per cent more productive than the average US worker. John Mills and Roger Bootle (2016) argue that slow productivity growth is also a result of an uncompetitive manufacturing industry.<sup>46</sup> Their thesis centres on the long-term over-valuation of British Sterling that has rendered the British manufacturing sector uncompetitive compared to other nations. By devaluing the currency, UK manufacturing will be able to increase exports and output and register higher rates of productivity growth. Mills states in a 2016 pamphlet,

Does this decline in the significance of manufacturing in the UK matter... it is far easier to achieve productivity increases in manufacturing than it is in services, so the smaller the manufacturing is as a proportion of GDP, the more slowly the economy is likely to grow".<sup>47</sup>

The effect of these structural changes are contested. The Institute for Public Policy Research (IPPR) argued in May 2016 that only half of the UK productivity slowdown since 2011 "*can be accounted for by shifts in the structure of the economy away from high-productivity sectors such as manufacturing, and towards those characterised by low productivity, such as accommodation and food*".<sup>48</sup> The Institute for Economic Affairs (2016) argue that UK manufacturing may be small compared to developing countries in Asia, but it is similar in size to the manufacturing sectors of Canada, France, the Netherlands and USA. They continue to argue that the decline of manufacturing has been overstated, with "*about 19*

43 CSJ Calculations

44 Gov.uk, Manufacturing in the UK: An Economic Analysis of the Sector (December 2010)

45 Kansas City Fed, Macro Bulletin, (Kansas: April 2016) [accessed via: [www.kansascityfed.org/~media/files/publicat/research/macrobulletins/mb16vanzandweghe0418.pdf](http://www.kansascityfed.org/~media/files/publicat/research/macrobulletins/mb16vanzandweghe0418.pdf)]

46 Mills, J. and Bootle, R. *The Real Sterling Crisis* (Civitas: 2016)

47 Mills J. *Why Trump Won* (London: 2016)

48 Thompson, S., Colebrook, C., Hatfield, I. and Doyle, P. *Boosting Britain's Low Wage Sectors: A Strategy for Productivity, Innovation and Growth* (IPPR: 2016)

per cent of the UK's output still directly reliant on manufacturing"<sup>49</sup> and that any industrial strategy that tries to reverse the shift of low value manufacturing away from the UK will be economically detrimental.

## Capital shallowing

Intrinsically linked to the argument regarding British manufacturing is the theory that declining levels of capital investment explain the productivity slowdown. Capital shallowing occurs when firms invest in labour over capital, resulting in a lower capital per worker ratio. A lower capital-per-person ratio reduces both capacity and output in the economy, reducing the scope for productivity increases.

A major proponent of the 'capital shallowing theory' is Professor John van Reenen from the Centre for Economic Performance.<sup>50</sup> He claims that capital shallowing explains both low productivity and high employment. Increased flexibility in the labour market reduced the cost of labour relative to capital. Firms favoured hiring additional workers instead of investing in new machines, producing a fall in the effective capital per worker ratio. With a lower capital per worker ratio, there is reduced opportunity for capacity growth, efficiency growth and increasing productivity. Van Reenen's argument that the economic shock caused by the global financial crisis triggered this divergence in factor prices is certainly visible in the productivity figures since 2008. Van Reenen hesitates to also point out that the change in factor prices also made service sector investment more attractive to entrepreneurs and lenders, partly explaining the fall in size of the UK manufacturing sector.

Van Reenen concludes the paper by estimating the quantitative impact of capital shallowing on the productivity slowdown:

We estimate that capital per worker has declined by 5 per cent ... Assuming that GDP is split two-thirds to labour costs and one third to capital costs implies that 'capital shallowing' has made a contribution of -1.8 percentage points to declining labour productivity. Hence, changes in capital can account for about 68 per cent of the labour productivity decline.<sup>51</sup>

Ben Broadbent from the Bank of England echoed this sentiment in a speech in 2014 when he said the fall in real wages (and therefore productivity) reflected price movements.<sup>52</sup> He went on to argue that business investment (in capital) was the answer to economic recovery.

## Zombie firms and capital misallocation

'Zombie firm theory' explains the productivity slowdown in terms of firm characteristics. Rooted in the recognition that the global financial crisis and subsequent recession caused exceptional business cycle movements and credit conditions, commentators believe both irregular credit conditions and high cash stocks (a result of quantitative easing) have enabled unproductive and unsustainable firms (zombies) to continue operating. A Financial

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49 Shackleton, J. and Zuluaga, D. *Balancing the Government: The Hand of Government or the Invisible Hand* (IEA: 2016)

50 Van Reenen, J. and Pessoa, J. *The UK Productivity and Jobs Puzzle: Does the Answer Lie in the Labour Market* (Centre for Economic Performance: 2013)

51 Ibid

52 Ben Broadbent, *Monetary policy, asset prices and distribution* (October 2014) [accessed via: [www.bankofengland.co.uk/publications/Documents/speeches/2014/speech770.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2014/speech770.pdf)]

Times article stated that as many as 10 per cent of British businesses were ‘zombies’ and quoted data showing that 160,000 UK businesses could only pay debt interest and not the principle on loans, an unofficial definition of ‘zombie status’.<sup>53</sup> However, data from the Government Insolvency Service shows a spike in liquidations during the recession and an above trend rate of liquidations in the post-crisis years. John Van Reenen, proponent of capital-shallowing theory, argued against theory of ‘zombie firms’ saying,

The direct micro-evidence on zombies is rather mixed. In the early part of the recession in 2008–09 it seemed as if most of the fall in productivity was confined to small firms who may be most susceptible to forbearance. However, after 2009 it appears that productivity also fell in larger firms.<sup>54</sup>

The Bank of England stated in 2016 that the financial crisis in 2007/08 disrupted financial markets, reducing available credit, which has in turn slowed productivity growth:

Impaired access to finance for companies and heightened uncertainty with respect to the macroeconomic environment may have dissuaded firms wishing to invest in profitable projects from doing so, impeding growth in the amount of capital per worker. Tight credit conditions may also have slowed the investment in, and introduction of, new innovations.<sup>55</sup>

Riley et Al. (2014) concurred that adverse credit conditions and misallocation of resources, had contributed to the decline in UK productivity. However, they went on to say that a “*widespread productivity shock within firms*” was the major reason behind the post-2008 decline in UK productivity.<sup>56</sup> By analysing the productivity performance of manufacturing firms in both the 1980 and 2008 recession, the authors found:

In both cases output contracted sharply. Only in the recent crisis did productivity collapse, and, in comparison to the previous recession this was due to a larger collapse in productivity within firms rather than productivity weaknesses associated with inefficient resource allocation.<sup>57</sup>

## Peak innovation

One of the most celebrated books of 2016 was Robert Gordon’s *The Rise and Fall of American Growth*<sup>58</sup> which laid claim to the theory that western economies had reached a natural ceiling or peak in their rate of economic growth. Gordon states that “*The Great Leap Forward of the American level of labour productivity that occurred in the middle decades of the twentieth century is one of the greatest achievements in all of economic history*”.<sup>59</sup> The reason for such success – great inventions conceived at the end of the 19th and beginning of the 20th century – increased the average productivity of both humans and capital and rapidly advanced our quality of life. Developing refrigerators and modern sewage systems increased life expectancy and supported healthier lifestyles. Railroads and cars allowed for an explosion in pan-national trade and commerce. The advent of radio

53 Michael Stothard and Chris Giles *Zombie companies stalk UK economy* (FT.com, 18 November 2012) [accessed via: [www.ft.com/content/d1ecf0d0-316f-11e2-b68b-00144feabdc0](http://www.ft.com/content/d1ecf0d0-316f-11e2-b68b-00144feabdc0)]

54 Van Reenen, J. and Pessoa, J. *The UK Productivity and Jobs Puzzle: Does the Answer Lie in the Labour Market* (Centre for Economic Performance: 2013)

55 Barnett, A. et Al. *Quarterly Bulletin: The UK Productivity Puzzle* (Bank of England: 2014)

56 Riley et Al. *Productivity Dynamics in the Great Stagnation: Evidence from British Businesses* (NIESR and Bank of England, 2014)

57 Ibid

58 Gordon, R. *The Rise and Fall of American Growth: The US Standard of Living since the Civil War* (Princeton: 2016)

59 Ibid.

and television (and much later the Internet) helped commercialise goods and services available to everyday households on a level never conceived prior to their existence. These developments led to great increases in the utility of capital against labour input, and in economic terms, huge increases in productivity. Gordon's central thesis though, is that human society cannot replicate the hugely important innovations of the later 19th and early 20th centuries that were so instrumental in improving our economic productivity and quality of life. Modern innovations in nanotechnology, artificial intelligence or online products like Facebook, Google and Twitter, are important, but unlikely to have the same effect on productivity as the telephone, central heating or light bulb did. This eventuality, Gordon believes, will precipitate the natural fall of American growth.

Gordon's argument focuses on improvements in the quality of capital and he uses Total Factor Productivity ("*the best available measure of innovation and technological change*"<sup>60</sup>) growth in the US economy between 1940–50 to demonstrate the effect of such improvements. There is little doubt regarding the importance of innovation and R+D and the production of both new tangible and intangible capital<sup>61</sup> for long term productivity growth. The role of research, innovation, development and the commercialisation of new ideas is a major component in the productivity challenge for the UK.

## Education and skills

The relationship between education and skills with productivity at both an aggregate level and an individual level is well established. Rincon-Aznar et al. (2015) estimated that skills contributed 20 per cent of total labour productivity growth in the pre-recessionary period in the UK.<sup>62</sup> The Confederation of British Industry (CBI) released research in December 2016 showing a causal link between higher rates of educational attainment and labour productivity at a regional level: "*We found that where children get the best results at GCSE or equivalent, and school performance is highest, regional productivity is also greater*".<sup>63</sup> House of Commons Business, Innovation and Skills as well as Education Committees stated in a joint report in 2015, "*Investment in skills development... has an important part to play in fostering productivity growth*".<sup>64</sup>

## Mismeasurement

An often-mooted theory regarding the slowdown in productivity is related to the difficulty of measuring the productivity of modern economic activity, specifically Internet-based online activity as well as intangible service sector output, which has led to an exaggeration of the productivity stagnation. An example of this would include a web designer at a major social network such as Facebook. Such activity, although integral to the firm and critical to the long-term mission of building an accessible website and usable interface, is unlikely to come up in the economic data for output. Another example of a service

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60 Ibid

61 Intangible capital includes knowledge, experience and process innovation that increases efficiency and drives productivity growth.

62 Rincon-Aznar, A, Forth, J., Mason, G., O'Mahony, M. and Bernini, M. *UK skills and productivity in an international context* (NIESR: 2015)

63 CBI, *Unlocking Regional Growth: Understanding the Drivers of Productivity Across the UK Regions and Nations* (2016)

64 House of Commons, *Education, Skills and Productivity: Commissioned Research* (2015) [accessed via: [www.publications.parliament.uk/pa/cm201516/cmselect/cmbis/565/565.pdf](http://www.publications.parliament.uk/pa/cm201516/cmselect/cmbis/565/565.pdf)]

related job that would prove difficult to detect in the productivity statistics would be the work of a compliance officer in a bank, a necessary role for the sake of keeping a good record of business. However, the work of such a compliance officer may struggle to register any impact on output figures despite an obvious increase in the number of jobs and hours worked in the economy. The intrinsic problem exists in measuring the output of a service sector where a job does not always correspond directly with the production of a tangible product. As the Guardian's Duncan Weldon puts it, *"to use every economist's favourite example, it is straightforward to measure the inputs, the outputs – and hence the productivity – of a widget factory, even if no one is really sure what a widget is. It is harder to do the same with an online widget brand manager"*.<sup>65</sup>

There is also concern that the 'productivity puzzle' has exposed poor measurement of digital activities.<sup>66</sup> The Bean Review (commissioned after the 2015 election as part of the 'Fixing the Foundations' report) was *"prompted by the growing difficulty of measuring output and productivity accurately in a modern, dynamic and increasingly diverse and digital economy"*.<sup>67</sup> Bean finds issues related to economic measurement: *"quantifying value-added in the digital modern economy; capturing the 'sharing economy'; measuring intangible investment; allowing for quality change; and understanding the international location of economic activity"*.<sup>68</sup>

65 Weldon, D. *Stunted growth: the mystery of the UK's productivity crisis* (The Guardian, 25 April 2016) [accessed via: [www.theguardian.com/commentisfree/2016/apr/25/growth-uk-productivity-crisis](http://www.theguardian.com/commentisfree/2016/apr/25/growth-uk-productivity-crisis)]

66 Coyle, D. *Do-It-Yourself: The Production Boundary and the Productivity Puzzle* (ESCoE, 2017)

67 Bean, C. *Independent Review of UK Economic Statistics* (Gov.uk, 2016)

68 Professor Charles Bean, *Independent Review of UK Economic Statistics* (2016)



# 2

## DRIVERS OF PRODUCTIVITY



## chapter three

# Investment and innovation

The only meaningful concept of competitiveness is productivity... Sustained productivity growth requires that an economy continually upgrades itself. A nation's companies must relentlessly improve productivity in existing industries by raising product quality, adding desirable features, improving product technology, or boosting production efficiency

Michael Porter, 1990

This chapter will analyse these firm and industrial level factors as drivers of productivity.

### Capital decline

Crude productivity growth has historically been a function of industrialisation, increased mechanisation and technological advance. This is easy to comprehend; 19th Century weaving machines increased the production output of textile factories while cutting head count costs. Ford factories in America pioneered machines that manufactured sheet metal for cars allowing them to cut the time to produce one Ford car from 12 hours to 90 minutes.<sup>69</sup> The computer processor allowed companies to digitise services, reach more consumers and allow many of us to work from home or on the road. The process of mechanisation and technological advance required extensive capital investment.

There is a significant body of literature (Van Reenen and Pessoa (2013); Bailey and Montalbano (2016)) that argues declining levels of capital investment ('capital shallowing') have caused the slowdown in labour productivity; *"We estimate that capital per worker has declined by 5 per cent using this method. Assuming that GDP is split two-thirds to labour costs and one third to capital costs implies that 'capital shallowing' has made a contribution of -1.8 percentage points to declining labour productivity. Hence, changes in capital can account for about 68 per cent of the labour productivity decline"*.<sup>70</sup> Mills (2017) states, *"We have allowed the proportion of our GDP which we invest to drop to a point where productivity growth has almost completely stalled and where, as a result, median wages, allowing for inflation, are barely higher than they were before the 2008 crash"*.<sup>71</sup>

69 Ford Motor Company [accessed via: <http://corporate.ford.com/innovation/100-years-moving-assembly-line.html>]

70 Pessoa, J. and Van Reenen, J. *The UK Productivity and Jobs Puzzle: Does the Answer Lie in Labour Market Flexibility*, (ESRC, LSE: 2013)

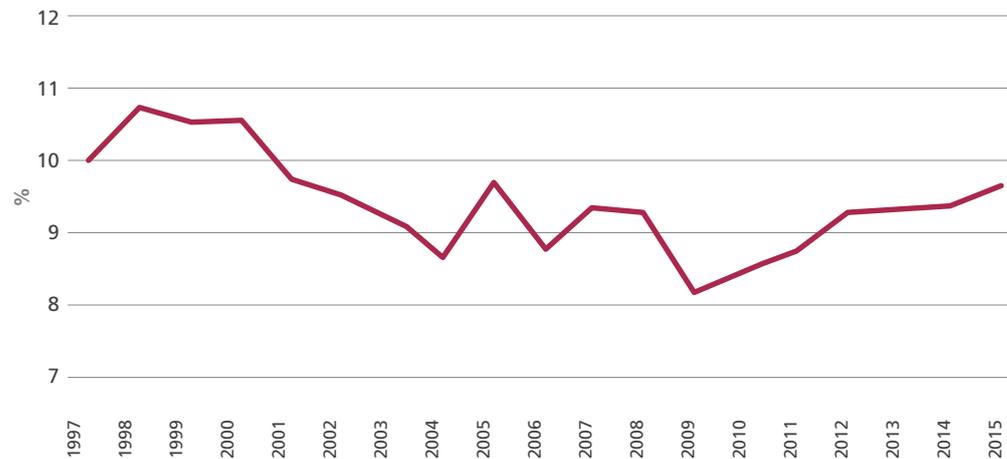
71 Mills, J. *Britain's Achilles Heel* (Civitas, 2017)

The level of capital investment is growing but low by historical standards. Quarterly non-financial investment<sup>72</sup> has only just returned to levels experienced before the global financial crisis, at approximately £80bn per quarter.<sup>73</sup> This is approximately a 33 percent increase from its post-crisis low in 2009. However, at approximately 17 per cent of GDP, investment remains below the pre-crisis trend.<sup>74</sup> Investment per employee is today roughly the same level it was in 1999, and despite a recent increase in GFCF per employee, the trend line from 1997 to 2015 remains downwards. Even taking out public sector investment (which has declined because of austerity policy measures adopted under the coalition government), investment within the business sector remains lower as a percentage of GDP than it was in the year 2000. Growth in net capital stock per employee in the UK economy has declined rapidly since the recession, and moved into negative territory between 2012 to 2015.

Figure 13a. Total Gross Fixed Capital Formation (%GDP)



Figure 13b. Business investment as % GDP



Source: ONS (2017)

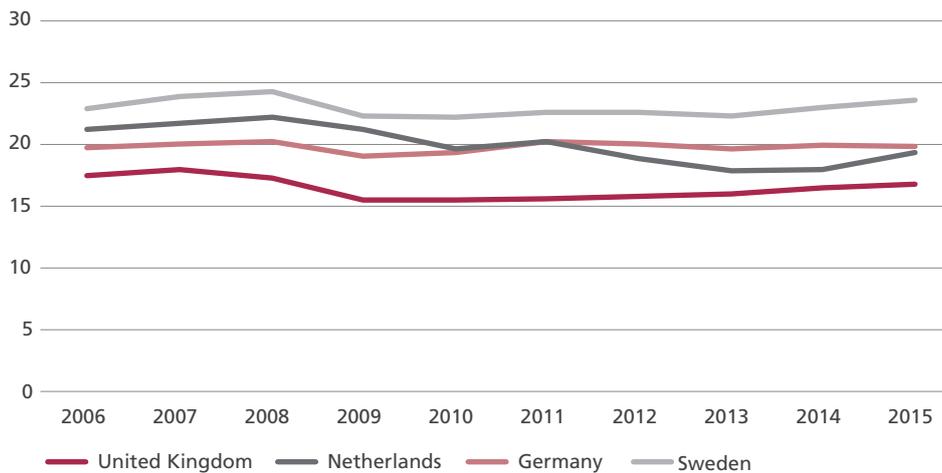
Investment in Britain is low by international standards as well. Data from Eurostat shows the UK economy invests 6.7 percentage points (of GDP) less than the Swedish, 3 percentage points less than the German economy, and 2.5 percentage points less than the Dutch. This level of underinvestment has been consistent since 2007.

72 Note: Measured by nominal Gross Fixed Capital Formation (GFCF)

73 ONS, CSJ calculations

74 ONS, CSJ calculations

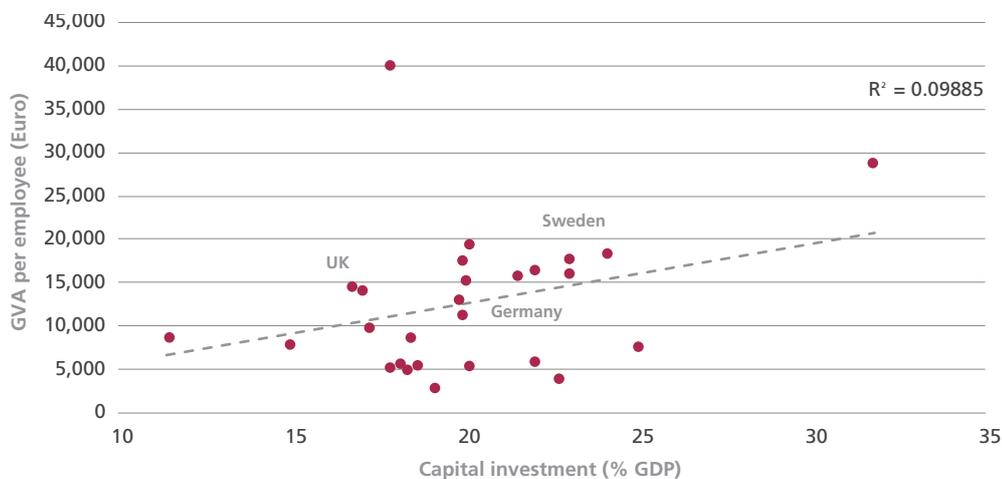
Figure 14. Total investment to GDP ratio



Source: Eurostat, CSJ

Simple correlations between capital investment and productivity show a weak link between the two (see Figure 14). However, if you narrow the analysis to comparing the UK with other developed western European economies, the correlation between capital investment and productivity improves.

Figure 15. International comparisons – capital investment X productivity (2016)



Source: Eurostat, World Bank

Some argue that low levels of investment are exaggerated. Evidence suggests capital expenditure has been suppressed in the short term by recent fluctuations in the price of oil, and nominal capital expenditure in the oil and gas industry fluctuates accordingly. Standard and Poor's argued in 2016, "strip out commodity producers' angst and the capex picture is a brighter one".<sup>75</sup> The effect of a slowdown in oil and gas capital expenditure is significant considering they account for roughly 42 per cent of global capital expenditure.

<sup>75</sup> Richard Blacken, Global capex picture brighter (if you forget miners) (FT.com, 17 March 2016) [accessed via: [www.ft.com/content/72dc0b7a-fb23-314b-847b-4cbd9b682536](http://www.ft.com/content/72dc0b7a-fb23-314b-847b-4cbd9b682536)]

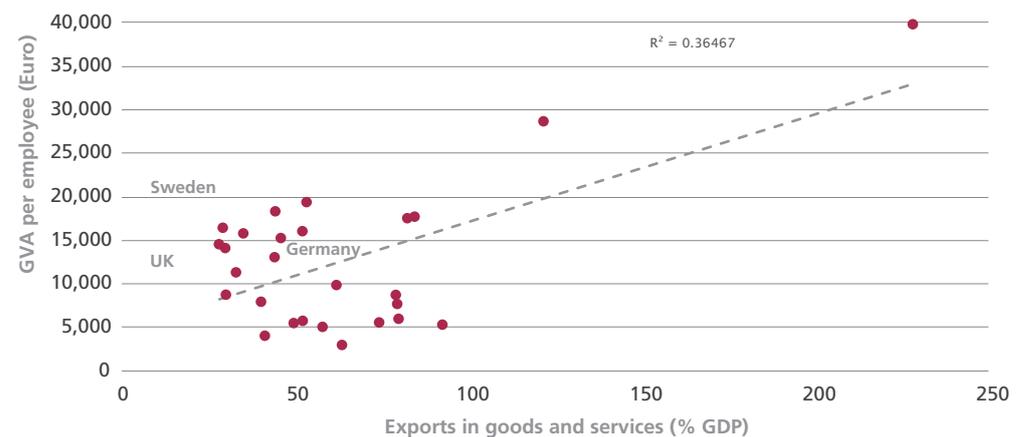
Any expectation that a decline in capital expenditure associated with heavy industrial production in oil and gas or minerals would precipitate an increase in capex associated with high value technology production and services (software, IT hardware, high-value manufacturing and digital media) is difficult to confirm.

There is also criticism that the capital expenditure figures do not reflect the growth in intangible investment rooted in the growth of the knowledge intensive economy. Investment in intangible assets grew by 143 per cent between 1990 and 2011, from £85 billion to £121.3 billion.<sup>76</sup> Investment in intellectual property products as a proportion of GDP, associated with high growth industrial production, has risen marginally by 20 per cent from 3.06 per cent to 3.68 per cent. In current prices, UK gross domestic expenditure on R+D has increased from £11.8 billion in 1990 to £30.6 billion in 2014, even though as a percentage of GDP it has fallen from 1.89 per cent to 1.67 per cent over the same period. We cover intellectual property, R+D and innovation later in this chapter.

### Is re-Industrialisation the answer?

Both Moyo (2016) and Mills and Bootle (2016) argue that the best means of increasing capital expenditure in our economy is by rebuilding the UK's manufacturing base. Low tech manufacturing is most associated with both the benefits of mechanisation (a contributor towards productivity) and goods exports. There is evidence to suggest that increasing exports do lead to higher levels of productivity (see below). However, investment and exports can be generated from the service sector (Ireland and Luxembourg), and once you exclude countries with irregular levels of service related exports (Ireland and Luxembourg) the correlation disappears.

Figure 16. International comparisons – exports X productivity (2016)



Source: Eurostat

Other countries with higher rates of productivity do not have larger manufacturing sectors. On first appearance, the answer is ambiguous. The UK has a similar economic mix

76 Gov.uk, Fast Facts 2017 [accessed via: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/581279/Fast-Facts-2017.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/581279/Fast-Facts-2017.pdf)]

to most developed economies: Dutch manufacturing contributes 11.7 per cent of total GVA, French manufacturing contributes 11.2 per cent<sup>77</sup> and US manufacturing equals just 12 per cent of total value added.<sup>78</sup> The Swedish and German manufacturing sectors are comparatively large at 17 per cent and 22.8 per cent of total GVA.<sup>79</sup> On average, the UK's dependence on service sector economic activity is also in-line with a trend throughout the developed world.

A crude shift-share model constructed by the Centre for Social Justice shows that altering the economic mix of the UK economy towards manufacturing would result in a relatively small one per cent increase in output. Dolphin and Hatfield (2015) looked to deconstruct which part of the productivity decline is due to within sector differences or structural mix. They found that *“the productivity gap between the UK and the four European countries mentioned above is wholly the result of lower productivity within industries in the UK, and not the result of a bias in the industrial composition of the UK economy as a whole towards relatively low-productivity sectors”*.<sup>80</sup>

The Institute for Economic Affairs (2016) argue that UK manufacturing may be small compared to developing countries in Asia, but it is similar in size to the manufacturing sectors of Canada, France, the Netherlands and USA. They continue to state that the decline of manufacturing has been overstated, with *“about 19 per cent of the UK's output still directly reliant on manufacturing”*<sup>81</sup> and that any industrial strategy that tries to reverse the shift of low value manufacturing away from the UK will be economically detrimental. This conclusion that structural mix does not drive productivity difference is corroborated by the Bank of England who state structural differences between the UK and other economies *“are unlikely to explain fully the UK's productivity underperformance”*.<sup>82</sup>

The evidence is clear, that increasing investment will boost demand led growth and increase productivity growth across the British economy in the near term. However, the means to boost investment remain ambiguous. Re-designing the British economy to become more light manufacturing focused may have adverse consequences. The UK economy is now service focused, and exhibits higher levels of intangible investment in the long term. There is also an argument that capital shallowing has smaller effects on productivity in the long run. Robert Solow's growth model shows capital accumulation yielding diminishing returns as an economy grows. Famed American investor Warren Buffett, speaking in August of 2017, stated the future of productivity growth will be innovation, not just manufacturing linked expenditure on machines. The IMF released a paper in 2017, stating that weak investment in response to the financial crisis added to pre-crisis trends that had put pressure on productivity growth.<sup>83</sup> Those pre-crisis trends included a *“waning ICT boom, an ageing workforce, slower human capital accumulation, and slowing global trade integration”*.<sup>84</sup> So, if capital investment is a short term driver of productivity growth, what is driving a more secular decline in productivity in the long run?

77 Eurostat, CSJ calculations (2015 prices)

78 World Bank Databook (2014 prices)

79 Eurostat, CSJ calculations (2015 prices)

80 Dolphin, T. and Hatfield, I. *The Missing Pieces: Solving Britain's Productivity Puzzle* (IPPR: 2015)

81 Shackleton, J. and Zuluaga, D. *Balancing the Government: The Hand of Government or the Invisible Hand* (IEA: 2016)

82 Barnett, A. et Al. *Quarterly Bulletin: The UK Productivity Puzzle* (Bank of England: 2014)

83 IMF, *Gone with the Headwinds: Global Productivity* (IMF, April 2017)

84 Ibid

## Competitive advantage and innovation – how innovative is Britain?

Harvard University's Michael Porter worked on Ronald Reagan's Commission for Industrial Competitiveness, where he refined his theory on the causes of national and industrial competitiveness,

Competitive advantage is created and sustained through a highly-localized process. Differences in national values, culture, economic structures, institutions and histories all contribute to competitive success... Ultimately, nations succeed in particular industries because their home environment is the most forward-looking, dynamic and challenging.<sup>85</sup>

Porter concludes that innovation is the most crucial factor in driving a company and industry's long term productivity growth: "*A nation's competitiveness depends on the capacity of its industry to innovate and upgrade*".<sup>86</sup> Innovation, as a process, can be applied to all parts of the production function: new innovative products, new production processes, efficient management systems, technology enhanced routes to market and more innovative ways to promote and market a business.

How important is innovation for productivity in business? PWC's 2013 Global Innovation survey of 1,757 executives worldwide found 67 per cent of the most innovative companies reported innovation as a competitive necessity and leading innovators anticipated business growth six per cent higher per annum than low level innovators.<sup>87</sup>

Robert Gordon argues that innovation, and a lack of it across western economies, is at the root of our current productivity decline. *The Rise and Fall of American Growth* (2016) charts the rapid improvement in the American quality of life because of innovation and inventions in the late 19th century and early 20th century. Gordon states that "*some inventions are more important than others... [and the] revolutionary century after the Civil War was made possible by a unique clustering, in the late nineteenth century, of what we will call the 'Great Inventions'*".<sup>88</sup> Inventions such as refrigeration technology made food preparation safer, improving the health and life expectancy of millions. Sewage systems, municipal waterworks, tanks, toilets and drainage meant that the typical housewife did not have to carry 50 gallons of water 8–10 times a day covering 148 miles in a year. Electric lamps and mass electricity generation brought home life from out of the dark and reduced the need for manual work at home (cleaning, chopping wood, etc), freeing men and women from hard labour and allowing them to engage in urban work. The invention of the automobile and mass production line process increased freedom of movement and labour mobility. The elevator allowed buildings to grow vertically and increased urbanisation. The TV did not just herald an age of entertainment but also consumerism as a broad choice of ordinary home products were advertised to the population at much reduced prices.

What did this transformation mean for US productivity growth? Between 1890 and 1920, productivity growth increased at an average rate of 1.5 per cent per year. Between 1920 and 1970, this rate increased to 2.82 per cent per year, and then declined back to 1.62 per cent between 1970 and 2014. What was equally significant during the miracle

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85 Porter, M. *The Competitive Advantage of Nations* (Harvard Business Review, 1990)

86 Porter, M. *The Competitive Advantage of Nations* (Harvard Business Review, 1990)

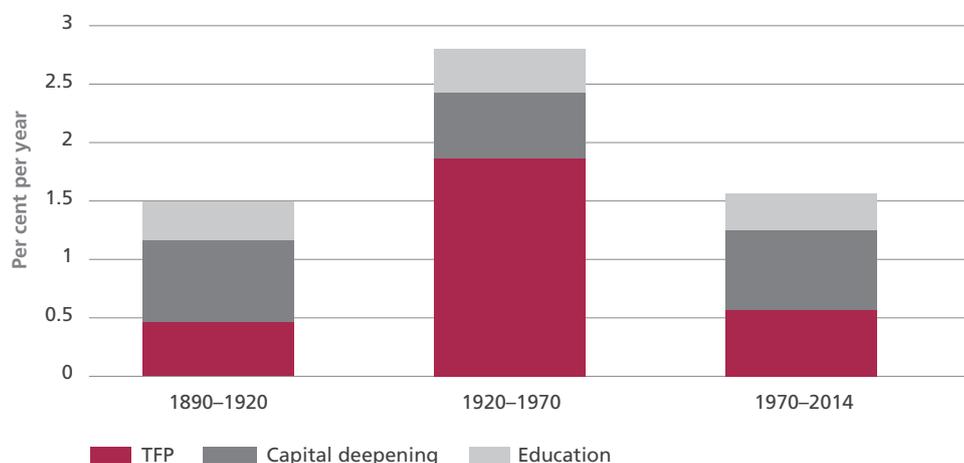
87 PWC Global Innovation Survey 2013 [accessed via: [www.pwc.com/gx/en/issues/innovation/innovation-survey.html](http://www.pwc.com/gx/en/issues/innovation/innovation-survey.html)]

88 Gordon, R. *The Rise and Fall of American Growth: The US Standard of Living since the Civil War* (Princeton Press, 2016)

half century of 1920 to 1970, was that the majority of productivity growth came not from improvements in education or capital deepening, but in Total Factor Productivity (TFP). TFP measures a worker's ability to interact with technology around them to produce goods and services. TFP growth made up roughly 70 per cent of total productivity growth in the 1920 to 1970 period, whereas TFP had made up approximately a third of productivity growth in the preceding and following 50 years. Gordon states,

The margin of superiority of TFP growth in the 1920 to 1970 interval is stunning, being almost triple the growth rate registered in the two other periods... many new inventions that made possible the achievements of the special century through 1970 were beyond anyone's imagination... Maintaining growth at the pace of the years before 1970 proved to be beyond the realm of possibility... We know that the growth rate of labour productivity since 1970 has been disappointing, and the growth rate of TFP since 1970 is barely a third of the rate achieved between 1920 and 1970.<sup>89</sup>

Figure 17. Average annual growth rates of output per hour and its components



Source: Robert Gordon (2016)

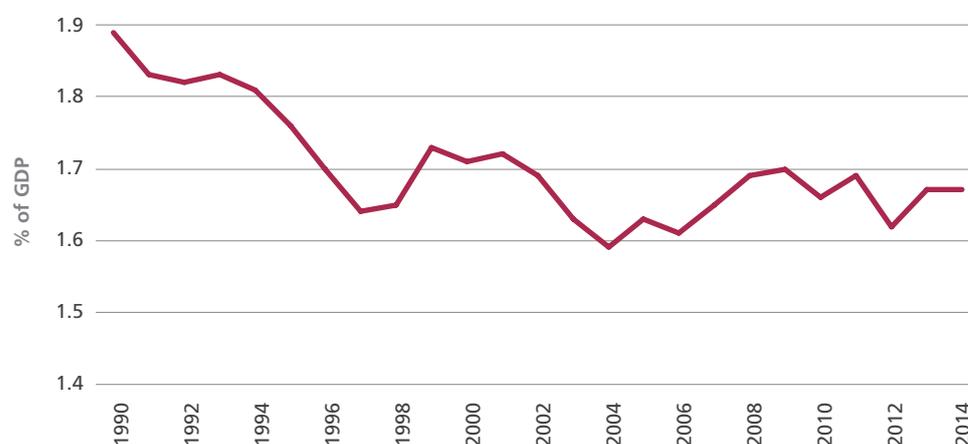
Gordon's central thesis, that human society has reached a natural peak level of innovation, remains hard to accept. Modern innovations in science, tech and engineering can be just as transformative for our economy. Developing alternative sources of energy will be transformative. Better healthcare and pharmaceuticals can bring an end to workplace illness, artificial intelligence will be able to free humans up for more creative and diverse work. Gordon's criticism that the Internet has not yielded high rates of productivity growth forgets that millions of jobs across the globe are linked to the Internet and tech industries.

Gordon's analysis, however, is definitive in showing that historically large improvements in productivity and our quality of life have been made possible through technological developments and not just the standard combination of education and capital investment. As he points out, education and capital deepening's contribution to labour productivity growth is nearly constant across 1870-2014; it is only TFP that made a difference. So, how innovative is Britain? Using a wide variety of metrics for proxies, this report asserts that Britain performs modestly.

89 Ibid

As we mentioned earlier, R+D spending as a percentage of GDP is below historical averages. Gross spending on R+D stood at 1.89 per cent of GDP in 1990 and has fallen consistently since then to just 1.68 per cent in 2016.<sup>90</sup> To put this in relative perspective, Eurostat figures show Sweden spent 3.26 per cent of GDP on R+D in 2015, Germany 2.87 per cent, South Korea 4.29 per cent (2014 figures) and Japan 3.59 per cent (2014 figures).<sup>91</sup> The 2017 Conservative manifesto committed to increasing this figure to the OECD average of 2.4 per cent within ten years, so we expect medium term increases in this sector. The importance of R+D expenditure for productivity was explored in research commissioned by the *Campaign for Science and Engineering* in the UK. Goodridge, Haskel, Hughes and Wallis (2015) estimated the effect of direct R+D spending, claiming a 10 per cent increase in R+D expenditure would be associated with a 0.03 percentage point increase in annual Total Factor Productivity (TFP) growth.<sup>92</sup> Dal Borgo, Goodridge, Haskel, and Pesole (2011) found “*intangible capital deepening accounts for 23 per cent of labour productivity growth*”.<sup>93</sup>

Figure 18. UK research and development expenditure



Source: ONS

The Campaign for Science and Engineering published statistics showing the UK contributes 3.2 per cent of the global research funding, but 4.1 per cent of global researchers and 9.5 per cent of downloaded world publications, and 15.9 per cent of the world’s most cited papers.<sup>94</sup>

Another appropriate proxy for innovation is intellectual property patents. The World Intellectual Property Office (WIPO) ranks countries on the number of patents, trademarks and industrial design applications that originate there. The UK ranks 7th (behind China, USA, Germany, Japan, South Korea, France and Italy) in terms of patent applications.<sup>95</sup> This modest ranking though masks a big gap between the high performing and low performing

90 ONS, UK Gross domestic expenditure on research and development 2015 (16 March 2017)

91 Eurostat, Total intramural R&D expenditure (GERD) by sectors of performance (2016)

92 Haskel, J., Hughes, A., Wallis, G. and Goodridge, P. *The Contribution of Public and Private R&D to UK Productivity Growth* (Imperial College Business School, 2015)

93 Dal Borgo, M., Goodridge, P., Haskel, J., and Pesole, A. *Productivity and Growth in UK Industries: An Intangible Investment Approach* (London: 2011)

94 Campaign for Science and Engineering [accessed via: [www.sciencecampaign.org.uk](http://www.sciencecampaign.org.uk)]

95 World Intellectual Property Indicators (2015) [accessed via: [www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_941\\_2015.pdf](http://www.wipo.int/edocs/pubdocs/en/wipo_pub_941_2015.pdf)]

countries. A total of 2.68 million patents were filed in 2014, up 4.5 per cent from 2013. China was the top patent applicant with 928,177 applications, USA had 578,802 in 2nd, Germany was 6th with 65,965 (43 per cent of the total EU patent application). The UK registered 23,040 patents in 2014, 0.86 per cent of total applications (despite the UK representing more than 3.7 per cent of global GDP).<sup>96</sup> The UK has seen a decline in patent application per head and sees 80 per cent fewer patent applications compared to the USA.<sup>97</sup> Largest growth areas in patent application include digital communication, IT methods for management and micro-structural and nano-technology. WIPO shows the UK has a declining specialization in the digital communication IP sphere, and has greater specialization in fields related to pharmaceuticals and medical technology.

Universities are also a good proxy indicating the level of innovation within an economy. Elite British universities perform consistently well in rankings. The Times Education Supplement (TES) ranks both the University of Oxford (1st) and University of Cambridge (4th) in the top four universities in the world.<sup>98</sup> However, there are only four British universities in the top 20, and seven in the top 50. The USA, on the other hand, has 25 universities in the top 50.<sup>99</sup> In terms of research, UK institutions feature well with Oxford, Cambridge and the University of London ranking highly.

There is a popular theory across the UK that too many universities are engaged in un-scientific courses and modules with little to no market value (media studies,<sup>100</sup> Professional and Commercial Dance,<sup>101</sup> Harry Potter studies<sup>102</sup>). However, data from HESA over 2009/10 shows approximately one quarter of all first-time degrees and half of all doctorates in the UK were taken in scientific subjects.<sup>103</sup> By 2015/16, 45 per cent of all higher education students in the UK were enrolled in scientific subjects.<sup>104</sup> The UK has enrolment and graduation rates that are generally in-line with other countries.

Apart from GERD, patents and higher education data, proxies for measuring innovation can include more nuanced data. An International Robotics Federation press release in 2014 shows robot density in the UK at the world average (66 robots per 10,000 employees). This was below Netherlands at just over 100, the USA at approximately 165, Sweden at close to 200, Japan at over 230 and South Korea at close to 500 robots per 20,000 employees.<sup>105</sup> 75 per cent of all robot sales are in five markets: China, South Korea, Japan, USA and Germany.

96 Ibid

97 Ibid

98 TES, World University Rankings 2016–2017 [accessed via: [www.timeshighereducation.com/world-university-rankings/2017/world-ranking#survey-answer](http://www.timeshighereducation.com/world-university-rankings/2017/world-ranking#survey-answer)]

99 Ibid

100 Note: Bangor University

101 Note: Bath Spa University

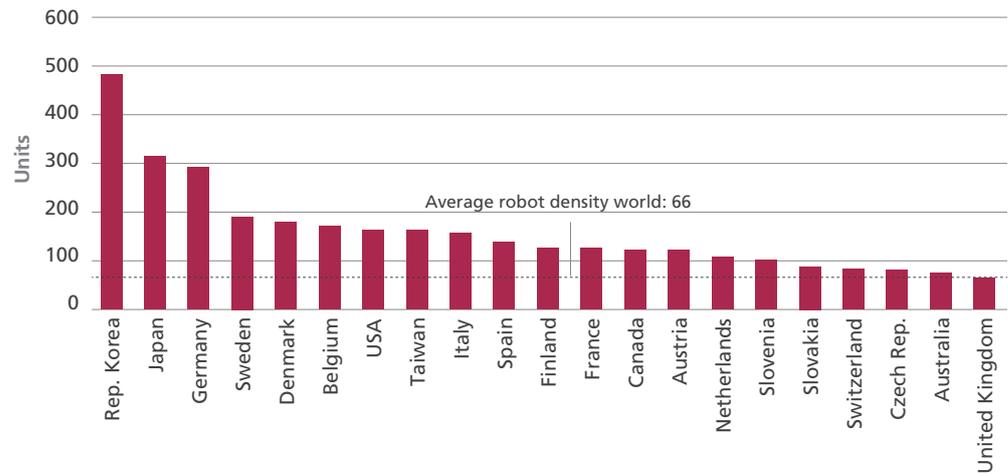
102 Note: Durham University

103 Note: Includes biological studies, physical sciences, mathematical sciences, computer science, and engineering and technology.

104 HESA, All students by subject area and sex 2015/16 [accessed via: [www.hesa.ac.uk/data-and-analysis/students/courses](http://www.hesa.ac.uk/data-and-analysis/students/courses)]

105 International Federation of Robots [accessed via: [www.ifr.org/news/ifr-press-release/survey-13-million-industrial-robots-to-enter-service-by-2018-799/](http://www.ifr.org/news/ifr-press-release/survey-13-million-industrial-robots-to-enter-service-by-2018-799/)]

Figure 19. Number of multipurpose industrial robots (all types) per 10,000 employees in the manufacturing industry (ISIC rev.4: C) 2014



Source: FR

The poor prevalence of robotic technology in the UK is replicated in data showing the density of digital network technology, more often known as ‘the Internet-of-Things’ (IoT). An OECD report in 2015 found that the UK had fewer IoT devices (13 per 100 people) than Belgium (15.6), France (17.6), Sweden (21.9), Germany (22.4), the US (24.9) and South Korea (37.9). The importance of digital networks in manufacturing is evidenced in the German government’s industrial strategy paper, where authors describe the technology as part of the fourth industrial revolution for production and key to maintaining German economic competitiveness and performance.<sup>106</sup>

UK businesses are also responsible for the level of innovation within an economy. Businesses that persistently invest in R+D have 13 per cent higher productivity.<sup>107</sup> PWC Global Innovation Study found that there was a 25 per cent difference in R+D spending between high and low innovation firms.<sup>108</sup> CSJ commissioned research found that business managers felt R+D was important for improving innovation, but less important than technical education, apprenticeship and supporting infrastructure growth.

The Boston Consulting Group lists one UK company (BT Group) in its list of 50 Most Innovative Global Companies in 2016.<sup>109</sup> Fast Company’s list of 50 innovative companies in media, tech and entertainment included two UK start-ups, although one moved to the US after seed funding. Forbes’ list of 100 most innovative companies in the world listed just six from the UK.<sup>110</sup> Another means of measuring UK corporate innovation is the presence of unicorns, start-ups that have accrued billion-dollar valuations. CB insights list 203 start-ups that have reached a market capitalisation of over \$1 billion. 51 unicorns are based in China, four in Germany, nine in the UK, and 106 were based in the USA.<sup>111</sup>

106 Germany Trade and Invest, *Industrie 4.0: Smart Manufacturing for the Future*

107 Campaign for Science and Engineering, *Strengthen Science and Engineering to Support the UKs Future* (June 2017)

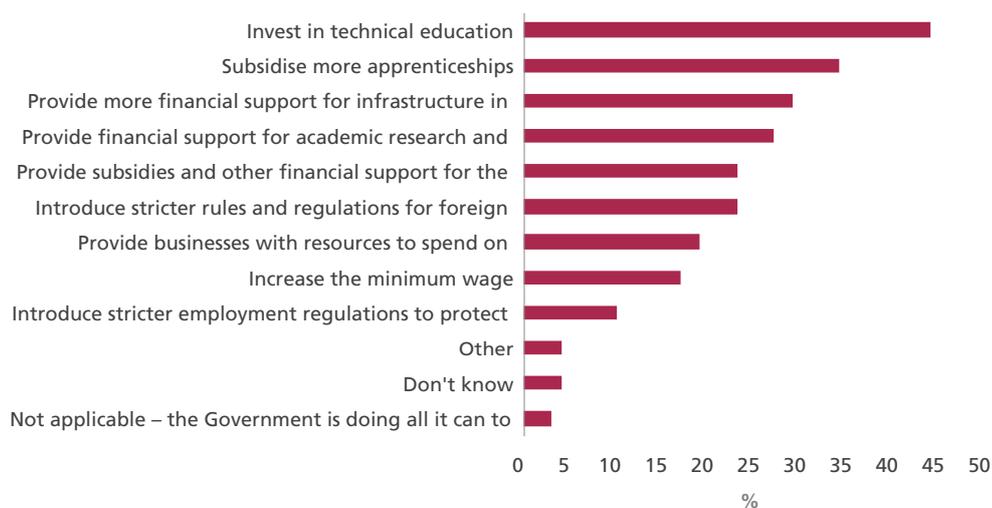
108 PWC Global Innovation Study (2016) [accessed via: [www.strategyand.pwc.com/innovation1000#tab-2016|VisualTabs3](http://www.strategyand.pwc.com/innovation1000#tab-2016|VisualTabs3)]

109 BCG, *The Most Innovative Companies 2016: Getting Past ‘Not Invented Here’* (2017)

110 Fast Company, 2017 Most Innovative Companies [accessed via: <https://hypebeast.com/2017/2/fast-company-2017-most-innovative-companies>]

111 CBI Insights [accessed via: [www.cbinsights.com/research-unicorn-companies](http://www.cbinsights.com/research-unicorn-companies)]

Figure 20. Which, if any, of the following do you think the Government should do to increase productivity in the UK?



Source: CSJ, YouGov

Opinion surveys corroborate this sense that the UK is relatively slow at taking up new technologies. PWC's technology report found that only 38 per cent of UK CEOs say they are "currently exploring the benefits of humans and machines working together, compared with 52 per cent globally, 47 per cent in the US and 62 per cent in Japan".<sup>112</sup> Just 25 per cent of UK CEOs are also reported to want to strengthen their companies digital and technology capabilities to capitalise on new opportunities, and "49 per cent of UK CEOs say their organisation is currently addressing AI and automation (including blockchain), compared to 58 per cent of all CEOs globally, and way behind the proportion of CEOs doing this in countries such as the US and Australia, both at 62 per cent".<sup>113</sup> CSJ commissioned research asked a panel of UK employees on their perception of the level of innovation at their company. On a scale of 0 to 10 (0 being Not at all Innovative, 10 being Very Innovative), 60 per cent of respondents stated that they felt the company was moderately innovative.

## What drives innovation – bad managers and entrepreneurs

There are many examples of individual firms failing to innovate, and consequently falling into insolvency. The *Woolworths* bankruptcy offers a story of a low-cost retailer, competing on the UK high street. A demerger with *Kingfisher* left it with lease payments that increased the cost base. These costs, coupled with competition from grocers that had entered the non-grocery market, and a failure to innovate both processes and product, left the chain facing financial insolvency.<sup>114</sup> There are many other examples of retail companies not diversifying, innovating and keeping costs low; *HMV* was unable to remain competitive in a world where music and film became increasingly available on the

<sup>112</sup> PWC Technology Report (2017)

<sup>113</sup> Ibid

<sup>114</sup> George MacDonald, *What went wrong for Woolworths?* (Retail Week, 4 December 2008) [accessed via: [www.retail-week.com/sectors/general-merchandise/what-went-wrong-for-woolworths/1941462.article](http://www.retail-week.com/sectors/general-merchandise/what-went-wrong-for-woolworths/1941462.article)]

internet. *Clinton Cards* never utilised the Internet to allow customers to customise their own product. *Blockbuster* again relied on physical presence on the high street to attract customers that were increasingly going online to rent and buy video content.

These examples are not confined to unproductive industries Canadian firm *RIM's* (makers of the Blackberry phone) whose keyboard based cell phone declined in market share as Apple produced a touch screen version that also allowed for more features. *DELL* computers lost out to Apple. It was Steve Jobs' famous appreciation for aesthetic innovation, redesigning how a product looks and feels, that saw *DELL* lose a large chunk of the personal computer market share.

Another example of a failure to change and innovate as technology and society evolved was the use of Japanese products such as the Walkman and CDs, as well as VHS. Companies such as *Toshiba* and *Sony* ranked as some of the largest in the world; however as portable devices became ubiquitous, so music and phone functions were combined. No longer did any individual need a *Sony Vaio* laptop, Walkman and DVD player. Now they have an iPad, which can provide storage of music and films, Instant Messaging services and access to the Internet.

British car manufacturers such as British Leyland and Rover failed to adapt to a world of advanced automotive design and engineering. A Rover 200 looked and felt inadequate next to the Mercedes C-Class Estate. The Mini was taken over by *BMW* when the German car company took on Rover. British taxi drivers have been the most recent victims of failing to adapt to a changing world. A US-based gig-economy company that is disrupting a traditional industry is *Airbnb* which is putting hotels under increasing pressure as it offers tourists the chance to rent cheaper residential units directly from local owners.

When one thinks of the most innovative companies in the world – *Apple, Google, Tesla, IKEA, UBER, BMW, BASF, Toyota* and *GE* – they all originate in countries known for their high level of industrial productivity, such as the USA, Germany, Sweden and Japan (an exceptional case, where total aggregate levels of productivity are depressed by inflation and declining population). They also unsurprisingly exhibit similar characteristics of a high R+D budget and adoption of technological change.

Whilst a fertile economic and social environment are essential for long term productivity growth, unique firm-level characteristics often drive productivity growth in a company. Unique characteristics include management technique, leadership, ownership structure, domicile, balance sheet strength, size, brand, cost efficiency and technology utilisation. Government must create the conditions for innovation – an open economy, access to capital, a thriving academic sector, and regulatory support. However, firm factors are instrumental in driving innovation and productivity growth in the UK economy. So, what firm level characteristics drive innovation and productivity growth in a company? Three significant factors emerge:

1. Size and Age – Intuitively we believe SMEs are more productive whereas larger companies are more bureaucratic and strategically cumbersome. Though Haltwinger, Jarmin and Miranda (2011) analysed data in the US and found that small isn't always best: "*Our main finding is that once we control for firm age there is no systematic*

*relationship between firm size and growth*".<sup>115</sup> What matters instead is age; young firms are a greater source of job creation, even though they have a higher failure rate. Older firms and SMEs show a negative rate of net job creation.<sup>116</sup> It is also worth noting that the five largest companies that make up the US Nasdaq stock market are firms that were started in the last 40 years. They (Microsoft, Google, Apple Amazon, and Facebook) were high growth companies led by entrepreneurs in high growth industries that displaced older more cumbersome corporates. Young, high growth firms (often led by entrepreneurs) are essential for productivity growth.

2. Management – Discussions with business leaders for this report have always found that the key to inculcating a desire to innovate within any firm begins with leadership at management level. Chief Economist at the Bank of England Andy Haldane believes that management failings are one of the defining characteristics of low productivity firms.<sup>117</sup> He cites research conducted by Bloom and Van Reenen (2007) which found a statistically significant link between quality of management and productivity growth, "*A one standard deviation improvement in the quality of management raises productivity by, on average, around 10 per cent. This suggests potentially high returns to policies which improve the quality of management within companies*".<sup>118</sup> The Mayfield Commission also arrived at the conclusion that management was a key contributor to low productivity. In his opening statement for the report Sir Charlie Mayfield said, "*Although our lacklustre productivity performance has been much analysed and discussed we are a long way from it being resolved. That resolution will come mainly from business and it is time for concerted action. The routes to improvement are many and varied but they all depend on strong ambitious business leadership and enduring action on the ground*".<sup>119</sup> In our discussions with business owners, many stated it was incumbent upon management to drive innovation, efficiency and productivity growth. In discussions with members of the venture capital and private equity industry, many felt that poor management masked a strong company that, provided with capital, could reap considerable productivity, revenue and profit growth.
3. Ownership Structure – Linked to management failings is ownership structure. Haldane at the Bank of England identifies family owned firms where internal competition between staff is weak and few management controls exist.<sup>120</sup> Our analysis of public sector productivity, as well as anecdotal evidence across the globe, suggests that publicly owned corporations are also less productive than private organisations. However, firms that are owned and run by entrepreneurs, unsurprisingly, are linked to higher rates of firm productivity growth. Research from Singapore shows that entrepreneurs bring new ideas and technology to business problems, are inclined to be more diverse and innovative in product design and creation, and lastly generate competitive pressure within a market forcing other firms to become more productive.<sup>121</sup>

115 Haltwanger, J., Jarmin, R. and Miranda, J. *Who Creates Jobs? Small vs Large vs Young?* (2011)

116 Ibid

117 Andy Haldane, *Productivity Puzzles* (Speech delivered at the London School of Economics, 20 March 2017) [accessed via: [www.bankofengland.co.uk/publications/Documents/speeches/2017/speech968.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2017/speech968.pdf)]

118 Ibid

119 Mayfield Commission, *How Good Is Your Business Really* (2016)

120 Haldane A. *Productivity Puzzles* (Speech delivered at the London School of Economics, 20 March 2017)

121 Endeavour Insight, *How Does Entrepreneurship Impact Productivity?* (30 March 2016) [accessed via: [www.ecosysteminsights.org/enterprise-and-efficiency-how-does-entrepreneurship-impact-productivity/](http://www.ecosysteminsights.org/enterprise-and-efficiency-how-does-entrepreneurship-impact-productivity/)]

Lastly the EBRD released a paper in August 2017 that established foreign ownership of Turkish firms were generally linked to increased productivity; however this was more a result of price increases and efficiency improvements.<sup>122</sup>

Leadership and management are clearly important. However, whilst in Germany there is an emphasis on cultivating good managers, evidence in the UK suggests that this is not culturally valued. CSJ commissioned research through polling company YouGov, which found that the majority of employers do not offer financial support to management staff to pursue an advanced degree (MBA, PhD etc). 70 per cent of respondents across a multitude of industries admitted to not offering support for management who wished to pursue advanced education. This was unsurprisingly higher in low productivity industries such as retail, hospitality/leisure and marketing/PR/sales.

## The long tail

Our concluding section analysing firm level drivers of productivity looks at the theory that low rates of productivity growth are concentrated in a minority of underperforming firms across the UK economy. This is an important clarification to make; productivity stagnation is driven by a long tail of underperforming firms and not by industry wide lack of innovation and competitiveness.

Andy Haldane and Sir Charlie Mayfield cite the structure of some industries and the existence of what has become understood as the long tail. Haldane comments on this phenomenon existing at both a national and industrial level,

This empirical evidence suggests a long tail of countries and companies with low, slow productivity growth. These productivity laggards have been unable to keep-up, much less catch-up, with frontier countries and companies. At the same time, an upper tail of companies and countries has maintained high and rising levels of productivity. These productivity leaders are pulling ever-further away from the lower tail.<sup>123</sup>

The Mayfield Commission analysis shows the long tail in terms of individual productivity around a median. The UK has a larger portion of employees operating under the median, with a small cluster of very productive workers operating at the top of the distribution. The German economy, however, has a higher proportion of employees at or just above the median.

The existence of the 'long tail', or any cohort of under-performing industries does not detract however from the importance of management and firm-level characteristics that drive that underperformance. Mayfield recognises this by calling on management to crack down on coasting and fundamentally improve their business.

Causes of the long tail remain rooted in firm-level characteristics; management and leadership. Long tail firms exhibit a slow rate diffusion of technology from highly productive companies at the top of the distribution to those at the bottom. Research at

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122 Bircan, C. *Ownership structure and productivity of multinationals* (EBRD, 2017)

123 Haldane A. *Productivity Puzzles* (Speech delivered at the London School of Economics, 20 March 2017)

the Brookings Institute shows ‘frontier firms’ continue to capitalise on new technology, whilst laggards struggle to keep up. This has less to do with management and more to do with economies of scale, reach and resources,

Those “frontier firms” – and by extension their regions – that possess the technological capabilities, sophistication of management, and global networks to navigate the complexities of the modern economy are pulling away from the pack. New evidence from the OECD, moreover, finds that the technological capabilities of firms at the frontier are not diffusing across the rest of the economy.<sup>124</sup>

These are real problems for start-ups and laggards, as technology increasingly becomes a barrier to entry in some industries and competition in entire markets suffers directly.

## Public sector productivity

Data on UK employment shows many individuals are employed within two large industries dominated by the public sector: education and social/healthcare. The public sector’s size and perceptions of cumbersome bureaucracy are regularly cited as an example of why productivity growth is falling in the UK. The UK public sector employs more people than the OECD average. Reform think tank published figures showing that this is broadly true, and that public-sector productivity is slow by historical and comparable standards; *“Overall, public-sector productivity has stagnated for two decades. Across this period, real-terms public-sector spending increased by an average of 3.1 per cent each year, almost 16 times faster than productivity”*.<sup>125</sup> However, there is little anecdotal evidence to suggest a causal relationship between size and productivity. Sweden, Denmark and Norway have larger public sectors (measured as public-sector employment as a percentage of total employment) than the UK, as well as being more productive. Germany has a relatively smaller portion of total employment taken up by the public sector and is also more productive than the UK as a whole. It is also worth pointing out that public sector productivity becomes a value discussion on whether the state has a role in providing both public and private goods and services. Lastly, as Reform stated in 2015, poor data collection hinders meaningful analysis because *“Most official estimates do not include a measure of service quality, and the availability and reliability of data is variable across different sectors”*.<sup>126</sup>

## Conclusion

What has caused the UK’s productivity slowdown? Conventional theory is that a combination of high employment, low interest rates, declining capital investment, industrial imbalance and slow growth have driven productivity lower. In the short term, this is evidentially occurring; the UK needs to address its trade imbalance and boost capital investment.

124 Parilla, J. and Muro, M. *Understanding US productivity trends from the bottom-up* (Brookings Institute, 2017)

125 Hitchcock, A., Laycock, K. and Sundorph, E. *Work in Progress: Towards a Leaner, Smarter Public Sector Workforce* (Reform, 2017)

126 Crowhurst, E., Finch, A. and Harwich, E. *Towards a More Productive State* (Reform, 2015)

However, in the longer term, the lack of innovation across UK corporates, amongst other things, is seriously stifling productivity. To boost productivity, policy must support:

- Higher levels of capital investment in the near term.
- Public and private R+D spending in the UK.
- The uptake of innovative technologies across both the manufacturing and service sector.
- Entrepreneurs who want to disrupt inefficient and unproductive industries.
- Better management in low growth companies.

## chapter four

# Human capital and the bottom 20 per cent

The combination of open markets and technology means that returns in a globalised world amplifies the rewards of the superstar and the lucky. Now may be the time of the famous or fortunate, but what of the frustrated and frightened?

Mark Carney, 2016

### Productivity and the bottom 20 per cent

The consensus on pay has been that wages have stagnated, much like productivity, since the end of the financial crisis. Analysing median weekly wages, this is true. Real average weekly wages have still not returned to their pre-crisis peak of £480 after falling to £450 in 2014.

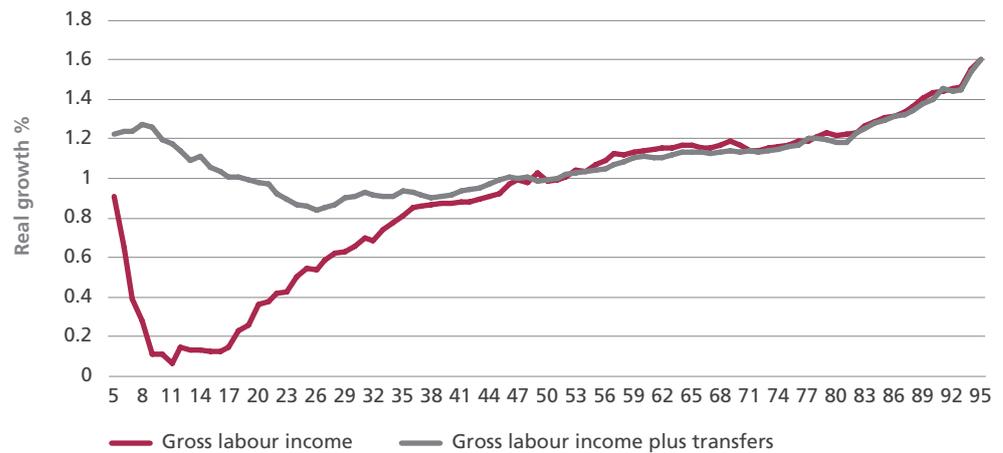
However, analysis from the Institute for Fiscal Studies (IFS) in *Figure 22* shows that over a longer 20-year period, wage performance has varied across the distribution curve.<sup>127</sup> Wages in the bottom quarter have consistently underperformed compared to wages at the top. Only once transfers are considered do you see equalisation of take home earnings across the income distribution. The ONS comments,

In the financial year ending 2016, the average income of the richest fifth of households before taxes and benefits was £84,700 per year, 12 times greater than that of the poorest fifth (£7,200 per year). An increase in the average income from employment for the poorest fifth of households has reduced this ratio from 14 to 1 in the financial year ending 2015. The ratio between the average income of the top and bottom fifth of households (£63,300 and £17,200 respectively) is reduced to less than 4 to 1 after accounting for benefits (both cash and in kind) and taxes (both direct and indirect).<sup>128</sup>

127 Belfield, C., Blundell, R., Cribb, J., Hood, A. and Joyce, R. *Two decades of income inequality in Britain: the role of wages, household earnings and redistribution* (IFS, 2017) [accessed via: [www.ifs.org.uk/uploads/publications/wps/WP201701.pdf](http://www.ifs.org.uk/uploads/publications/wps/WP201701.pdf)]

128 ONS, *Effects of taxes and benefits on UK household income: financial year ending 2016* (April 2017) [accessed via: [www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/theeffectsoftaxesandbenefitsonhouseholdincome/financialyearending2016](http://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/theeffectsoftaxesandbenefitsonhouseholdincome/financialyearending2016)]

Figure 21. Average real annualized wage growth between 1994–2014



Source: IFS, Gov.uk

For wages at the bottom of the income scale to stagnate for such a long period exposes the possibility that productivity growth has varied considerably between the high and low earners. Productivity growth has clearly driven wage growth for high earners (predominantly working in high skilled professional services industries based in the South East) whilst low earners have seen no productivity and wage growth for over 20 years. It reinforces the sentiment of the IMF and others that the UK has experienced much more secular productivity stagnation that began way before the financial crisis in 2007. Long term factors that have driven this divergence in fortunes include technological advancement, globalisation and human capital (education and skill attainment).

This chapter analyses productivity from the perspective of human capital, and the effect on productivity of low educational attainment, low skill levels, low pay and a lack of in-work progression.

## Low pay and the hollowing out of the job market

A large portion of the least productive workers are found in low wage service industries. The least productive five industries make up 31 per cent of UK total GVA output (approximately £500.8 billion), but also constitute 54 per cent of total employment (15.5 million jobs). The ten most productive industries in comparison split across high value manufacturing and high skilled service sector industries. However, they make up just a quarter of UK GVA output (£423.2 billion) and just 7.4 per cent of total UK employment (2.1 million jobs).

Figure 22. Productivity by industry

5 least productive industries	GVA (%)	Jobs (%)	GVA (£)	Number of jobs	GVA per head (£)
Accommodation and food services	2.90	7.19	46,689,000,000	2,067,000	22,587.81
Human health and social work activities	6.66	13.52	107,420,000,000	3,888,000	27,628.60
Administrative and support services	4.75	8.67	76,527,000,000	2,495,000	30,672.14
Education	6.10	9.10	98,319,000,000	2,619,000	37,540.66
Wholesale, retail and repair of motor vehicles	10.66	15.70	171,897,000,000	4,517,000	38,055.57
	<b>31.07</b>	<b>54.18</b>	<b>500,852,000,000</b>	<b>15,586,000</b>	<b>31,055.57</b>
10 most productive industries	GVA (%)	Jobs (%)	GVA (£)	Number of jobs	GVA per head (£)
Mining	1.63	0.22	26,260,000,000	62,000	423,548.39
Real estate activities	11.57	1.62	186,491,000,000	465,000	401,055.91
Coke and refined petroleum products	0.15	0.02	2,392,000,000	6,000	398,666.67
Basic pharmaceutical products and preparations	0.83	0.14	13,329,000,000	39,000	341,769.23
Electricity, gas, steam and air-conditioning supply	1.53	0.37	24,627,000,000	105,000	234,542.86
Financial and insurance activities	8.23	3.65	132,644,000,000	1,049,000	126,448.05
Chemicals and chemical products	0.57	0.34	9,137,000,000	97,000	94,195.88
Water supply; sewerage and waste management	1.05	0.65	16,932,000,000	186,000	91,032.26
Computer, electronic and optical products	0.70	0.44	11,352,000,000	126,000	90,095.24
Information and communication	6.18	3.08	99,641,000,000	1,139,000	87,481.12
	<b>26.25</b>	<b>7.42</b>	<b>423,164,000,000</b>	<b>2,135,000</b>	<b>244,594.94</b>

Source: ONS

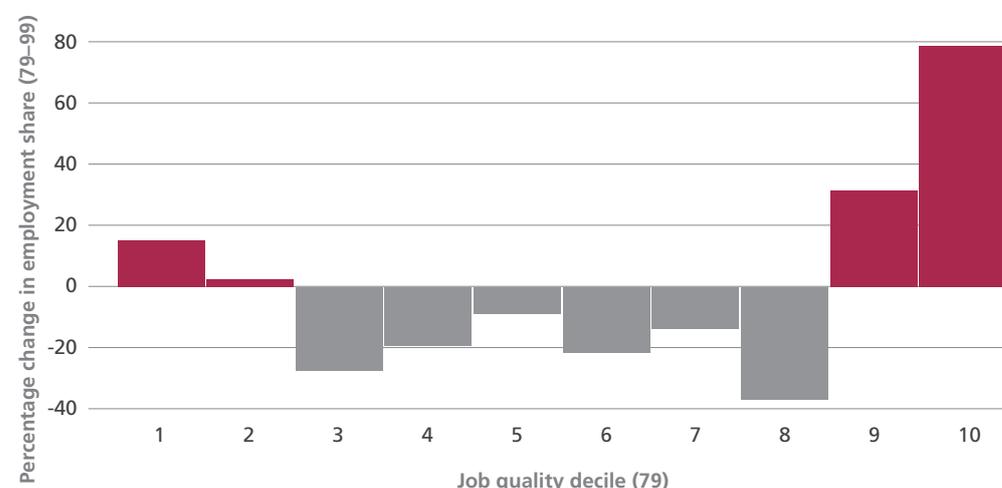
As we mentioned in the previous chapter, the imbalance between manufacturing and service based employment has formed over the last 20 to 30 years. ONS data tracking industrial job growth between 1997 and 2014 shows jobs in industries that classically attracted blue collar workers have declined. Since 1997, the chemical industry has lost more than 77,000 jobs, the pharmaceutical industry has lost 33,000 jobs, the transport equipment industry (which would include the automotive manufacturing industry) has lost 89,000 jobs and machinery manufacturing industry has lost 134,000 jobs.

In their place grew low wage and low skilled employment in the service sector, which now makes up more than half of UK employment. Skelton (2015) detailed the prevalence of low paid employment in the UK: *"Despite success in reducing extreme low pay, the level of low pay has remained stubbornly at the same level since the mid-1990s, there are a variety of measures of low pay, but all suggest that between 22 per cent and 32 per cent*

of workers are what might be considered low paid".<sup>129</sup> A Resolution Foundation report in 2016 found 40 per cent of individuals working in the retail industry were paid below two-thirds of the median average wage.<sup>130</sup> 65 per cent of the accommodation industry are equally paid below the two-thirds threshold.<sup>131</sup>

This hollowing out of the manufacturing industry is matched by the hollowing out of middle income jobs across the entire economy. Much like trends in other western economies, the UK has seen a decline in the number of 'mid-ranked' jobs in vocational sectors. There has been an equal increase in the number of jobs considered 'low-level' and 'senior-level' roles. Goos and Manning<sup>132</sup> were some of the first to recognise this phenomenon of 'job polarisation'. Using starting wage as a proxy for job quality, they established a significant decline in medium quality mid-wage jobs, while correspondingly high and low wage/quality jobs grew in number.

Figure 23. Employment by job quality



Source: Goos and Manning (2007), Department for Business, Innovation and Skills (October 2013)

The Department for Business, Innovation and Skills summarised the professions that saw largest growth in number of the period 1979 to 1999; "Goos and Manning listed the ten occupations that had seen the largest increases in employment share between 1979-1999. This list is dominated by high-level jobs in business and finance (as Figure 1 would suggest)".<sup>133</sup>

Most concerning is that with the surge in low pay, low skilled employment in the UK, the opportunity of promotion and moving up the value chain seemed to also become less likely. IPPR recognised the problem of 'job polarization' and the importance of ensuring occupation progression for productivity growth.

129 Skelton, D. *Tackling Low Pay* (Centre for Social Justice, 2015)

130 Resolution Foundation, *Low Pay Britain* (2016)

131 Ibid

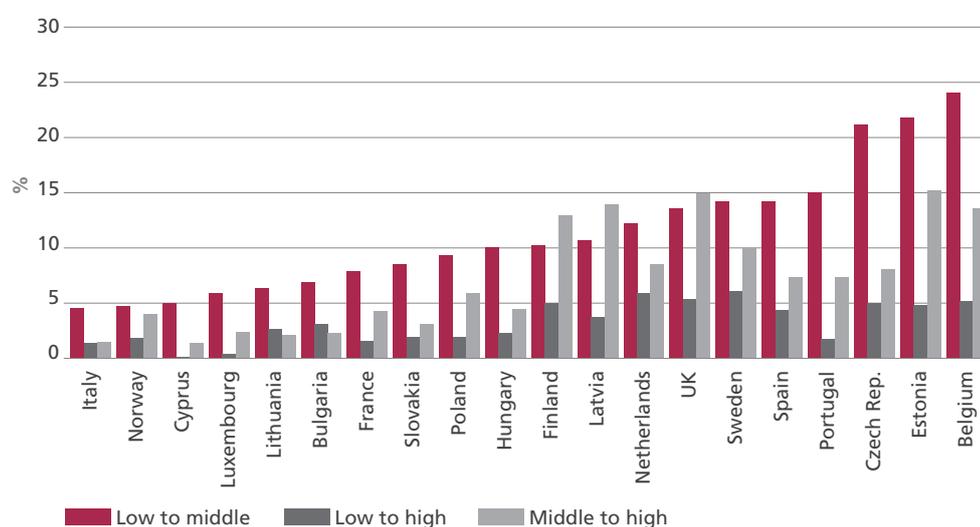
132 Goos, M. and Manning, A. *Lousy and Lovely Jobs* (LSE, December 2003)

133 Department for Business, Innovation and Skills, *Hollowing out and the future of the labour market* (BIS, 2013)

Several decades of globalisation and technological change, which the institutions governing the labour market have struggled to catch up with, have hollowed-out middle-income jobs and created a disconnect between overall productivity growth and wages... Understanding in-work progression in Europe is vital to finding a solution to these problems".<sup>134</sup>

Authors at the IPPR found the UK had a comparatively low incidence of occupational progression. They found that less than 15 per cent of low wage/skilled workers in the UK progressed to middle wage/skilled occupations.<sup>135</sup> This was just higher than the Netherlands, but lower than Sweden, Spain and Belgium.<sup>136</sup> Fundamentally, there was little proof of workers being able to progress from low skilled to high skilled (leapfrogging mid-skilled) employment. This was a general observation across European countries, "*in most European countries fewer than 5 per cent of low skilled workers move into a highly-skilled occupation over a four-year period*".<sup>137</sup> With fewer mid-skilled jobs available, there seem fewer routes for low skilled workers to progress up the value chain.

Figure 24. Rates of occupational progression (%) by occupational groups, in EU countries, 2004–2011



Source: IPPR, Eurostat

There were 5.69 million low paid workers in the UK in 2015.<sup>138</sup> The Social Mobility Commission (SMC) 2016 State of the Nation report states that "20.4 per cent of all UK workers are in low pay (with earnings below two thirds of median earnings), compared with 16.6 per cent in Australia, 8.4 per cent in Finland and only 7.9 per cent in Denmark, countries associated with higher social mobility", and that "only one in ten workers will be able to escape low pay over the course of a ten-year period".<sup>139</sup> David Skelton's 2014 report, *Tackling Low Pay*, referenced analysis from the Resolution Foundation showing only 25 per cent of employees on low pay

<sup>134</sup> Thompson, S. and Hatfield, I. *Employee Progression in European Labour Markets* (IPPR, 2015)

<sup>135</sup> Ibid

<sup>136</sup> Ibid

<sup>137</sup> Ibid

<sup>138</sup> Social Mobility Commission, *State of the Nation 2016* (November 2016) [accessed via: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/569410/Social\\_Mobility\\_Commission\\_2016\\_REPORT\\_WEB\\_\\_1\\_\\_.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/569410/Social_Mobility_Commission_2016_REPORT_WEB__1__.pdf)]

<sup>139</sup> Social Mobility Commission, *State of the Nation 2016* (November 2016)

would ever progress towards higher pay over the long term. 12 per cent would spend their entire working life on low pay, while 64 per cent would fluctuate between low-paid and well-paid groups.<sup>140</sup> The CBI produced research in 2014 showing one-in-three workers would not progress out of the bottom pay decile after 14 years of work.<sup>141</sup>

## Life on low pay

Life on low pay perpetuates the problem of productivity stagnation as it has a vicious cycle effect on an individual's ability to increase their productivity.

Low wage work is inherently less secure than well paid work. This is because low wage workers are ultimately easier to make redundant and cost less (in the form of starting salaries and training) to take on if a company needs a replacement. Low pay is linked to increased risk of poverty. A Joseph Rowntree Foundation study into low paid work in 2010 found, "*individuals and households would repeatedly experience poverty both when in work and when out of it*".<sup>142</sup> The study found that 'ill health' and 'depression' were more prevalent amongst low paid workers that were surveyed. Individuals struggled to balance important commitments such as parenting duties or caring for relatives when in low paid insecure employment. This was found to compound stress levels and further increase the risk of unemployment. Skelton and the CSJ again cover the impact of low pay on family life and structure,

Strong families are a crucial route out of poverty and are essential for a stable society. Low pay can have a damaging impact on family life. Many low-paid jobs involve parents having to work unpredictable, atypical hours, which minimises time that can be spent on family activities, such as eating or reading with children or helping them with their homework.<sup>143</sup>

Within a family, children often enter the same field of work as their parents. Like worklessness, low paid employment can repeat across generations. The SMC found that 45 per cent of earning inequalities are passed down a generation.<sup>144</sup> The SMC continue to outline the reality of occupational immobility between generations:

Strong barriers to equality of opportunity persist. The odds of those from professional backgrounds ending up in professional jobs are 2.5 times higher than the odds of those from less advantaged backgrounds reaching the professions. For those from working-class backgrounds, the odds of following in their parents' occupational footsteps are 2.3 times higher than the odds of those from more advantaged backgrounds moving into working class jobs.<sup>145</sup>

Individuals in low paid employment are more likely to lose their job, fall into poverty; they are more likely to experience periods of depression and emotional stress, and these characteristics are more likely to be passed onto their children who go on to experience low paid employment. Poverty, stress and ill-health combine to deeply repress an individual's capacity to be productive. This effect is reciprocated on children. Research in the US has found that "*low family income compromises children; 'physical growth,*

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140 Skelton, D. *Tackling Low Pay* (CSJ, 2014)

141 CBI, *Better Off Britain* (CBI, 2014)

142 JRF, *The Low-Pay, No-Pay Cycle: Understanding Recurrent Poverty* (JRF: 2010)

143 Skelton, D. *Tackling Low Pay* (Centre for Social Justice, 2015)

144 Social Mobility Commission, *Social Mobility, the Class Pay Gap and Intergenerational Worklessness: New Insights from The Labour Force Survey* (2017)

145 Ibid

*cognitive development and socio-emotional functioning. It decreases the achievement of children when they are in school and pits them at heightened risk of dropping out of school early... low childhood income impairs productivity later in life.*"<sup>146</sup>

The effect on productivity growth of job polarisation, growth in low paid work and staying low paid for long periods of time are evident. However, the theory that technology and globalisation drove job polarisation and in effect a decline in productivity negates the effect of changes to the quality and capacity of human capital in the UK economy. We must also cover what factors drive an individual into low paid work and not high paid work. This raises the issue of education and professional development in the UK and the effect poor investment in both has had on productivity stagnation.

In summary, economic shifts driven by globalisation, technological advancement and increasingly automation, have caused a decline in mid-level technician jobs and a growth in low skilled and low paid jobs in the service sector. Why is this a problem? Low pay perpetuates the problem of low productivity, it increases stress on the individual, and consequently low skilled and low wage workers have few opportunities of occupational progression and no increase in wages.

Policy makers must work to increase the number of good jobs in an economy, however, there are other drivers of long term wage stagnation and low levels of occupational progression. Policy must support productivity growth for workers in low skilled jobs and greater fluidity between low, mid and high skilled employment. Below we cover the two policy areas that drive low pay and occupational mobility: a lack of education and in-work training.

## Education, skills and vocational training

There is a large body of work pointing to the causal relationship between education, skill development and training with higher rates of productivity growth at both the individual and regional level. The ONS has long pointed to the positive relationship between educational attainment and earnings.<sup>147</sup> Brookings Institute stated in 2006 that investments in education were responsible for up to 30 per cent of recent labour productivity growth.<sup>148</sup> In a report for the UK Government, Aznar et Al. (2015) summarised that *"In the run-up to the financial crisis, the up-skilling of the UK's workforce accounted for around 20 per cent of total labour productivity growth"*.<sup>149</sup> Holland et al. (2013) found that a 1 per cent increase in the graduate workforce led to an increase in productivity of 0.2 to 0.5 per cent.<sup>150</sup> Finally, the Confederation of British Industry released a report in 2016 that found the average regional GCSE scores were positively correlated with GVA per capita output.<sup>151</sup>

Why is education important? Understanding numbers, being able to write, analyse problems and develop systems to improve processes are all built during years of education.

<sup>146</sup> Hill, M. and Sandfort, J. Effects of Childhood Poverty on Productivity Later in Life (Children and Youth Services Review, 1995)

<sup>147</sup> ONS, *Education, Earnings and Productivity: Recent UK Evidence* (2003)

<sup>148</sup> Sawhill, I et Al. *The Effects of Investing in Early Education on Economic Growth* (Brookings Institute, 2006)

<sup>149</sup> Aznar et Al. *UK skills and productivity in an international context* (Department for Business, Innovation and Skills, 2015)

<sup>150</sup> Holland et Al. *The relationship between graduates and economic growth across countries* (BIS, 2013)

<sup>151</sup> CBI, *Unlocking Regional Growth* (2016)

Without these requisite skills working in any environment becomes close to impossible. Today, these skills are in even higher demand as workers are increasingly expected to work with technology, communicate with people around the world, and analyse more information that is now available to us due to technology. Education also builds character important for success, including self-evaluation and curiosity, primary drivers in any individual that wants to constantly learn more. Without individuals with both current skills and the capacity to learn new skills, an economy's productive capacity will diminish.

UK educational performance has seen mixed results in recent years. The UK's performance in PISA surveys has stabilised around the OECD average in recent years (although the UK has scored well in science), whilst GCSE and A Level grades have improved and Ofsted has ranked more schools as *Good* or *Outstanding*. However, there are two core criticisms of the UK education system that are linked to poor productivity performance at the bottom of the income scale:

### 1. The UK education system produces individuals without the requisite skills to compete in a modern economy.

The OECD PIAAC survey of adult skills found young people in England score poorly against young people from competitor countries. Survey results found that young people from most other countries peaked in terms of literacy and numeracy skills at the end of formal education. In the UK however, they were more likely to peak closer to their thirties, leading the Government to conclude that *"the skills levels that young adults in England reach at the end of formal schooling are insufficient for everyday life and work and so they are required to continue to improve on these skills through further education and training in higher education, or when they enter work"*.<sup>152</sup> Digging into the PIAAC total scores, the UK scored a 262, below Germany (272), the Netherlands (280) and Sweden (279).<sup>153</sup> Most concerning is the measurement of 'problem solving in a technology rich environment'. 5.8 per cent of UK adults failed an ICT core test, higher than the OECD average of 4.7, Sweden (4.8), USA (4.1), the Netherlands (3.7) and Germany (3.7). The UK also had a lower percentage of adults who were considered skilled (at level 2 or 3) in ICT than Germany, Netherlands and Sweden.

The PISA survey results expose a flatlining in performance of school children. Since 2009 the UK has ranked above the OECD average in science subjects but lower in maths, reading and science than more productive countries such as the Netherlands, Germany, Canada, New Zealand and Sweden.

Even outside of international contexts, the data suggests that the current education system lets down a large portion of students. A 2014 CSJ report found that *"35 per cent of businesses are dissatisfied with the basic literacy of school and college leavers and 30 per cent are dissatisfied with their basic numeracy"*.<sup>154</sup> In 2016, the percentage of students not receiving an A\* to C grade (considered a pass) in English and Maths GCSE was 40.3 per cent, a small improvement of 3.5 percentage points from 2015. However, much of this progress was related to changing methodology according to the Department

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152 Department for Business, Innovation and Skills, *Young Adults Skills Gain in the International Survey of Adults Skills* (BIS, 2012)

153 OECD PIAAC 2012, [accessed via: [www.oecd.org/skills/piaac](http://www.oecd.org/skills/piaac)]

154 Centre for Social Justice, *Closing the Divide – Tackling Educational Inequality in England* (2014)

for Education, assuming no methodology change the improvement would have been just 0.5 percentage points.

Students from disadvantaged backgrounds are more likely to underachieve in the UK education system. 43.1 per cent of disadvantaged students at state funded schools achieved an A\* to C grade in Maths and English GCSE (27.5 percentage points below the achievement rate for non-disadvantaged students). Whilst the 2016 average Attainment 8 score for all pupils at state-funded schools in England was 51.6, for students receiving FSM the average score was 39.0, a gap of 12.6 points.<sup>155</sup> The effect of disadvantage is best illustrated when measuring Progress 8<sup>156</sup> scores. Disadvantaged students had a negative Progress 8 score of -0.37 (meaning attainment and competency levels have regressed against other students), whereas non-disadvantaged students had a Progress 8 score of +0.11.

Government statistics show that 77.2 per cent and 77.6 per cent of students failed their resits in English and Maths respectively.<sup>157</sup> Around a quarter of all students and nearly half the students eligible for FSM do not pass their GCSEs by age 18. These poor results demonstrate an education system that does not accommodate the wide variety of students and their many different modalities of learning. It can be disheartening for students who have failed their GCSEs up to four times<sup>158</sup> resulting in detrimental consequences for students' mental health.

The consequences of poor levels of educational attainment in the UK are significant. Regions with poor educational outcomes are shown to have lower levels of productivity growth. For example, London and the South-East region outperform the rest of the UK with more students achieving five A\* to C grade GCSEs whilst also recording significantly higher rates of productivity growth than the UK average.<sup>159</sup> However, allowing high rates of failure among FSM students place huge pressures on the economic and social fabric of the UK. Closing the divide between FSM and non-FSM students will be essential for driving productivity growth going forward.

### How do the different United Kingdom (UK) nations compare in the Programme for International Student Assessment (PISA)?

PISA performance in the UK has not significantly changed since 2006, although it has moved up and down the country rankings (due to variation between cycles in which other countries participate, how many participate, and how well those other countries perform). Additionally, UK students score above OCED average in both the science and reading domains, and around OCED average in Maths. However, looking only at overall UK performance glosses over the fact that there is not one homogenous education system within the UK. Instead the UK consists of four increasingly distinct education systems, one for each of the four nations. Each of these nations is performing differently in the three main PISA domains of reading, maths and science (see Table 1).

<sup>155</sup> Revised GCSE and equivalent results in England, 2015 to 2016, SFR03/2017, published 19 January 2017

<sup>156</sup> Progress 8 aims to capture the progress a pupil makes from the end of primary school to the end of secondary school. It is a type of value added measure, which means that pupils' results are compared to the actual achievements of other pupils with the same prior attainment [see: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/583857/Progress\\_8\\_school\\_performance\\_measure\\_Jan\\_17.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/583857/Progress_8_school_performance_measure_Jan_17.pdf)].

<sup>157</sup> ONS, Revised A Level and other 16–18 results in England, 2015/2016, published 19 January 2017

<sup>158</sup> BBC, *The pupils stuck in a cycle of maths and English resits* (6 March 2017) [accessed via: [www.bbc.co.uk/news/education-39142646](http://www.bbc.co.uk/news/education-39142646)]

<sup>159</sup> Department for Education, SFR03/2017: GCSE and equivalent results in England 2015/16 (revised), 19 January 2017

**Table 1. Summary of PISA 2015 results overall and between UK nations**

Country	2015 Domain score		
	Science	Reading	Maths
OECD average	493	493	490
UK Average	509	498	492
England	<b>512</b>	500	493
Northern Ireland	500	497	493
Scotland	497	493	491
Wales	<b>485</b>	<b>477</b>	<b>478</b>

Bold = Scores are significantly different from other three countries.

### England

England's 2015 scores are the highest out of the four devolved nations in all three PISA domains (although this difference is only statistically significant in science). Since 2006, these scores have remained stable, although the country has shifted in the rankings. England is above the OECD average, scoring 512. Internationally, only nine other countries significantly outperformed English students in 2015, down from 10 countries in 2012. It is also above the OECD average in reading, with only 12 countries' scores being significantly higher in 2015, this is down from 17 in 2012. Maths, however, is close to the OECD average, scoring 493. Compared to the other nations England's reading and maths scores are not dissimilar to Scotland's or Northern Ireland's, however it significantly outperforms Wales in all three domains.

### Northern Ireland

In 2015, Northern Ireland scored second to England in every domain. Across time there have been no significant changes in any domains' scores since 2006. It performs significantly above Wales in all three domains and similarly to Scotland across the board, only English students in science performed significantly better in 2015.

### Scotland

Scotland's 2015 performance in all three domains was around the OECD average. Since 2012, its Maths scores have remained more or less the same but its scores in reading and science dropped significantly between 2012 and 2015. In 2012, Scotland scored 513 in science, compared with 497 in 2015, a drop of 15 points. Additionally, in reading Scotland's score reduced by 13 points, however it's new score of 493 is not dissimilar to its 2009 score of 500. Maths scores have also slowly reduced since 2006, from 506 points to 491.

### Wales

In every domain Wales scores significantly below all three other UK nations and significantly below the OECD average. Performance in maths and reading has remained stable since 2006, however performance in science has consistently reduced; Wales scored 505 in 2006, and 485 in 2015, a drop of 20 points. In 2015, students in 33 countries scored significantly higher in science than those in Wales.

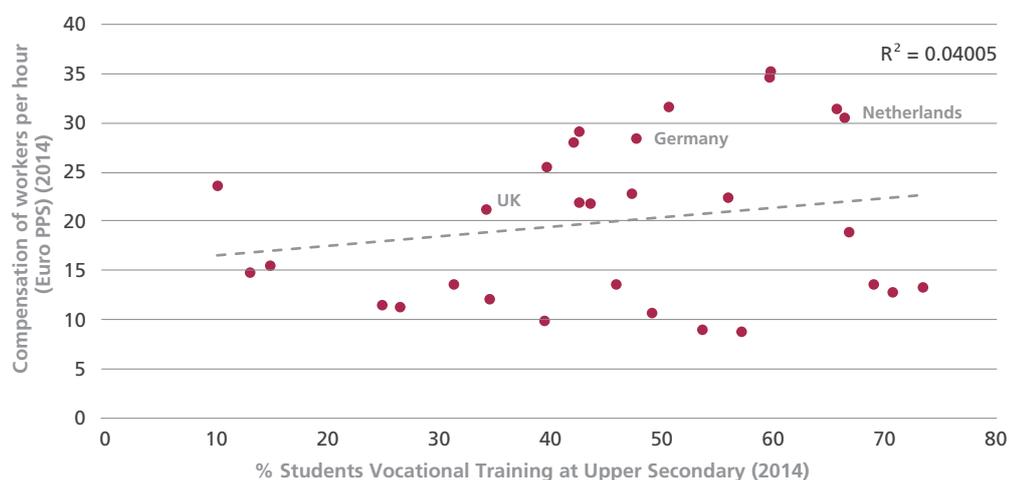
## 2. The UK has underinvested in Professional and Technical Education

Aside from skill levels and educational attainment, the UK education system is criticised for poor provision of high quality Professional and Technical Education (PTE, more commonly known as vocational education). Vocational education is traditionally the training of

a student or apprentice in a specific craft, skill or trade in preparation for a career in that field. PTE can include academic teaching of a subject aside from the more applied learning of a skill, craft or trade.

The evidence linking PTE and productivity is anecdotally strong but statistically ambiguous. There seems to be a low level of correlation between higher take-up of vocational training at upper secondary level and higher average wages (see figure 26 below). However, once the analysis is narrowed to include only developed western European economies, the correlation improves dramatically. There is little doubt though that the UK invests less in PTE compared to a select group of more productive countries. Data from Eurostat also shows that the UK is below the EU average for proportion of students studying vocational programmes at upper secondary level, and a House of Commons Joint Select Committee report found that Germany had twice the proportion of students compared to the UK studying vocational subjects at NVQ level 2 and 3.<sup>160</sup>

Figure 25. EU countries charting % in vocational education with worker compensation (2014)



Source: Eurostat

The UK has come under intense criticism for failing to develop PTE routes for students to learn and build a career. This has been one of the factors to blame for the poor skills amongst the working population; *“The UK performs relatively well in terms of higher skills (bachelor’s degree and above), and there is ample evidence on the impact of higher skills. However, compared to other countries, the UK’s intermediate (practical, technical and occupational) skills are of more concern.”*<sup>161</sup> Beginning in the ‘60s with the conversion of polytechnics and accelerated in the ‘90s, there has been a push, rightly or wrongly, to expand university as an option to a more socially and economically diverse group of secondary school students. A House of Commons Research paper stated that *“overall participation in higher education increased from 3.4 per cent in 1950, to 8.4 per cent*

<sup>160</sup> House of Commons Business, Innovation and Skills and Education Committees, *Education, skills and productivity: commissioned research* (October 2015)

<sup>161</sup> Department for Business, Innovation and Skills, *UK Skills and Productivity in an International Context*

in 1970, 19.3 per cent in 1990 and 33 per cent in 2000". In 2000, there were some 1.5 million undergraduate students in the UK, by 2011/12 there were nearly 2 million.<sup>162</sup>

Part of the increase were growing social pressures. Baroness Wolf commented that "aspiration to higher education is almost universal among parents of young children".<sup>163</sup> Public policy across the political divide supported a conventional route for everyone through primary and secondary school, completing GCSE's and A-Levels before going onto university, gaining a degree and getting a job. The percentage of graduates in the British population grew from 17 per cent in 1992 to 38 per cent in 2012.<sup>164</sup>

In principle, this is no bad thing. The modern UK economy is creating more jobs in knowledge heavy innovation industries that require university education, just as routinuous jobs decline. Graduates as a cohort exhibit higher employment rates, more productivity with higher earnings and lower levels of poverty. Most importantly, university degrees have the potential to act as an economic and social leveller between students from wealthy middle-class backgrounds and students from less advantaged working-class backgrounds.<sup>165</sup>

However, the range of quality across universities and degree types masks a more diverse reality for recent graduates. The EDGE Foundation released statistics in 2015 showing almost all graduates with 'in-demand' degrees in medicine, nursing, dentistry and veterinary science were employed within six months of graduating.<sup>166</sup> However, only one in eight graduates with degrees in creative arts and design were employed within six months, one in six law graduates had entry level graduate jobs within six months, and only half of graduates with degrees in business administration that were employed had an associate professional or technical role.<sup>167</sup> The employment rate for science graduates in professional and managerial roles six months after graduating was 58.1 per cent, 33.3 percentage points higher than graduates with degree in social sciences.<sup>168</sup> Even within the social sciences field and over a longer time frame, there is variation in employment prospects for graduates. 46.7 per cent of law graduates were in entry level occupations within three and a half years after graduating, compared to 31.3 per cent of business and administrative studies graduates and 30.5 mass communication and documentation graduates.<sup>169</sup>

The premium that graduates earn over non-graduates has remained constant over the past several years. Analysis from the IFS shows that graduates have consistently earned a premium of approximately 35 per cent for the last two decades.<sup>170</sup> However, the IFS note that the premium has been maintained by falling real wages across both graduate and non-graduate cohorts. The IFS stated that:

between 2008 and 2013, the real median hourly wage of 25- to 29-year-old graduates fell by nearly 20 per cent. The level in 2015 is about 15 per cent below the 2008 peak and roughly

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162 HESA, All students by subject area and sex 2015/16 [accessed via: [www.hesa.ac.uk/data-and-analysis/students/courses](http://www.hesa.ac.uk/data-and-analysis/students/courses)]

163 Wolf, A. Review of Vocational Education (Department for Education, 2011)

164 ONS, *Graduates in the UK Labour Market: 2013* [accessed via: [www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/graduatesintheuklabourmarket/2013-11-19](http://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/graduatesintheuklabourmarket/2013-11-19)]

165 De Vires, R. *Earnings by Degrees* (Sutton Trust, 2014)

166 Edge Foundation, *The Graduate Labour Market: An Uncomfortable Truth* (2015)

167 Ibid, Edge Foundation (2015)

168 Ibid, Edge Foundation (2015)

169 Ibid, Edge Foundation (2015)

170 Institute for Fiscal Studies, *The Puzzle of Graduate Wages* (IFS, 2016)

the same as the level in the mid-1990s. However gloomy this picture may be, it cannot be taken as direct evidence of a substantial negative impact from the increasing supply of graduates lowering their wages".<sup>171</sup>

As employment rates vary with University and degree type, so do starting salaries. Research by the Sutton Trust shows that even after taking account of demographic and socio-economic differences,

graduates from Oxford and Cambridge enjoy starting salaries approximately £7,600 (42 per cent) higher per year, on average, than graduates from post-1992 universities... graduates from medicine and dentistry courses (the highest earning subject) earning starting salaries approximately £12,200 higher than those studying design and creative arts (the lowest earning subjects). Engineering and technology (the second highest earning subject) graduates earn on average £8,800 higher than design and creative arts graduates.<sup>172</sup>

The growth in university graduates and decline in non-graduate technical qualifications has contributed to both a skills gap in the UK economy and skills mismatches. The UK Commission for Employment and Skills (UKCES) released survey results showing a skills gap linked directly to the lack of vocational training available in the economy. Between 2013 and 2015, there was a 50 per cent increase in employers who were finding it hard to fill a vacancy due to a lack of skills.<sup>173</sup> In 2015, there were 210,000 vacancies related to skills shortages, up from 150,000 in 2013.<sup>174</sup> Industries with the largest shortages included Electricity, Gas and Water, Construction, Transport and Manufacturing. Skills that were lacking included specialist skills and knowledge, complex numerical skills, computer literacy and advanced IT skills.

There is also an argument that universities over provide non-STEM degrees, creating a STEM skills gap in the economy. Lord Baker at the Edge Foundation<sup>175</sup> and the Royal Academy of Engineering<sup>176</sup> have both cited the problem of excess demand for graduate engineers and non-graduate STEM workers. YouGov polled a cluster of businesses in 2013 and found that 60 per cent of STEM graduate employers felt there was insufficient supply of competent talent to fill the demand for STEM expertise in the British economy. YouGov stated,

59 per cent of businesses and 79 per cent of universities surveyed believe there aren't enough skilled candidates leaving education to meet industry's employment requirements. Furthermore, among those who believe a skills gap exists, over six in ten (61 per cent) business leaders and 68 per cent of academics believe it will take over ten years to close.<sup>177</sup>

This demand is unlikely to subside. Writing in 2012, Professor Matthew Harrison calculated that the British economy would need 830,000 professionals and 450,000 technicians with STEM qualifications by 2020. The digital sector is widely regarded as a high growth area where future jobs will be created. However, a PWC Global CEO survey in 2017 found that 67 per cent of UK CEOs believe digital skills were hard to come by when recruiting employees, compared to just 24 per cent of CEOs in China.<sup>178</sup> PWC also found that 77 per cent

171 Ibid

172 De Vires, R. *Earnings by Degrees* (Sutton Trust, 2014)

173 UKCES, *Employer Skills Survey 2015: UK Results* (2016)

174 Ibid

175 Lord Baker, *The Skills Mismatch* (Edge Foundation, 2014)

176 Harrison, M. *Jobs and Growth: The Importance of Engineering Skills to the UK Economy* (Royal Academy of Engineering, 2012)

177 YouGov, UK skills gap in STEM subjects (2013) [accessed via: <https://yougov.co.uk/news/2013/10/11/uk-skills-gap-stem-subject/>]

178 PWC, *Prospects for the future: confidence in business growth and long-term optimism* [accessed via: [www.pwc.com/gx/en/ceo-agenda/ceosurvey/2017/uk/key-findings/future-landscape.html](http://www.pwc.com/gx/en/ceo-agenda/ceosurvey/2017/uk/key-findings/future-landscape.html)]

of CEOs see the lack of innovation skills amongst the workforce as the biggest threat facing their business.<sup>179</sup>

Aside from a potential skills gap, the increasing prevalence of university degrees and decline in technical qualifications has been linked with skills mismatching. Matching is carried out by the ONS and International Labour Organisation, which compare the distribution of educational attainment of those in employment in the UK against the average educational attainment level of their occupation.

Figure 26. Percentage of those in employment defined as “Matched”, 16 to 64



Source: ONS

The ONS figures for the UK show an increase in percentage of those people considered matched in their occupation (e.g. their educational attainment has been commensurate to their occupation), however 30 per cent of the workforce are considered unmatched, of which an increasing number in recent years are considered over-educated. The theory is that the growth in graduates is not in line with the number of roles that are of graduate quality level. The hollowing out of the jobs market, resulting in fewer mid-tier roles, has exacerbated the problem. The evidence also points to this problem continuing. Between 2012 and 2022, more higher skilled (managers, directors, and professional) and lower skilled occupations (care personnel, administrative assistants, customer service occupations) will be created than medium-skilled occupations (tradesman, associate professionals, technicians).

Table 2. Demand for different skill levels

Skill level	Net demand	% of Base
High Skilled	5,049,000	59.9
Medium Skilled	3,640,000	39.6
Low Skilled	5,667,000	36.8

Source: IPPR, UKCES

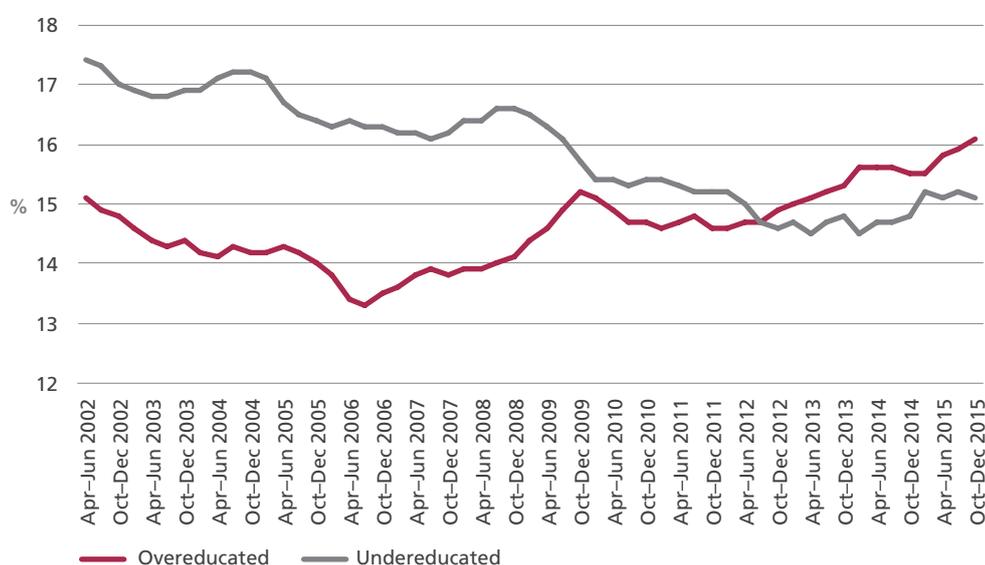
179 PWC, The Talent Challenge [accessed via: [www.pwc.com/gx/en/ceo-survey/2017/deep-dives/ceo-survey-global-talent.pdf](http://www.pwc.com/gx/en/ceo-survey/2017/deep-dives/ceo-survey-global-talent.pdf)]

The problem of mismatching can be also rooted in two theories of endemic dysfunction within the higher education system. If graduates are struggling to find employment commensurate with their level of educational attainment, aside from the lack of appropriate jobs being available, this could signal:

- Graduates are less skilled than they used to be, and therefore struggle to meet the requirements of employers, who in turn hire fewer graduates to fill vacancies.
- Graduate degrees are so prevalent, they no longer act as an appropriate signal to employers of human capital quality or potential.

Regardless, as university applications continue to rise after tuition fees have trebled, the problem of degree prevalence will continue to suppress employment rates and graduate starting salaries and increase the size of the skills gap and the problem of skills mismatching.

Figure 27. Percentage of those in employment defined as “Mismatched”, 16 to 64



Source: ONS

In summary, there is evidence to suggest that the UK's underinvestment in economically valuable skills through PTE has resulted in young people entering the workforce increasingly unprepared for the world of work. Concerningly, this is most prevalent amongst disadvantaged students as 60 per cent of FSM students fail to achieve the basic standard of Maths and English GCSE at A\* to C level. The emphasis on university as the best route from education and into employment has led to a rapid increase in the number of university students across the UK, and consequently a decline in the economic return to a university degree. One of the consequences of this has been an increase in the number of graduates who are classified as unmatched in their current job.

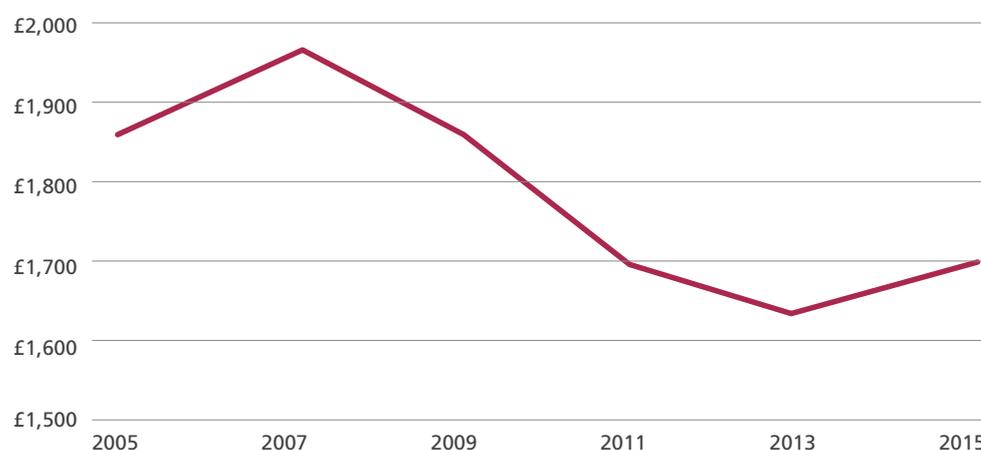
## In-work professional development

As pointed out earlier, growth in low paid work has coincided with increased occupational immobility in the UK. Data from IPPR and Eurostat show that less than 15 per cent of UK employees progress onto a higher skilled occupation over a four-year period, of

which a small number progress from low skilled professions. This is in line with European standards, but exposes that few low paid workers see the opportunity to progress in work. Employees with a greater opportunity of occupational and wage progression are more engaged in their job, more ambitious for professional success and more productive in both the near and long term. Higher levels of occupational progression are important for a functioning labour market and productivity growth.

One of the theories explaining low levels of occupational progression includes the low levels of professional development in the UK. IPPR figures show a decline in employer investment in skills for employees across the UK (see below, figure 30). Eurostat figures show the UK has a lower percentage of employees participating in Continuous Vocational Training Courses than the European average. This is a sharp decline from 2005 when the UK was at the European average.

Figure 28. Employer investment in skills per employee in 2015/16 prices in England 2005–2015



Source: IPPR

Table 3. Participation in vocational training

% of employees participating in CVT courses	2005	2010
<b>European Union</b>	<b>33</b>	<b>38</b>
Belgium	40	52
Denmark	35	37
Germany	30	39
France	46	45
Netherlands	34	39
Sweden	46	47
Norway	29	46
United Kingdom	33	31

Source: Eurostat (2010)

Less than a third of UK employees participate in CVT or another variety of professional development courses. In Sweden and Belgium approximately half of all employees participate in these courses. Belgium also has the highest rate of occupational progression from low to middle skilled jobs in the EU, whilst Sweden has higher rates of occupational progression for low skilled workers than the UK. CSJ commissioned research found that over half of UK employees haven't even considered accessing professional development courses, whilst 35 per cent of respondents admitted to having taken part in a professional development course. Participation rates were lowest in low wage and low skilled industries, including hospitality and leisure and retail. High wage and high skilled industries such as the legal industry, and finance/accounting had higher rates of professional development course participation. Equally revealing within the CSJ/YouGov survey was the revelation that the majority (56 per cent) of respondents admitted to spending less than 5 per cent of revenues on professional development for employees.

The necessity for increased investment in training to boost skill attainment seems ambiguous. The OECD PIAAC survey shows that whilst young UK adults rank behind other countries when measuring skills, older UK workers make up that deficit and rank equally with international comparables later in their career. The UK has low levels of in-work training but compares well against other countries on levels of occupational progression.

A group of academics studied the impact of in-work training on productivity (using wages as a proxy) across a broad range of British industries between 1983 and 1996. They found a 1 per cent increase in training was associated with an increase in productivity of 0.6 per cent.<sup>180</sup> Professional development training clearly drives productivity in multiple ways. It is worth noting that in a CSJ commissioned survey, more than half of employees admitted to not seeking or considering any form of professional development training.

Work-based training is essential for young workers who need to convert academic knowledge into work-based competencies. A report by NIESR for the Education and Business, Innovation and Skills Select Committees, stated that *"Many jobs in the UK require a level of mathematics which, in principle, is no higher than GCSE standard – but many workers with GCSE maths lack the skills, knowledge and experience to apply this level of maths in the complex settings of workplaces"*.<sup>181</sup> In-work training is also linked to higher levels of competency amongst workers using new technology. Training can help older workers develop their skills in new technology applications such as word processing and data software programming. Work based counselling (a form of professional development) and other forms of occupational health expenditure are also found to reduce sickness and absentee rates as well as boost an organisation's productivity.<sup>182</sup>

There is also belief that in-work support is an important mechanism for building trust, loyalty and employee engagement. A YouGov survey commissioned in August 2015 found that only half of British workers believe their job is meaningful, and 37 per cent of working British adults feel their job is not making a meaningful contribution to the world.<sup>183</sup> CSJ

180 Dearden, L., Reed, H., and Van Reenen, J. *The Impact of Training on Productivity and Wages: Evidence from British Panel Data* (Oxford Bulletin of Economics and Statistics, 2006)

181 Rincon-Aznar, A. and Mason, G. *Skills and Productivity in the UK, US, France and Germany: A Literature Review* (NIESR, 2015)

182 Rick Hughes, How workplace counselling helps employees and employers (Personnel Today, 23 February 2015) [accessed via: [www.personneltoday.com/hr/workplace-counselling-helps-employees-employers/](http://www.personneltoday.com/hr/workplace-counselling-helps-employees-employers/)]

183 YouGov Survey Results [accessed via: [https://d25d2506sfb94s.cloudfront.net/cumulus\\_uploads/document/g0h77ytkkm/Opi\\_InternalResults\\_150811\\_Work\\_W.pdf](https://d25d2506sfb94s.cloudfront.net/cumulus_uploads/document/g0h77ytkkm/Opi_InternalResults_150811_Work_W.pdf)]

commissioned polling of employees across UK industries in 2017 found 5 per cent of UK employees would describe themselves as 'Not at all Satisfied', while a third of employees would describe themselves as unsatisfied at work. Concerningly, the number considered as unsatisfied was particularly high amongst employees in the public sector and retail sector. There also seemed to be a disproportionately high number of employees dissatisfied with working in large organisations (20+ employees).

## Conclusion

Much of the literature on UK productivity has focused on a decline in firm and aggregate level investment since the financial crisis. However, as we have shown, wage stagnation at the bottom of the income scale exposes a long-term decline in productivity amongst the most disadvantaged workers in society. The effect of globalisation, technological advancement and a dysfunctional education system have created classes of winners and losers. The winners have been well educated professionals, working in high value industries such as finance or real estate, predominantly based in London and the South East. The losers have been lower skilled workers forced into low wage service sector employment with little hope of professional advancement or wage progression. And whilst more can be done to increase capital expenditure, improve management and boost innovation in British industry, improving Britain's productivity problem will require policy support for the millions of workers in low wage, low skilled work, with little chance of progression and stagnating rates of individual wage growth. Hatfield and Dolphin (2015) point out:

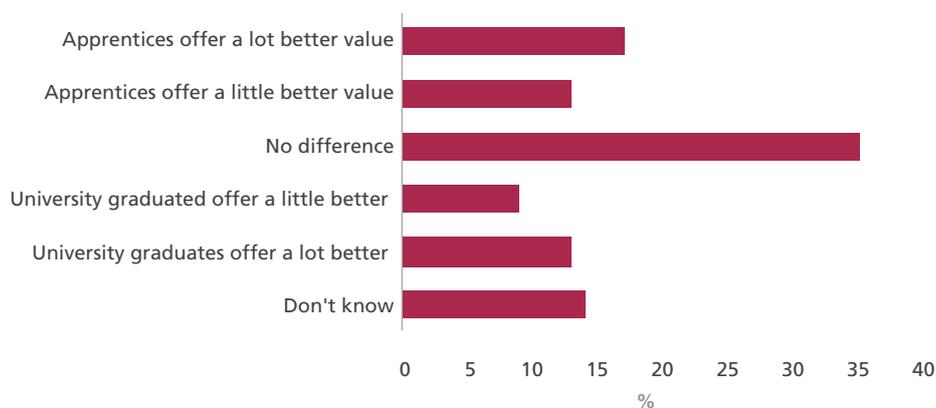
Our low-wage sectors are less productive than their equivalents in western Europe... analysis suggests that if we were able to raise productivity levels among low-wage firms to the levels seen elsewhere, the UK could close a third of its average productivity gap with Belgium, France, Germany and the Netherlands.<sup>184</sup>

Whilst globalisation and technology are ultimately forces for good, UK public policy has been slow to react to imbalances within the system. Our education system does not produce workers with the appropriate skills ready for work. We push many secondary school students into university with no promise of either a good job or a decent wage after earning a low value degree. PTE has been chronically underinvested in, as we emphasise the university route out of education and into employment. A CSJ commissioned survey on employers found that investing in technical education and subsidising more apprenticeships were considered the most important steps for Government to take to boost UK productivity. The imbalance between university and technical education needs to be addressed. The same CSJ survey found more employers found apprentices offer better value to their than university graduates. Lastly, UK employees spend the least amount of time in professional development courses, when compared to other EU countries.

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184 Hatfield, I. and Dolphin, T. *The Missing Pieces: Solving Britain's Productivity Puzzle* (IPPR, 2015)

Figure 29. Do you think apprentices or university graduates offer better or worse value to you as an employer, or is there no difference?



Source: (CSJ, YouGov)

More needs to be done to (a) support the most disadvantaged at school, specifically those that drop out at GCSE level (b) improve PTE provision from secondary school onwards, (c) improve and diversify the number of routes into work (d) strengthen non-university provision of further education, and (e) re-establish a sense of purpose and opportunity in the workplace. These steps will break down the winners and losers of globalisation and technological advancement, creating a fairer and more productive workforce in the process.



## chapter five

# Regional divide – how productivity is driven by geography

Phone and email are great ways to transmit information and keep a research project going once the key creative ideas are in place, but they are not the best way to come up with those ideas. New ideas arise in mysterious and unpredictable ways from free and unstructured interactions”

Enrico Moretti, 2014

Does place and geography matter more than anything else for businesses and people? Our research shows a huge divergence in productivity growth between London and the rest of the country. Cities are also shown to have on average higher levels of productivity than rural communities. Whether it is explaining unproductive businesses or workers, geographical position is a recurrent theme. CSJ polling found 20 per cent of business people felt their position was ‘*Very Important*’ whilst 60 per cent felt it was of above average importance.<sup>185</sup> There is a large body of evidence to suggest that policy should focus on creating the right local conditions for productivity growth.

### London and the rest

As we found in *Chapter 1 – History of Productivity Performance*, there is a significant gap between per head gross value-added output in London and the rest of the country. London average productivity was £42,666, whereas the South East was £27,012, the North West was £21,011, and the North East was £18,216.<sup>186</sup> Wales has the lowest level of per head productivity at £17,573.<sup>187</sup> This productivity divergence has driven a £172 gap in earnings between the London and the average in the North.

<sup>185</sup> CSJ, YouGov polling

<sup>186</sup> ONS Regional and sub-regional productivity in the UK (2015)

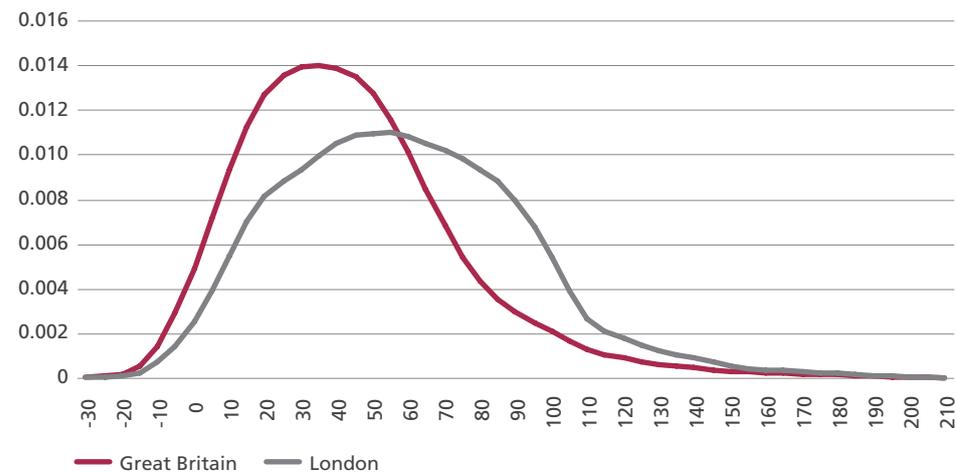
<sup>187</sup> Ibid

Figure 30. Earnings by region

2016	Median Weekly Earnings (% of UK Ave).	Median Weekly Earnings (£)	Change from 2015 (%)
North East	91.7	494.0	2.2
North West	93.4	503.2	0.7
Yorkshire and Humber	92.5	498.3	3.0
East Midlands	89.7	483.2	2.5
West Midlands	94.7	510.2	0.9
East	98.2	528.8	3.7
London	124.5	670.8	2.3
South East	105.1	566.0	1.7
South West	93.7	505.0	2.5
Wales	91.4	492.4	2.6
Scotland	99.3	535.0	2.9
Northern Ireland	91.9	495.2	1.5
UK	100.0	24,958	2.1

Source: ONS (2016)

Figure 31. Productivity distribution curve



Source: ONS

The gap between London and the rest is evident when analysing other productivity-related metrics – job creation, educational attainment, innovation, infrastructure, venture capital firms, and start-ups. House of Commons data shows London and the South East has created 45 per cent of all jobs created across the UK between 2004 and 2016 (with London creating a third of the jobs itself).<sup>188</sup> The North West, North East and Yorkshire and Humber all score lower on measures of educational attainment when compared to regions in the South and East of England.<sup>189</sup>

<sup>188</sup> House of Commons, UK regions and countries: labour market statistics (2016)

<sup>189</sup> Department for Education, *Revised GCSE and equivalent results in England: 2015 to 2016*

[accessed via: [www.gov.uk/government/statistics/revised-gcse-and-equivalent-results-in-england-2015-to-2016](http://www.gov.uk/government/statistics/revised-gcse-and-equivalent-results-in-england-2015-to-2016)]

Figure 32. Educational attainment by region

Region/ Local Authority	Number of pupils at the end of key stage 4	Average attainment 8 score per pupil	A*–C in English and maths GCSEs		English Baccalaureate		Progress 8			
			Percentage of pupils entered for components	Percentage of pupils who achieved	Percentage of pupils entered for all components	Percentage of pupils who achieved	Number of pupils included in the measure	Average Progress 8 score	Lower confidence interval	Upper confidence interval
England	600,425	48.5	91.1	59.3	36.8	23.1	.	.	.	.
North East	26,076	48.7	96.4	61.6	36.2	22.0	25,478	-0.16	-0.17	-0.15
North West	74,057	49.4	97.0	61.7	37.5	23.4	71,252	-0.15	-0.16	-0.14
Yorkshire and The Humber	54,562	48.9	97.1	60.9	36.6	21.7	52,641	-0.03	-0.04	-0.02
East Midlands	47,204	48.9	97.1	61.6	36.6	22.1	45,346	-0.14	-0.15	-0.13
West Midlands	60,215	49.2	97.2	60.3	37.4	22.1	57,709	-0.08	-0.08	-0.07
East	61,059	50.4	97.2	64.0	38.5	24.4	58,355	0.03	0.02	0.04
London	76,596	51.9	96.8	66.4	49.8	31.9	69,955	0.16	0.15	0.17
Inner London	25,070	51.3	96.6	65.4	49.9	30.5	22,883	0.17	0.16	0.18
Outer London	51,526	52.3	96.9	67.0	49.7	32.6	47,072	0.16	0.15	0.17
South East	85,618	51.0	96.9	65.8	41.7	27.3	81,199	0.02	0.01	0.02
South West	52,421	50.3	97.2	64.0	38.0	22.7	50,149	-0.05	-0.06	-0.04

Source: Department for Education, 2015/16

The North East and North West are the two regions with the highest percentage of schools that fall below the floor standard of quality, 17.2 per cent and 16.8 per cent respectively.<sup>190</sup> London has just 3.1 per cent and the South East has 6.2 per cent of schools falling below that standard.

Looking at borough level data, educational attainment is particularly low in the suburbs of deindustrialised towns across the North East and North West. Knowsley, on the outskirts of Liverpool, saw just 10.5 per cent of students achieve 5A\* – C's at GCSE in 2016.<sup>191</sup> Other low achievers included Blackpool, Bradford, Derby, Salford, and Middlesbrough.

Innovation and enterprise is skewed along geographical lines too. CSJ analysis of the Government's Intellectual Property Office (IPO) data on patents, shows almost a fifth of new patents being registered in London and the South East, the North West is home to more than 8 per cent of newly registered patents, whereas the North East only accounts for 1.8 per cent.<sup>192</sup> This is not surprising considering just less than a third of public expenditure on science and technology over 2014 to 2015 was directed in London and the South East.<sup>193</sup>

<sup>190</sup> Ibid

<sup>191</sup> Ibid

<sup>192</sup> CSJ Calculations, Intellectual Property Office (IPO)

<sup>193</sup> Note: Measured under public expenditure on science and technology [accessed via: [www.gov.uk/government/statistics/public-expenditure-statistical-analyses-2016](http://www.gov.uk/government/statistics/public-expenditure-statistical-analyses-2016)]

More venture capital companies are based in London and more investments are made in London based businesses. The Private Equity Map shows private equity (PE) and venture capital (VC) firms made 670 investments in London based businesses with a combined turnover of £28.3 billion.<sup>194</sup> There were just 46 investments made in businesses based in the North East, with a combined turnover of just over £1 billion. The difference is accentuated when looking at 'high tech investments'. PE and VC firms made 186 high tech investments in the London, and just 4 in the North East.

Figure 33. Companies by region

Region	Companies	Turnover (£bn)	Employees
East Midlands	93	£ 2.80	20,323
East of England	192	£ 6.22	69,570
London	670	£ 28.30	134,753
North East	46	£ 1.05	9,020
North West	218	£ 6.16	41,397
Northern Ireland	17	£ 0.075	700
Scotland	132	£ 3.65	16,219
South East	329	£ 16.40	86,158
South West	117	£ 1.91	20,071
Wales	45	£ 1.25	7,122
West Midlands	153	£ 4.74	33,418
Yorkshire and Humber	122	£ 6.24	38,597

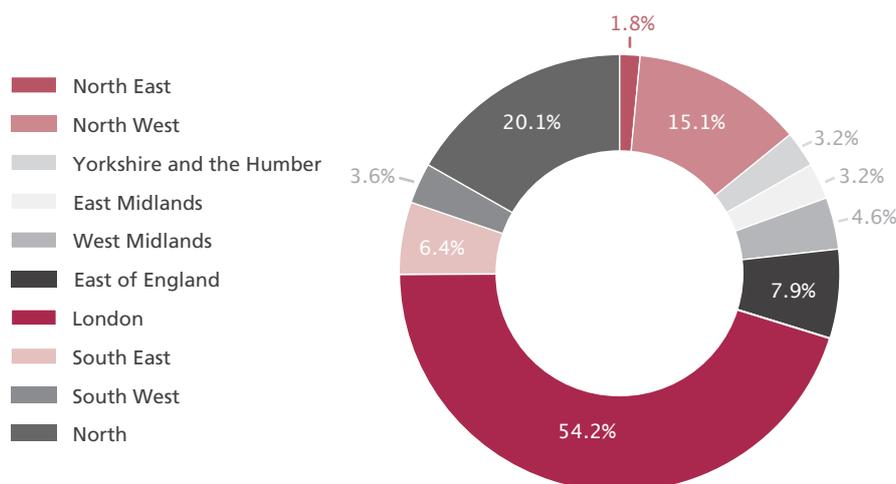
Source: [www.privateequitymap.com](http://www.privateequitymap.com)

Finally, there is a well-known gap in infrastructure investment between London, the South East and the North. London receives over a quarter of transport related capital expenditure, more than the North East, North West and Yorkshire and Humber combined.<sup>195</sup> London receives more investment per head for housing related capital expenditure than the North, although this is a function of higher asset prices. IPPR calculations in Figure 34 below show an inequality in infrastructure spending that extends across all asset classes and not just transport and housing.

<sup>194</sup> Private Equity Map [accessed via: [www.privateequitymap.com](http://www.privateequitymap.com)]

<sup>195</sup> Note: Measured as total identifiable expenditure on transport [accessed via: [www.gov.uk/government/statistics/public-expenditure-statistical-analyses-2016](http://www.gov.uk/government/statistics/public-expenditure-statistical-analyses-2016)]

Figure 34. Infrastructure spending by region, 2017



Source: IPPR

## Clusters and cool cities

The North-South divide has been driven largely by London's dominance as a centre of economic activity. There is a body of tangible empirical evidence to prove that cities create the conditions necessary for job creation, wealth creation and productivity growth:

- Of the 20 most productive local authority districts in the UK, nine were boroughs based in London, and seven were in large regional cities across the UK (Milton Keynes, Manchester, Aberdeen, Edinburgh, Belfast, Glasgow, Oxford).
- The ten most productive UK cities, not including London (Milton Keynes, Edinburgh, Aberdeen, Belfast, Glasgow, Oxford, Manchester, Bristol, Cambridge and Nottingham) have an average per head GVA 31 per cent higher (£33,459) than the UK average (£25,601).<sup>196</sup>
- Almost a third of job growth in the UK between 2004 and 2016 has been in London.<sup>197</sup>
- Almost 40 per cent of all jobs in the North West are in the Greater Manchester area.<sup>198</sup>
- The median weekly wage for a full-time worker in Leeds is £520, £75 more than a worker in Harrogate just north of the city.<sup>199</sup>
- The median weekly wage for a full-time worker is £553 in Manchester, but just £459 for people working a one hour drive along the A635 in Kirklees.<sup>200</sup>
- The median weekly wage for a full-time worker is £539 in Birmingham, but just £434 for people working and living in Bromsgrove.<sup>201</sup>
- Edinburgh makes up less than 10 per cent of Scotland's population, but approximately 15 per cent of Scotland's GVA.<sup>202</sup>

<sup>196</sup> ONS, CSJ Calculations

<sup>197</sup> House of Commons, UK regions and countries: labour market statistics (2016)

<sup>198</sup> ONS, LI01 Regional labour market: Local indicators for counties, local and unitary authorities (12 July 2017)

<sup>199</sup> ONS, *What are the average earnings where you work?* [accessed via: [www.ons.gov.uk/visualisations/nesscontent/dvc126/](http://www.ons.gov.uk/visualisations/nesscontent/dvc126/)]

<sup>200</sup> Ibid

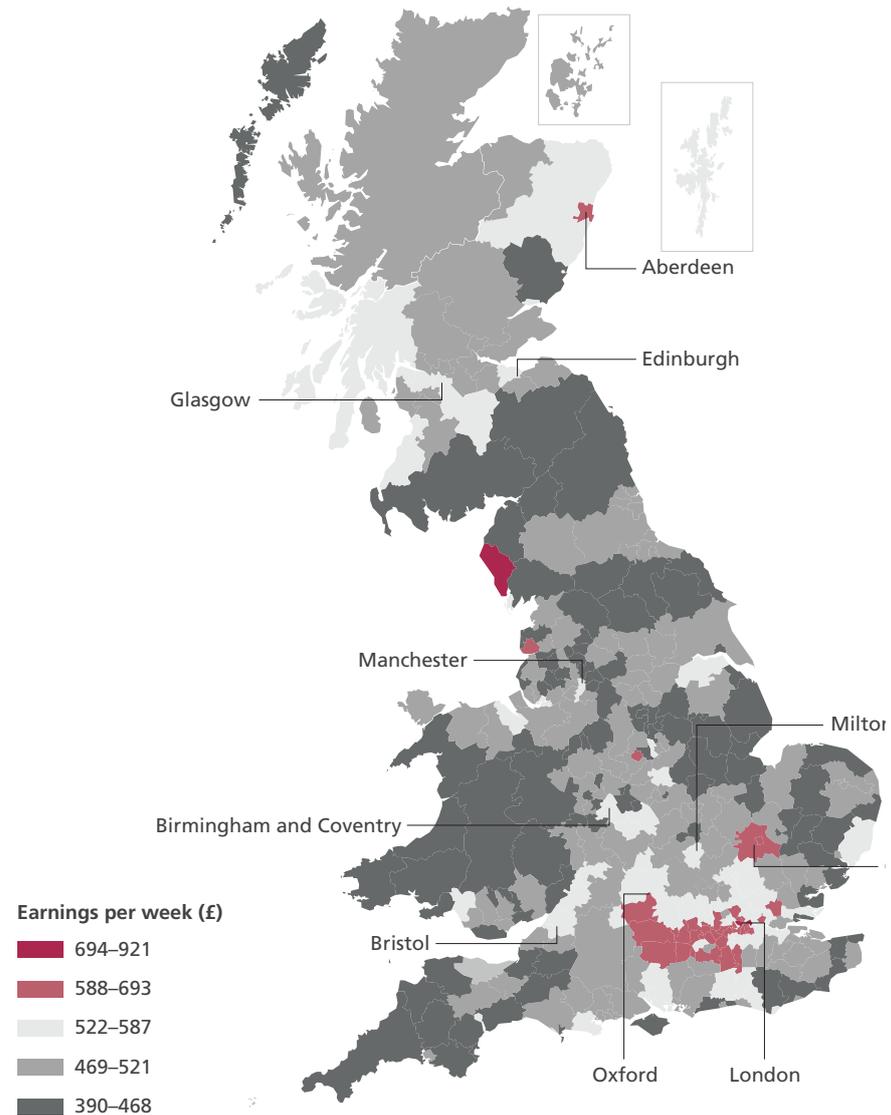
<sup>201</sup> Ibid

<sup>202</sup> ONS, Regional Gross Value Added (15 December 2016) [accessed via: [/www.ons.gov.uk/economy/grossvalueaddedgva/datasets/regionalgrossvalueaddedincomeapproach](http://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/regionalgrossvalueaddedincomeapproach)]

- Between 1997 and 2015, Birmingham’s economic output in GVA terms grew at 12 percentage points more than the West Midlands average, and the City of Cambridge grew 28 percentage points more than the East Anglia average.

The outperformance of cities in the UK is replicated in the US too. Analysis from the Brookings Institute shows “The largest 100 metro areas have higher average labour productivity (\$119,000 per worker) than smaller metro areas (\$99,000 per worker)”.<sup>203</sup>

Figure 35. Earnings map of the UK



Source: ONS

The surge in GVA and earnings among urban workers is hardly surprising as our economy has moved from rural based agrarian and manufacturing production to services focused. As we pointed out in *Chapter 1 – A History of Productivity Performance* the local district with

203 Parilla, J. and Muro, M. *Understanding US productivity trends from the bottom-up* (Brookings Institute, 2017)

the highest level of GVA per head was the Borough of Camden and City of London which is home to many high growth international firms in the tech, media and communications industry. Tower Hamlets is home to many of the largest financial companies in the world, based in Canary Wharf. Edinburgh also has a large financial services industry (as home to RBS), Oxford has one of the great academic institutions in the world, and Milton Keynes is home to the UK headquarters of *Domino's Pizza*, *Argos*, *Mercedes-Benz*, *Volkswagen*, and a *Nissan* European R+D facility. Cambridge has a cluster of high value technology businesses such as *ARM*, US chip maker *Qualcomm* and *Illumina*.

Entrepreneurs, hugely important for long term productivity growth, are most likely to be city based. More than 200,000 start-ups were founded in London in 2016. This is a far larger number than some of our other cities, but it is still notable that nearly 50,000 start-ups were founded in Birmingham, Manchester, Glasgow, Leeds and Edinburgh combined. Examples of UK start-ups that have grown into billion dollar valued companies include *BrewDog Brewery* that is based outside of Aberdeen, *Oxford Nanopore Technologies* that was spun out of Oxford University, and *Funding Circle* a fin-tech business that offers alternative sources of finance to entrepreneurs, based in London's financial district.

Figure 36. Start-ups by local authority

Local Authority	Start -ups	% change from 2015
London (combined)	205325	4.7
Birmingham	17473	23.5
Manchester	9416	8.1
Glasgow City	7845	18.1
Leeds	7645	10.4
City of Edinburgh	6635	-3.1
Bristol, City of	5113	4.6
Liverpool	4915	9.9
Brighton and Hove	4299	-9.5
Bradford	3821	-1.0
Leicester	3718	7.2
Sheffield	3671	-1.1
Luton	3387	28.2
Trafford	3223	-3.2
Stockport	3140	8.0
Cardiff	3066	10.4
Coventry	3060	-8.0
Milton Keynes	3007	-2.0
Cheshire West and Chester	2893	19.1
Salford	2889	15.6

Source: Start-Up Map

Urban areas undoubtedly perform better than rural areas on measures of productivity, investments, start-ups, and jobs growth. The theory explaining why cities are increasingly more productive than rural areas is known generally as cluster theory. Clusters are locations with a high density of firms in specific industries. Cluster theory recognises that market forces generate clusters and that there are large positive externalities that evolve from

them. Michael Porter refers to clusters as a “*fundamental economic unit in the modern economy, and an important driver of competitiveness*”.<sup>204</sup>

Porter’s reasoning for the positive effect of clustering is simple: “*Firms that are located within a cluster can transact more efficiently, share technologies and knowledge more readily, operate more flexibly, start new businesses more easily, and perceive and implement innovations more rapidly*”.<sup>205</sup> Delgado, Porter and Stern analysed start-ups in America and found that those situated in clusters (defined by those authors as a region with a large presence of specific industries) “*experience higher growth in new business formation and start-up employment... [are] associated with the formation of new establishments of existing... [and] contribute to start-up firm survival*”.<sup>206</sup> Audretsch and Feldman (2003) establish the importance of geography and proximity on innovation by better facilitating knowledge spillovers.

Enrico Moretti (2012) makes the case that clusters are even more important today than they have been in the past because they are most effective in the innovation sector, and the majority of economic output in western economies emanates from innovation industries. He uses Silicon Valley and nearby Visalia in rural California to demonstrate the divergence between an innovation cluster and a rural community. Moretti argued that a high-tech multiplier effect existed, meaning that the presence of just one tech company had extensive positive externalities;

high tech firms tend to be located near each other. Bringing one high tech company to a city eventually results in having more high-tech companies locate there, as dense high-tech clusters make high tech firms more innovative and more successful... Every time a company generates jobs in the innovation sector, it also indirectly creates additional jobs in the non-traded sector in the same city. Attracting a new scientist, software engineer, or mathematician to a city increases the demand for local services. This in turn means more jobs for cabdrivers, housekeepers, carpenters, nannies, hairstylists, doctors, lawyers, dog walkers and therapists... an innovation job is more than a job.<sup>207</sup>

Brookings analysed US regional growth and found certain cities had capitalised on boom industries very effectively. Cities that have attracted innovative companies rank highly in productive terms; San Jose, Houston, San Francisco, Connecticut and Los Angeles are the five most productive cities in the US, and home to the high growth companies in tech, media and finance. Houston is an exception as home to the oil and gas business. The least productive metropolitan areas, McAllen, Boise City, Augusta and Georgia, failed to build clusters around high growth industries; “*Unless a metro economy participated in the energy boom (see metros in North Dakota, Oklahoma, and Texas) or the tech boom (see Austin, TX; Pittsburgh, PA; Portland, OR; San Jose, CA; and Seattle, WA), it was very hard for it to grow at more than one percent per year*”.<sup>208</sup>

The UK has a much smaller tech industry (as we covered earlier) which might, in itself, contribute to our productivity malaise. However, UK cities that adapted quickly to the economic shifts of the ‘90s and ‘00s, attracting innovative and high growth companies, have been able to survive and thrive. Most notable UK cities that have adapted seem to

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204 Porter, M. *Clusters and Economic Policy: Aligning Public Policy with the New Economics of Competition* (Harvard Business School, 2009)

205 Ibid

206 Delgado, M., Porter, M. and Stern S. *Clusters and entrepreneurship* (Journal of Economic Geography, 2010)

207 Moretti, E. *The New Geography of Jobs* (New York, 2012)

208 Parilla, J. and Muro, M. *Understanding US productivity trends from the bottom-up* (Brookings Institute, 2017)

buck the north/south divide that exists when analysing regional productivity across the UK. Cities in Scotland and the North West including Edinburgh, Glasgow, Manchester and Leeds have higher than average rates of worker productivity. These were towns and cities that saw huge economic dysfunction because of de-industrialisation and the closing down of the coal industry in the '70s and '80s. However, by investing in social infrastructure (bars, restaurants, music venues, schools and hospitals) and physical infrastructure (town centres that are connected to cross country transport infrastructure), regional towns have become hubs of productivity growth. Examples include Sheffield, former contestant for City of Culture in 2013, which has attracted investment from Boeing to build a new plane production plant.<sup>209</sup> Bristol, home to two world class universities, Isambard Brunel's Great Western Railway and the Bristol Old Vic cinema, has Dyson HQ situated just a 32-minute drive away. Sunderland, a 20-minute drive from Newcastle, has Europe's most productive car plant, Warrington (45 minutes from Manchester city centre) has a large Unilever factory, and Leeds, with a student base of more than 55,000, which is home to ASDA's HQ.

### Case study: Manchester

Manchester was the primary beneficiary of the industrial revolution in the early 19th century. Between 1801 and 1820, the population of Manchester doubled to nearly half a million as rural workers migrated into the city for jobs in cotton factories and mills. However, the British textile industry collapsed in the 20th century due to trade restrictions in the first world war and foreign competition after restrictions were lifted. Economic decline was further compounded by the industrial decline of the coal and steel industry across the wider North West through the middle of the 20th century.

Manchester epitomised the re-emergence of ex-industrial towns into modern hubs for both economic and social activity. Counter culture, Britpop, Manchester United and large developments such as the Manchester Arndale centre cemented the city as somewhere people wanted to live. Property developers reacted by converting old cotton mills into trendy office and living spaces. Major employers in high growth industries subsequently moved to Manchester; Bank of New York, Adidas, BASF, BBC, Siemens and BetFred. Manchester has the largest student population in Europe and the University of Manchester is the 4th largest in the UK by endowment size. The Manchester Arena, Manchester Conference Centre and Manchester Central Convention Complex were built and renovated in the late '80s and early '90s to provide a meeting place for industry. In 2008, Manchester generated 5 per cent of UK GVA (£48 billion) and 20 per cent of the North's economic output.

Public policy has tried to capitalise on the notion of Manchester as a hub of social and economic activity. A Greater Manchester Local Enterprise Partnership (LEP) was created in 2011, part of a devolution agenda under the coalition Government. LEPs replaced Regional Development Agencies (RDAs) and were far more dependent on voluntary partnership between businesses and local authorities. Their aim was to increase co-ordination, communication and bottom up governance at the local level. RDAs were publicly funded (£1.7–2.2 billion annually) investment bodies that were tasked with financially underwriting projects of economic interest to their area. LEPs weren't originally designed to have any spending powers, but were instead tasked with co-ordinating public spending in the area, helping businesses set-up and operate and finally to provide policy advice on a range of social issues including housing, higher education

209 Boeing.com, *Boeing Expands Production with Investment in New UK Site and US Facility* (24 February 2017) [accessed via: [www.boeing.co.uk/news-media-room/news-releases/2017/february/boeing-expands-production-with-investment.page](http://www.boeing.co.uk/news-media-room/news-releases/2017/february/boeing-expands-production-with-investment.page)]

and employment. The Greater Manchester City Deal was signed in July 2012 and continued the devolution of fundraising powers (through the Earn Back mechanism), spending powers (predominantly on infrastructure) and co-ordinated local efforts to attract public funding for housing, investment and low carbon projects.

Manchester's success in the industrial revolution was a function of market forces (cheap labour and access to new technology), after which intangible forces such as football, culture and music have helped regenerate Manchester's economic prowess. The conditions for growth were made possible by harnessing co-ordination and resources from the ground up. Most importantly; physical investment in buildings and transport as well attracting employers.

## Productivity and poverty across just one post code

Productivity growth has thrived in urban clusters where capital, workers and ideas can flow freely, accelerating innovation, progress and wealth generation. However, analysis shows that too often the effects of productivity growth are exclusive. In many of the most productive parts of the country there remains a marginalised section of society that has been excluded from opportunity. Tower Hamlets is an example, the third most productive borough in the country with GVA per head of £98,154 whilst having some of the highest levels of poverty and deprivation in the country.

The Joseph Rowntree Foundation mapped poverty and wealth across Britain in 2007 and found that *"the lowest wealth and highest poverty rates are concentrated in large cities and the industrialised/de-industrialising areas of Britain"*.<sup>210</sup> We have focused on how average earnings are generally higher in the South East (including London) and in urban areas across the country. However, these areas are often areas with the highest levels of inequality and rates of absolute poverty. *End Child Poverty* released statistics in 2015 that found the 20 local authorities (LA) with the highest rates of child poverty were all in urban areas.<sup>211</sup> Most remarkably, the local authority with the highest rate of child poverty was Tower Hamlets. The LAs with the lowest levels of child poverty were predominantly rural (Shetland islands, Ribble Valley, Aberdeenshire).

Social breakdown is much greater in urban clusters – unemployment rates are highest in ex-industrial cities – Hartlepool, Middlesbrough, Birmingham and Wolverhampton – whilst rural areas of Woking, Cambridgeshire and Northamptonshire have the lowest unemployment rates in the country.<sup>212</sup> Census data also shows that inner city local authorities including Tower Hamlets, Westminster, Islington, Barking and Dagenham, and Camden have the highest percentage of lone parents out of work, whereas rural areas in Yorkshire, Wokingham and Leicestershire have some of the lowest rates of unemployed lone parents.<sup>213</sup> The number of deaths related to drugs are much higher in cities such as

210 JRF, *Poverty, wealth and place in Britain, 1968 to 2005* (2007) [accessed via: [www.jrf.org.uk/sites/default/files/jrf/migrated/files/2019-poverty-wealth-place.pdf](http://www.jrf.org.uk/sites/default/files/jrf/migrated/files/2019-poverty-wealth-place.pdf)]

211 End Child Poverty, *Poverty in your area 2016* [accessed via: [www.endchildpoverty.org.uk/poverty-in-your-area-2016/](http://www.endchildpoverty.org.uk/poverty-in-your-area-2016/)]

212 ONS and Nomis, *unemployment by local authority* (2016)

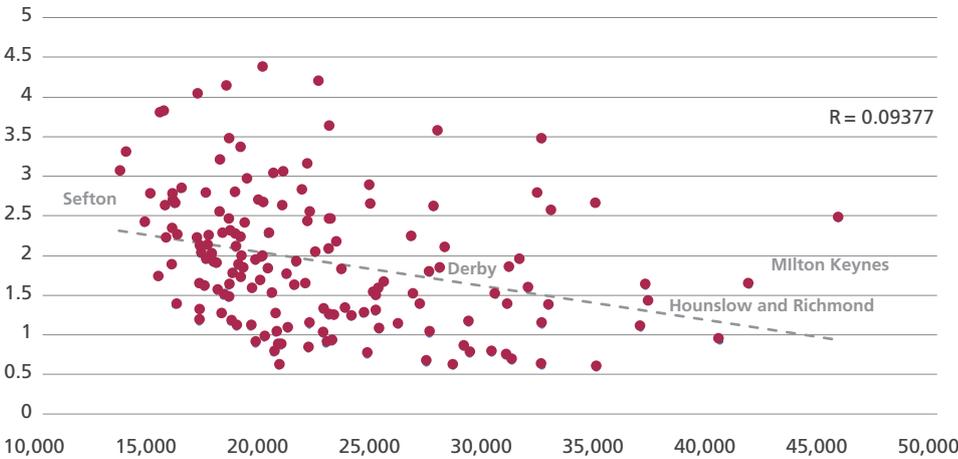
213 ONS, Table KS107EW: Lone parent households with dependent children, local authorities in England and Wales (Census 2011)

Birmingham, Leeds, Liverpool and Manchester<sup>214</sup> and, as we mentioned earlier, educational attainment is lowest in ex-industrial towns and cities across the north west. A Money Advice Service report found the most indebted places in the UK were predominantly (with the exception of Blaenau Gwent and Merthyr Tydfil) in urban areas including Newham (London), Sandwell (Birmingham) and Tower Hamlets (London).<sup>215</sup>

ONS data detailing earnings by NUTS3 level shows areas with high mean and median earnings and high GVA per head also have the largest disparity between high and low earners. Using the nominal difference between earners at the 80th and 20th percentile as a measure of inequality, Kensington and Chelsea, Camden, Westminster, and Tower Hamlets (some of the most productive boroughs in the country) had high levels of inequality. Equally, some of the least productive areas in the country (Blackpool, Manchester, Wales) had low rates of inequality.

Productivity growth is clearly exclusive. The areas with highest rates of productivity per head are also some of the most unequal with high unemployment, debt levels, drug deaths, and child poverty rates. There is little doubt that in the long-term productivity growth improves median earnings and brings down poverty (see Figure 37 below for benefit claimants and productivity by local authority), but it must be inclusive. As Mark Carney said, open markets, technology and globalisation amplify rewards to the ‘superstar and the lucky’, but what of the ‘frightened and frustrated’.

Figure 37. Local Authority comparisons – proportion of benefit claimants by GVA



Source: ONS

214 ONS, Drug misuse deaths by local authority (2016) [accessed via: [www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/drugmisusedeathsbylocalauthority](http://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/drugmisusedeathsbylocalauthority)]

215 Money Advice Service, *Over-indebtedness Map* [accessed via: <http://overindebtednessmap.org/>]

## Creating inclusive clusters – transport, housing, universities, big employers

How can we build inclusive clusters that generate productivity growth and reduce poverty? We analyse four factors: transport investment, housing, universities, and attracting big employers.

Investing in transport is often seen to be a key long determinant of productivity growth. Investing in infrastructure provides a very intense stimulus to an economy; improved transport links increase labour mobility and improved transport links increase business connectivity (between businesses and employees, customers and suppliers). There is strong evidence to support this assertion. TFL and Oxford Economics found that a “10 per cent increase in business related connectivity increases economy wide productivity by 0.5 per cent”.<sup>216</sup> The importance of transport links for the benefit of business has long been touted by the Confederation of British Industry (CBI),

The 2016 CBI/AECOM Infrastructure Survey shows that 69 per cent of respondents in the North West say delivering East-West rail links to decrease journey times is critical, while in the South East, 87 per cent cited tackling congestion as the top priority, including improving journey times on the M3.<sup>217</sup>

In creating clusters and boosting productivity, transport links have been proven invaluable. The CBI published findings in 2016 that showed reducing journey times to selected cities increased the population of a city and boosted productivity. Reducing the journey time into Liverpool by 50 per cent would increase the population by 6.2 million and productivity by 14 per cent.<sup>218</sup> Sheffield could see an increase in population by 3.8 million and productivity growth by 9 per cent.<sup>219</sup> Lowering the train time between Leeds and Manchester “to 30 minutes, could lift productivity in the city by more than 10 per cent”.<sup>220</sup> Evidence from other countries corroborates these findings; the Rhine-Ruhr corridor is connected via the *Verkehrsverbund Rhein-Ruhr* transport system which integrates a bus, light rail, and train network as well as four airports in the major cities of Dusseldorf, Cologne, Dortmund, and Weeze. Another includes the creation of the Orseund Bridge and a corresponding rail connection that connects Copenhagen in Denmark with the Swedish city of Malmo. The bridge and public transport system mean that it takes just 21 minutes (instead of the previous 2.5 hours to get from Malmo to Copenhagen, connecting the 350,000 residents of Malmo with the 1.3 million residents of Copenhagen).

There is growing evidence to suggest that a lack of suitable housing increases commuting times, which in turn reduces productivity. A lack of new affordable housing is related to higher prices and high house prices are linked with reduced labour mobility. This is particularly obvious in London where firms are struggling to access employees that live close to the office due to exorbitant rents and house prices. A study at the University of Cambridge found that workers with a commute of less than 30 minutes produced 7 days

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216 TFL and Oxford Economics, *Impacts Upon the Local and National Economy* [accessed via: <http://content.tfl.gov.uk/impacts-to-the-local-and-national-economy.pdf>]

217 CBI, *Unlocking Regional Growth* (CBI, 2016)

218 Ibid

219 Ibid

220 Ibid

more work per year than those with commutes of longer than one hour.<sup>221</sup> Long distance commuters are more likely to experience mental health conditions, financial worries and work-related stress.

Building sufficient housing is also considered a key factor in creating a cluster and reducing poverty. Building homes is important for reducing housing costs and housing-related poverty. A shortage of new homes built and a restricted supply of homes has caused an increase in poverty. JRF estimate that more than three million people in the UK are living in poverty because of high housing costs. 43 per cent of social renters are also estimated to be living in poverty after housing costs have been deducted from weekly budgets.<sup>222</sup>

Between 2015 and 2025, Bristol is due to see population growth of 8.9 per cent, Manchester 5.9 per cent and Edinburgh 7.3 per cent.<sup>223</sup> City regions excluding London will see an average population growth during this period of 5.2 per cent.<sup>224</sup> New workers and inhabitants have to be housed for obvious reasons related to productivity. Anecdotal evidence suggests that urban redevelopment creating new homes and office space is a key factor in creating clusters and generating productivity growth. We saw this with the redevelopment of Manchester cotton mills. The Isle of Dogs was transformed from a docking area in London to one of the financial capitals of the world. Salford docks was redeveloped and the BBC is now largely based there, bringing jobs and growth to the area. Kings Cross, also in London, was considered a dangerous place littered with crime, drugs and prostitution. However, it is now home to many fastest growing international tech firms. Temple Quay in Bristol was redeveloped in the '90s and now contains sustainable office space rented out to UK Government agencies.

Digital infrastructure is considered a key determinant of creating clusters of economic growth and long-term productivity growth. The benefits of the internet, communication and mass entertainment are negligible without wireless telephone signal and access to highspeed broadband. Mapping of ASDL speeds across the UK shows the recurrent theme of divergence between urban and rural communities, as well as the north and south. Cities such as Liverpool, Manchester, Leeds, Oxford, and Bristol have average ASDL upload and download speeds of over 8Mbps. However, rural areas of Norfolk, Lincolnshire, Wales, and Scotland show interspersed areas of low speed (0–2 Mbps) and no coverage at all. In the context of productivity, Government should work to plug these gaps, but in the context of clusters, ASDL and 4G coverage remains strong in areas of high population density.

Universities and other higher education institutions are also seen as a key function in establishing a cluster. Not only do they attract a large student body, but also universities foster an ecosystem of academic suppliers, businesses that provide services to the student body, research technology and support firms, and lastly venture capital companies that invest in intellectual property generated by university research departments. Further afield, academic powerhouses such as the Massachusetts Institute of Technology in Boston

221 Mercer, *Long commutes costing firms a week's worth of staff productivity* (17 May 2017) [www.uk.mercer.com/newsroom/britains-healthiest-workplace-flexible-working-and-commuting.html](http://www.uk.mercer.com/newsroom/britains-healthiest-workplace-flexible-working-and-commuting.html)

222 JRF, *The Link Between Housing and Poverty* (5 April 2013) [accessed via: [www.jrf.org.uk/report/links-between-housing-and-poverty](http://www.jrf.org.uk/report/links-between-housing-and-poverty)]

223 ONS, *Population Dynamics of UK City Regions Since mid-2011* (October 2016) [accessed via: [www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/populationdynamicsofukcityregionsincmid2011/2016-10-11#population-projections](http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/populationdynamicsofukcityregionsincmid2011/2016-10-11#population-projections)]

224 Ibid

and Stanford University in California are cornerstones of communities that have a large number of biotechnology (in Boston) and Internet entrepreneurs (in Silicon Valley). Oxford has a growing community of venture capital companies including University of Oxford Innovation Funds (UOIF), Oxford Technology and Oxford Capital Partners. The effect a university has on long term cluster building is dubious though according to Moretti, *“College graduates are a very mobile group, and they do not necessarily stay in the city where they went to school unless market conditions are attractive. The majority of college graduates in New York were not educated at Columbia, NYU or City University of New York, but at schools in other cities of states”*.<sup>225</sup> The extent to which a university drives the long-term success of its home city is dependent on the extent to which it develops as a centre of excellence and becomes synonymous with rootedness in the city. Stanford, MIT, Oxford and Cambridge are known for their geolocation within hubs of economic activity and enterprise. Secondly, students are ultimately drawn to what Moretti calls ‘sexy cities’ (desirable places to live). This goes back to the earlier point regarding Manchester, that urban regeneration, social and cultural capital projects, converted housing, and office space contribute to the creation of a cluster. There is little doubt that the presence of a good university is of huge value to an urban community and creating a productivity cluster, however they cannot be seen as a catalyst in isolation.

Lastly, a big employer is one of the most important catalyst that contributes to the creation of a productivity cluster. Reverting back to the map of earnings across the UK, whilst we found that earnings were on average higher in urban clusters, there was a single significant anomaly in the North West of the country, Copeland. Copeland is home to the Sellafield Nuclear decommissioning site and the proposed Moorside Nuclear Power Station. Sellafield Ltd is the largest employer in the area, offering a range of jobs in the skilled work of demolition, hazard management, analytics, and service support. As a result, Copeland has the third highest average full time weekly wage rate in the country, £806 (behind Tower Hamlets and City of London). A big employer that enters a small area can revolutionise employment, earnings growth and living standards. Single big employers are not the long-term answer to productivity however. The problem of terminal decline experienced in towns and cities is generally rooted in either a major employer leaving the area or an industrial decline. Detroit suffered after the US car manufacturing industry went into decline; Manchester experienced the same fate after the UK cotton industry disappeared; Dagenham in East London has never recovered from the decision by Ford to move manufacturing of the Ford Escort to Germany.

Whilst big employers help, our research found a large public sector presence was linked with lower productivity rates in an area. Talking with local private sector employers in the North East, some felt they could not compete with public sector pay, and were weighing up the opportunities to move to other parts of the country. The table below shows regions that have large proportions of public sector employment, are also regions with low productivity.

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225 Moretti, E. *The New Geography of Jobs* (New York, 2012)

Figure 38. Public sector employment by region

	Public sector employment (% of UK total)	Total employment (% of UK)
North East	4.4%	3.8%
North West	11.4%	10.6%
Yorks and Humber	8.6%	8.0%
East Midlands	6.3%	7.2%
West Midlands	8.5%	8.4%
East	7.8%	9.5%
London	13.6%	14.3%
South East	11.9%	14.3%
South West	8.2%	8.5%
Wales	5.4%	4.5%
Scotland	10.0%	8.2%
Northern Ireland	3.8%	2.6%
UK	100%	100%

Source: CSJ calculations

## Conclusions

Robert Gordon's analysis of productivity growth in 20th Century America established that there was a huge spike in total factor productivity, not related to an improvement in education or skills, or capital deepening but an accelerated relationship between workers, technology and innovation. It is increasingly clear that this acceleration is best facilitated within an urban environment that fosters exchange in capital, ideas, best practice, and labour. A biotechnology company will likely base itself in Cambridge or Oxford due to the proximity to the University and to venture capital funds with experience of commercialising university research, and not a city with no reputation for supporting biotech start-ups.

However, any effort to generate local growth must focus equally on ensuring it is inclusive and is paired with a radical anti-poverty agenda. Poverty seems to thrive in areas where productivity grows. Areas of London with high rates of productivity also have high levels of poverty. Any place based policies to support productivity growth must have poverty reduction at their heart.

Michael Porter commented in 2009, "*cluster based policies should increasingly replace industry-level and firm level policies, because cluster policy is more efficient, minimizes distortions to competition, and is far better aligned with the nature of competition in the modern economy*".<sup>226</sup> Cluster based policies should therefore focus on:

- Building local competitive advantage across regional city based clusters.
- Spending on physical and social infrastructure.
- Attracting 'Big Employers' to a cluster.
- Pairing a local growth plan with a radical anti-poverty agenda, ensuring inclusive productivity growth.

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<sup>226</sup> Porter, M. *Clusters and Economic Policy: Aligning Public Policy with the New Economics of Competition* (Harvard Business School, 2009)

# 3

## DRIVERS OF PRODUCTIVITY



## chapter six

# Better measurement

The measurement of productivity is difficult. As we have shifted from a manufacturing economy to a service led economy, and as services are increasingly intangible and take place in the digital sphere, value added has become increasingly hard to measure.

At the macroeconomic level, one of the conventional productivity measures (output per worker) is also inadequate because it can penalise economies that have high rates of employment, in two ways:

- An increase in employment and hours worked without a proportional increase in GVA puts upward pressure on the productivity measure denominator, and downward pressure on the productivity measure ratio. In the long term, this imbalance flattens out as the lag between job growth and economic growth closes.
- Productivity growth can often be generated without growth in employment, whilst sustaining high levels of inequality. Anecdotally, high productivity growth rates exist in areas of London with high rates of child poverty. On a national level, Spain has higher productivity levels than the UK but has an employment rate 14 percentage points lower. The US is 37.5 per cent more productive than the UK, but has a labour inactivity rate around 5 percentage points higher than the UK.

As the CSJ has always stated, work is an essential route out of poverty for many. Work has been shown to reduce welfare dependency, sustain a better quality of life and improve both long term mental and physical health conditions. Even taking into account the destabilising effect low paid work has on an individual (see *Human Capital and the Bottom 20%*) an individual in work can be up to 30 percentage points less likely to be in poverty than someone out of work.<sup>227</sup>

The CSJ therefore recommend a new measure of productivity that includes the proportion of the population out of work. This new measure would allow for the true productivity of a nation's entire labour resource to be judged on equal terms with other countries.

**Recommendation 1:** The UK Government should start publishing a new productivity measure which calculates GVA against the UK's total working age population (employed, unemployed and inactive by choice). The UK Government should also begin to lobby international organisations (including the OECD, Eurostat and IMF) to take up the new measure.

<sup>227</sup> Haskins, R. *Helping Work Reduce Poverty* (Brookings Institute, 2017) [accessed via: [www.brookings.edu/opinions/helping-work-reduce-poverty/](http://www.brookings.edu/opinions/helping-work-reduce-poverty/)]



## chapter seven

# Creating an innovation nation

Our analysis showed that UK productivity stagnation has been driven in both the long and short term by a decline in capital investment, a growing trade deficit, low levels of innovation, and bad management. UK policy should therefore focus on the following:

- Increase public and private R+D spending in the UK.
- Increase uptake of innovative technologies across both the manufacturing and service sector.
- Support entrepreneurs.
- Support better management in low growth companies.

### Capital expenditure and exports

Productivity growth is best generated from a thriving private sector that invests in capital, innovates both products and processes, and employs well paid and well skilled staff. Supporting the private sector is best done through maintaining a competitive tax regime that reduces disincentives to set-up and operate businesses in Britain. The UK already has one of the lowest statutory tax rates in the world and reducing it further could further attract foreign buyers of UK firms. Researchers found,

that the statutory tax rate in the target country has a negative impact on the probability of an acquisition in that country, with an average elasticity of around 1 – that is, a one percent reduction in the tax rate would imply approximately a 1 percent increase in the probability of a domestic company being acquired by a foreign acquirer.<sup>228</sup>

While reducing corporation tax may be subject to wider questions of fiscal sustainability, this report suggests keeping our corporation tax as competitive with other countries as possible.

This report supports simplicity in the tax system. The UK now has the longest tax code in the world, at 17,000 pages long. The UK offers three separate tax relief mechanisms for businesses in the creative industries who are engaged in research and development, four different tax relief mechanisms for entrepreneurs and two for businesses investing in capital. This has contributed to the complexity of the tax systems.

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228 Said Business School, *How do taxes affect the location of international mergers and acquisitions?* [accessed via: [/www.sbs.ox.ac.uk/faculty-research/tax/research/effects-tax-business](http://www.sbs.ox.ac.uk/faculty-research/tax/research/effects-tax-business)]

**Recommendation 2:** Tax simplification – The Government should embark on a significant process of simplification and clarity on the objectives within the UK tax code. Rates should be set over a longer period and designed to promote high growth businesses, capital investment, employment, and exporting abroad. See below for provisional CSJ tax recommendations.

## Business tax simplification – policy recommendations

### 1. Capital Investment

Combine: Annual Investment Allowance (AIA) and capital allowances creating the Universal Capital Allowance (UCA). Government should set the UCA at £500,000 and include investment in intangible capital.

### 2. Entrepreneurs

Combine: The Seed Enterprise Investment Scheme (SEIS), Enterprise Investment Scheme (EIS), and Venture Capital Trust Scheme (VCT) to create New Business Tax Relief (NBTR). The NBTR should prioritise young businesses under a certain age and not small businesses under a certain size.

### 3. Research and Development

Combine: R+D tax credits and Patent Box to create Innovation Credits (IC). Innovation credits would be deductible against both R+D expenditure and profits related to new innovative products that are patented. These again would support all research and development expenditure that has been commercially realised.

Our analysis established that entrepreneurs are treasured assets in our economy. Entrepreneurs drive productivity growth through high growth companies, modern technology, forcing competition in an industry, and developing new markets. Entrepreneurs should be incentivised to set-up businesses and continue working within them. Tax relief for entrepreneurs selling their businesses may therefore have a damaging effect on productivity.

**Recommendation 3:** Scrap Entrepreneurs Relief when entrepreneurs sell their company – the government should promote long term owner-led organisations.

## Innovation

The UK spends less on R+D as a percentage of GDP than Estonia, Slovenia or Austria. In their 2017 election manifesto the Conservative Government reaffirmed a commitment to increase total R+D expenditure to the OECD average – 2.4 per cent of GDP – within 10 years, and 3 per cent over a longer period. The Government has historically contributed less than 10 per cent of total spending on R+D (7 per cent in 2015).<sup>229</sup> This report supports the Government increasing their share of total spending to 10 per cent (equivalent to 0.24 per cent of GDP) of total R+D by 2022. This would increase nominal government expenditure from £2.21 billion in 2015/16 to £5.62 billion by 2022.<sup>230</sup> The CSJ support that commitment for two reasons: higher levels of public R+D spending has a crowding

229 ONS, UK gross domestic expenditure on research and development: 2015 (16 March 2017)

230 Note: Based on OBR projection – UK nominal GDP of £2,340 billion.

in effect on private expenditure on R+D,<sup>231</sup> and high total levels of R+D expenditure are positively associated with higher levels of productivity growth.

**Recommendation 4:** The Government should continue its commitment to spend 2.4 per cent of GDP on R+D by 2022 and 3 per cent by 2027. As part of this commitment, the Government should front load public investment in R+D of £5.62 billion (0.24 per cent of GDP) by 2022.

There has been an impressive increase in students taking STEM subjects at A level, however STEM subjects at both primary and secondary school, in Further Education and Higher Education must continue to be supported. STEM graduates will help plug the skills gap that exists and research by the Campaign for Science and Engineering has found that STEM graduates earn 20 per cent more than non-STEM graduates.<sup>232</sup>

A key to encouraging higher take-up of STEM subjects should be encouraging greater diversity among the STEM student population. Research by the Campaign for Science and Engineering (CaSE) and Kings College London (KCL) shows that whilst there is equal representation of females and males at Maths GCSE level, male students make up 58 per cent of the undergraduate maths population, and 63 per cent of the postgraduate maths population. Females make up just 19 per cent of engineering undergraduates and 43 per cent of physics undergraduates. Female STEM graduates are also very unrepresented in ICT, manufacturing and the energy industries.

**Recommendation 5:** The Department for Education and Department for Business, Energy and Industrial Strategy should lead a campaign to increase take-up of both women and disadvantaged students in STEM.

**Recommendation 6:** The Department for Education should address the affordability of Level 4, 5 and 6 (degree level) STEM subjects. HM Treasury should look to offer scholarships and grants to FSM students who wish to pursue STEM subjects at either University or FE College.<sup>233</sup> This could be done through increased funding of Discretionary Learner Support (DLS) and preferential treatment for STEM subject students.

### Information box – Free School Meals (FSM)

Universal Free School Meals are offered to children in reception, year 1 and year 2 of primary school. From year 3 onwards, Free School Meals are provided to students from disadvantaged backgrounds.

A child might be able to get free school meals if their parent receives any of the following: income support, income-based Jobseeker's Allowance, income-related Employment and Support Allowance, support under Part VI of the Immigration and Asylum Act 1999, the guaranteed element of Pension Credit, Child Tax Credit, Working Tax Credits, and Universal Credit.

<sup>231</sup> Haskell, J., Hughes, A. and Bascavusoglu, E. *The Economic Significance of the UK Science Base* (CaSE, 2014)

<sup>232</sup> Campaign for Science and Engineering, *Strengthen Science and Engineering to Support the UK's Future* (June 2017).

<sup>233</sup> Note: Chapter 7 details means for FE colleges to better collaborate with Universities so that both are better able to provide a wide variety of courses and professional training across multiple disciplines at lower average costs.

Despite the increase in STEM subjects across the student body, there has been a decline in the uptake of Design and Technology (D&T) as a subject at level 2 (GCSE) and above for over 10 years.<sup>234</sup> In conversations with businesses across the manufacturing sector, D&T is an essential subject for the developing skills related to the application of STEM theory. It also nurtures the development of skills essential for careers in manufacturing. One of the causes of this decrease has been the exclusion of D&T as a requisite subject and from the EBACC qualification.

**Recommendation 7:** The Department for Education should include D&T as a requisite subject in the science component within the EBACC.

Our analysis shows that UK industry has been slow to take up modern technologies including robotics, AI, Internet of Things (IoT), intelligent networking, and biosciences. In our discussions with business leaders, this seemed at times a cultural phenomenon. However, Catapult Centres have had great success at pairing academics with businesses to achieve better uptake of modern processes and production techniques.

**Recommendation 8:** The Government should encourage take-up of innovative enabling technologies (AI, IoT, 3D printing, big data analytics etc) through Catapult Centres. Catapult Centres should develop relationships with providers of modern technologies around the world and work with the British Business Bank to offer British businesses help in accessing these technologies.

**Recommendation 9:** Catapult Centres should be reviewed for their interaction with the SME sector. All barriers to engagement between SMEs and Catapult Centres need to be addressed. Catapult Centre should also be responsible for signposting different support schemes available to SMEs (such as working with the British Business Bank and tax incentive schemes).

UK businesses should be able to access the very best technologies around the world that help drive productivity growth at both a firm level and at a wider macroeconomic level. The key impediment for British businesses will be establishing relationships with technology providers and accessing affordable finance to fund capital expenditure in new technologies. The British Business Bank should pick up slack for both SMEs who struggle to access finance in credit and insurance markets.

**Recommendation 10:** The British Business Bank (BBB) should offer both insurance and credit guarantee products (much like UK Export Finance) that support British businesses who want to import and invest in cutting edge technologies that boost productivity. BBB should support British firms who want to buy Swedish manufacturing equipment or US artificial intelligence software.

In discussions with businesses, we found many SMEs were edged out of business due to unfair payment terms from larger suppliers and customers. Any small company with a small capital reserve will be unable to sustain sufficient cash to finance working capital

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234 Design and Technology Association [accessed via: [www.data.org.uk/news/2015-gcse-results-announced/](http://www.data.org.uk/news/2015-gcse-results-announced/)]

requirements if they also have to endure predatory payment terms. Unfortunately, some businesses we met felt “*The Prompt Payment Code is a well-intentioned, but abused concept*”. Unfair payment terms and pressure on working capital balances will reduce cash available for capital investment and innovation.

**Recommendation 11:** The Government should look to enforcing prompt payment (30 days) in the statute book. Legal recourse should be provided in cases of non-compliance. Membership of the Prompt Payment Code should also be heavily audited, with firms requiring multiple references across their supply chain.

## Management

Managers are the most important characteristics that define a firm’s level of innovation and long-term productivity. Outside of the existing legal framework, there is no role for government, in any free market economy, to determine who can run a business. But the evidence shows that entrepreneurs in young, high growth businesses are a major driver of wider productivity growth.

The UK remains an attractive place for entrepreneurs who want to start a business; the World Bank has ranked the UK 7th easiest place to do business in the world.<sup>235</sup> 383,000 businesses were set up between 2014 and 2015 in the UK, the highest number on record.<sup>236</sup> The London Stock Exchange is the largest stock exchange in Europe. The growth in self-employment partially represents a cultural shift away from conventional employment towards being a sole trader and business owner

Regardless, government must work to increase the incentives for entrepreneurs setting up businesses, deliver an education system that offers management and business administration courses, and support networks where business managers can come together to share best practice and innovative ideas on both process and production. Most pressing, the government need to reduce the barriers that prevent young people from disadvantaged backgrounds from starting their own business.

In discussions with enterprise coaches we often found that the single largest barrier facing young entrepreneurs from disadvantaged backgrounds remains confidence. After taking account for skill attainment and access to finance, the real barriers included ‘anxiety’ around legal or business management speak, a lack of confidence when pitching an idea to investors or a simple lack of confidence and ambition. The role of the enterprise coach is therefore essential in mentoring young entrepreneurs around the complexities of running and owning a business. The government should look to support enterprise coaches through the existing UC and Universal Support scheme.

<sup>235</sup> World Bank, Ease of Doing Business Rankings [accessed via: [www.doingbusiness.org/rankings](http://www.doingbusiness.org/rankings)]

<sup>236</sup> NS, Business demography, UK: 2015 (November 2016)

## CSJ Alliance case study – Young Enterprise

### Jack Davey Dupris

Jack won the Company Programme 2016–17 Journey Award after making the most transformational journey. Jack got involved with Young Enterprise whilst living at an accommodation service for homeless young people in Luton, and a number of personal factors meant Jack rarely had the motivation to see things through or communicate with others. *“Before Young Enterprise I would never take the initiative, my attitude was if it happens it happens, if it doesn’t it doesn’t. It was a build-up of things in my life that contributed to a lack of motivation.”* Jack said. Through Young Enterprise, Jack became more confident and enthusiastic and he developed key skills such as communication and resilience. *“The experience has 100% completely changed my plans for the future.”* Jack said. *“I’ve learnt so many skills I now want to have my own business, have people work for me. I’d never thought of that before, not even a little bit. I feel like my future looks brighter now, there are a lot more doors open now, which means I can put myself in a good position and help out my family.”*

**Recommendation 12:** Universal Support (US) should incorporate support for young entrepreneurs who have passed through the UC system and want to start a business. Service providers should be able to bid locally to provide young entrepreneurs with support that improves confidence, and skill sets, and helps sustain a business in its early years.

There is evidence to suggest bad management has elongated the long tail of underperforming firms in the British economy. Helping improve management at these firms will help improve productivity growth.

In discussions with employers, many referenced the German culture of investing in better management. Interviewees would cite German businesses who place a heavy emphasis on planning for a succession, achieving advanced education qualifications prior to taking-up a managerial role. The UK has outstanding business schools, however masters’ qualifications in business administration or management remains expensive and underutilised when comparing with countries such as the US and Germany. Investing in training at the management level is as important as investing in training for workers across the age and skill spectrum.

**Recommendation 13:** After one year of the apprenticeship levy’s implementation, the Government should look to extend it to cover training for management at advanced education level.

## chapter eight

# Skills, education and employment

Education and skilling are essential for long term productivity growth. Whether the business cycle is trending upwards or downwards, the capacity of our labour market to meet the needs of a modern economy will drive productivity growth in the long term. Our analysis concluded that policy should support:

- Improving the attainment level among disadvantaged students.
- Increasing provision of non-traditional routes from secondary school onwards, designed for students less disposed to traditional educational formats.
- Diversifying routes to employment, specifically strengthening FE Colleges and apprenticeships.
- Re-establishing purpose, opportunity and engagement for workers in low paid and low skilled work.

### Disadvantaged students – closing the gap

The UK education system continues to fail many of the students that pass through it. 40 per cent of students and 60 per cent of FSM students do not reach the basic level of attainment in Maths and English GCSE. This has allowed a large group of students to fall out of our education system without the requisite skills to get a job puts huge social and economic pressures on the UK. The Social Mobility Commission believe that raising the attainment of disadvantaged children to average levels could add £56 billion to GDP by 2050.<sup>237</sup>

Reducing the attainment gap between FSM and non-FSM students will require a dynamic approach that tackles disadvantage in multiple areas. The CSJ recognise that the Government have been successful in reducing that gap in recent years; the reading gap for Key stage 1 students has narrowed by six percentage points between 2010 and 2015,<sup>238</sup> the gap at age 16 has narrowed by six months over the last decade<sup>239</sup> and FSM students are applying to higher education institutions at record levels. The Education Policy Institute believe that attainment gap between 18-year old FSM and non-FSM students today is roughly 2 years of learning.<sup>240</sup>

237 Social Mobility Commission, *State of the Nation Report* (2013)

238 OFSTED, The Annual Report of Her Majesty's Chief Inspector of Education, Children's Services and Skills 2015/16 [accessed via: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/574186/Ofsted\\_annual\\_report\\_education\\_and\\_skills\\_201516\\_web-ready.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/574186/Ofsted_annual_report_education_and_skills_201516_web-ready.pdf)]

239 Andrews, J., Robinson, D. and Hutchinson, J. *Closing the Gap – Trends in Educational Attainment and Disadvantage* (EPI, 2017)

240 Ibid

There is a strong regional dynamic to educational inequality in the UK. Average attainment is lower in the North compared to the South East and London. There is a 5.5 percentage point lower basic attainment level across schools in Yorkshire and Humberside, when compared to London. The divide between FSM and non-FSM students is also larger outside of the South East. Success in reducing the attainment gap and improving overall attainment in London through the City Challenge focused on supporting leadership within schools, capital investment in school buildings and facilities, as well as better engagement between schools and government. By 2013, 76 per cent of FSM students in Hackney and 74 per cent of FSM students in Tower Hamlets were meeting the basic attainment standard at key stage 2 (compared to 60 per cent nationally).<sup>241</sup> Going forward, policy needs to support excellent teachers in low performing areas, and additional funding for sub-standard schools.

Pupils from disadvantaged backgrounds can double their learning when taught by an outstanding teacher – learning two years' worth of material in one.<sup>242</sup> The CSJ encourages the Government to increase the number of outstanding teachers in underachieving areas. Previous attempts to recruit outstanding teachers to underperforming regions with promises of quick career progression have failed. Two promising options for further recruitment are the creation of CPD endowments for teachers and the creation of regional scholarships for teacher sabbaticals. In Singapore's top-performing education system, teachers are entitled to 100 hours of CPD per year and a small 'allowance' for personal CPD materials, such as books and journal subscriptions. Sabbaticals could be a period of further research and professional learning.

**Recommendation 14:** The government should support the recruitment of excellent teachers to teach in under-performing schools. This should be done in three ways: (a) offering a financial bonus (similar in structure to London weighting of a teacher salary) to any teacher who moves to work in an underperforming school, (b) the offer of one-year sabbaticals attached to two-year placements in low performing schools, and (c) offering any teacher who moves to an underperforming school a Singapore style professional development training credit.

**Recommendation 15:** High performing teachers should also be fast tracked into positions of responsibility (such as Assistant Deputy Head Teachers, and school governors) in underperforming schools..

**Recommendation 16:** The Department for Education should lead an extensive review into why teacher retention levels are low and why excellent teachers are not motivated to move to underperforming areas.

Teacher recruitment and retention can further be facilitated by school-based training programs like salaried School Direct or the American 'Grow Your Own' teaching initiative. Schools finding it difficult to recruit or retain high-quality talent should be encouraged to consider talented support staff or community members as possible candidates for teacher training. Teachers have a demonstrated preference for working near the area they grew

241 Ladd, H. and Fiske, E. *Educational success in two Inner London boroughs: Lessons for the U.S.* (Brookings Institute, 2016)  
242 Sutton Trust, *Improving the impact of teachers on pupil achievement in the UK – interim findings* (2011)

up; recruiting high-quality teachers to underachieving regions may simply be a matter of identifying and training talented local candidates.

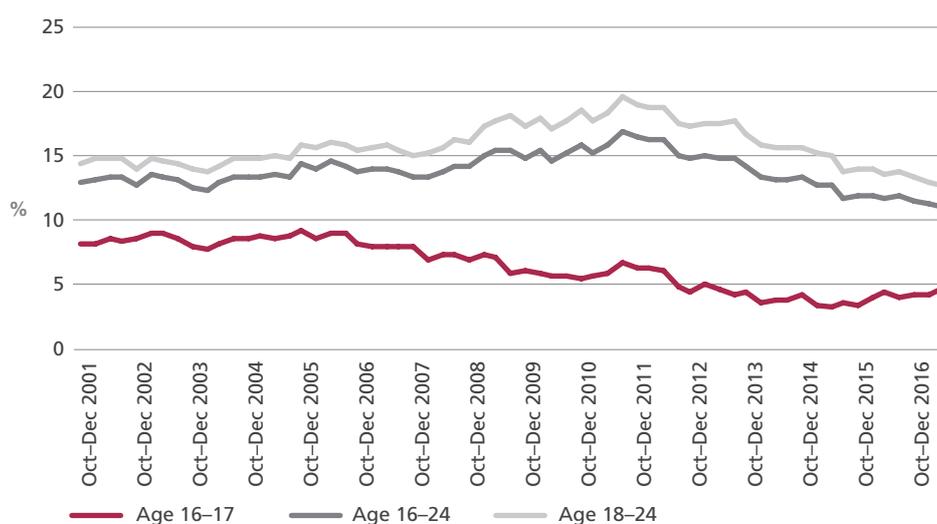
**Recommendation 17:** The Government should look to trial a ‘Grow Your Own’ initiative which gives head teachers the opportunity to handpick talented and promising support staff, specifically teaching assistants (TAs) to become teachers.

This year, the Department for Education has announced £72 million of funding for twelve “Opportunity Areas.” These areas are social mobility “coldspots” as determined by the social mobility index published by the Social Mobility Commission. Opportunity Area funding is dedicated to well-researched aspects of social mobility, such as early years interventions and the improvement of teaching and learning in schools. Early years interventions are especially critical, as according to BIS’s literature review on social mobility, *“The empirical, and indeed theoretical, evidence is clear that interventions which are made earlier in a child’s development are: a) likely to be more effective in boosting a child’s cognitive achievement, and b) may be a necessary requirement if a child is to develop good cognitive skills and have successful economic and noneconomic outcomes.”*<sup>243</sup>

The Opportunity Area programme should be carefully monitored and should also take on board lessons learned from the City Challenge and focus heavily on supporting excellent leadership in schools. If early indicators of social mobility – FSM students accepted into top universities or Year 1 students ready for school – show the Opportunity Area programme to be effective, it should be expanded significantly to include other social mobility ‘coldspots’.

**Recommendation 18:** Expand the number of Opportunity Areas. Opportunity areas should better reflect City Challenge programmes in London, Manchester and the Black Country, and focus on putting in place high quality leadership within each school.

Figure 39. NEETS as a % of people in the relevant population group



Source: ONS

243 Department for Business, Innovation and Skills, *Social Mobility: A Literature Review* (Gov.uk, 2011)

Success has shown not just in the growth of employment rates but decline in the percentage of NEETS within their population group. The percentage of 16–17-year olds classified as NEET has fallen from 9.2 per cent in 2005 to 4.2 per cent today. However, there remains growth in the number of long term NEETs, individuals who are not in employment, education or training for 12 months or longer. Analysis of ONS data by the Learning and Work Institute shows '*long term NEETs*' have increased in number from 9.8 per cent to 11.2 per cent between the first quarter of 2016 and first quarter of 2017.<sup>244</sup> More resources are needed to tackle the most at risk of falling into the NEET category. In discussions with employers, it is often commented that students who do not receive good GCSEs and do not subsequently go on to A-levels and university can often feel like 'failures'. Whilst the mechanisms are there to support a student's access to an apprenticeship or BTEC qualification at a FE college, they are not well communicated and are considered secondary in quality to the university route. Equally, teachers and support staff should continue to engage at risk NEETs with local employers and develop employment options for students who wish to leave school. Evidence is conclusive that increasing exposure to employers increases employment rates and earnings potential for students.<sup>245</sup> Evidence from the Department for Education in 2010 found that Activity Agreements between at risk NEETs were successful if costly.<sup>246</sup> The Scottish Government has rolled out Activity Agreements nationally with some success. This report recommends the continuation of such a programme.

**Recommendation 19:** At risk NEETs and their respective parents (or legal guardian), should enter into 'Activity Agreements' with schools. Each agreement would force at risk NEETs to attend compulsory careers advice sessions with local employers (made more possible with new sponsors within each secondary school) and JCPs. At risk NEETs would have to attend CV writing workshops and interview prep. They would also agree to be placed on a work experience programme over a two-week period prior to school term ending.

### Professional and technical education – a skilled economy

It is clear from discussions we have had with employers, teachers and graduates that the national curriculum must start to adopt more subjects that emphasise employability skills and have economic value. We don't envisage statutory subjects to change; children need to learn Geography, History and Music as part of a syllabus that is rounded. However, Key Stage 4 Maths should teach ratio, probability and statistics in a more professional context and using more modern methods. There is no reason why Key Stage 4 children cannot start using statistical software that is easily available using a PC. Ratios and rate changes should be conveyed in the context of finance and economics.

244 Sarah O'Connor, *More young Britons out of work and education* (2 August 2017) [accessed via: [www.ft.com/content/52958330-6ecb-11e7-aca6-c6bd07df1a3c](http://www.ft.com/content/52958330-6ecb-11e7-aca6-c6bd07df1a3c)]

245 Mann, A. *It's who you meet: why employer contacts at school make a difference to the employment prospects of young adults* (Education and Employers, 2014) [accessed via: [www.educationandemployers.org/wp-content/uploads/2014/06/its\\_who\\_you\\_meet\\_final\\_26\\_06\\_12.pdf](http://www.educationandemployers.org/wp-content/uploads/2014/06/its_who_you_meet_final_26_06_12.pdf)]

246 Department for Education, *What works re-engaging young people who are not in education, employment or training (NEET)? Summary of evidence from the activity agreement pilots and the entry to learning pilots* (2010)

This report supports an increased role for local employers with local schools. Our discussions with UTCs found that engagement between students and local employers was often very constructive and often led to offers of work experience and jobs. Dr Anthony Mann established a statistically significant positive relationship between employer contact and the likelihood of a young person getting a job and earning a high salary.<sup>247</sup> The Careers and Enterprise Company established that a student with “*four or more encounters with an employer is 86% less likely to be unemployed or not in education or training, and can earn up to 18% more during their career*”.<sup>248</sup> However, only 40 per cent of students currently have that kind of interaction with business.<sup>249</sup>

**Recommendation 20:** All secondary and primary schools should be forced to develop formal partnerships with local employers, with each employer given a seat on the board of governors/trustees. Local employers would be recognised as (non-financial) ‘sponsors’ of a school, and would be expected to provide non-financial resources for careers advice and inform the teaching staff on economically valuable skills that are in-demand. This would mirror the Enterprise Adviser Network.

**Recommendation 21:** The Department for Education should work with businesses through the sector skills councils and National College network, to understand the cutting-edge skills required in the modern economy. Information on economically valuable skills should be made public via Gov.uk. Destination measures for schools, subjects (including the T-level routes) and post-16 education channels should be made public via Gov.uk.

Organisations such as Young Enterprise have long campaigned for schools to focus on the employability and financial capability of their students, and for the national curriculum to be updated. Evidence from their programme shows 95 per cent of students who undertook employability and financial education training were in education, employment and training two years later; this is 7 percentage points higher than the national average. There is also robust evidence showing students who partake in financial education training achieve better results in their conventional Maths studies. The London Lead Teachers pilot ran across 26 schools in London, and found there was a 21 per cent increase in attainment between the start and end of the intervention for those who took part as compared with 3 per cent in the control group. Young Enterprise also point to anecdotal evidence that suggest students prefer learning academic subjects contextualised in employment, commerce, entrepreneurialism, and making money.

247 Mann, A. It's who you meet: why employer contacts at school make a difference to the employment prospects of young adults (Education and Employers, 2014)

248 The Careers and Enterprise Company, Enterprise Advisor Network [accessed via: [www.careersandenterprise.co.uk/enterprise-adviser-network](http://www.careersandenterprise.co.uk/enterprise-adviser-network)]

249 Ibid

## CSJ Alliance case study – Young Enterprise<sup>250</sup>

### Olivia

Olivia completed the Company Programme during the 2013–2014 academic year. She described herself as introverted and shy but believes she overcame these issues, in addition to developing team building and problem solving skills, through Young Enterprise. Olivia decided she wanted to study engineering and mechanics and applied for a sponsored aerospace engineering degree at Airbus. The skills Olivia developed with Company Programme allowed her to be more involved in the interview exercises: *“In the interviews I used my experience from doing Company Programme with budgets and that side of things and teamwork and asking them what they wanted. Taking part in Young Enterprise enabled me to gain a lot of fundamental skills needed in an engineering environment and I am very grateful for that opportunity.”* Olivia was accepted onto the three-year course based in Chester where she is currently studying.

**Recommendation 22:** Employability Skills – The Government should follow reform of Personal, Social and Health Education (PSHE) and strip out any content on financial literacy and build a new programme: Financial, Enterprise and Employability Education (FEEE). Like PSHE, we support the Government giving FEEE statutory status.

There has been criticism of UTCs as not generating the improvement in performance among pupils that had been originally hoped for. However, there is some empirical and anecdotal evidence to suggest they are beginning to yield results – some recent Progress 8 score for Maths in good UTCs were very promising<sup>251</sup> – and there is some expectation that the poor performance at Key Stage 4 may be rooted in a selection problem for UTCs. In discussions with UTC Head Teachers, though around the country we found that students also benefited from increased engagement with employers, a more diverse socio-economic student body and access to excellent teachers in advanced subjects. We also uncovered a sense among UTCs that feeder secondary schools were dissuading many students from applying to the UTC and there is also an expectation that parents are predisposed with a bias against sending their children to a local UTC.

**Recommendation 23:** The Department for Education should continue to provide financial support for UTCs, continue to ensure secondary schools co-operate with UTC, and increase the awareness of the benefits of a UTC education to the parents of children who exhibit talents in STEM subjects or are less disposed to traditional academic work and environments.

**Recommendation 24:** The Department for Education should continue to look at setting up UTCs in targeted areas of the country with the right conditions. The right conditions include areas with willing businesses and universities who are committed to the successful long term support of a UTC.

250 Note: [www.young-enterprise.org.uk/](http://www.young-enterprise.org.uk/)

251 Kettlewell, K., Bernadinelli, D., Hillary, J. and Sumner, C. *University Technical Colleges: Beneath the Headlines* (NFER, 2017)

The CSJ is encouraged by the Government's recent investment in technical qualifications, or T-levels. As suggested in Lord Sainsbury's report, T-levels should be assessed through both authentic tasks and tests of theoretical knowledge. The CSJ approves of Lord Sainsbury's recommendation to move from the currently confusing model to fewer 15 licensed choices. It is important that T-levels be taught by the wide variety of education providers (independents, academies, maintained schools, sixth form colleges, FE colleges and universities). This will help reduce stigma related to PTE as the poor cousin of general academic education.

A key component of T-levels is financial accessibility. Students in sixth forms need to be made aware of bursaries and enough funding must be available to allow all students to focus on their studies. In adulthood, T-level qualifications must be financially viable for students through some combination of Advanced Learner Loans and paid work experience.

T-level qualifications must extend from level 3 to Level 6, if they are to provide a viable alternative to university education for ambitious young people looking to embark on a hands-on, practical career. Continuing, post-18 vocational education is associated with increased productivity, wages, and employment throughout Europe. The Department for Education should also put forward clear options to transfer qualifications between vocational and academic "streams" for those looking to make a career change.

**Recommendation 25:** T-levels should be made available to students across all forms of education provider.

**Recommendation 24:** T-levels should be rigorous qualifications equal in value to level 3, 4,5 and 6 graduate qualifications. This report supports the existence of 4 qualifications (one qualification for each attainment level from 3 to 6) in each T-level track.

The work requirement within each T-level is essential. Businesses should be evaluated for suitability by their relevant Sector Skills Council before receiving students for work experience as they are in the Dutch vocational education system. Businesses must be responsible for introducing students to a wide range of skills and techniques used in the industry; students must not be used to simply complete menial tasks for the company. Employer expectations should be clearly communicated before any work experience begins and students should know how to raise concerns about the suitability of their placement. Clear regulation of the college and work placement components of T-level courses combined with high-quality assessment will result in valuable qualifications for young people seeking a vocational career.

**Recommendation 27:** Businesses and colleges should be assessed based on the quality of each work placement. T-level students should fill out time sheets and detail what relevant skills were practiced and developed during any work placement.

In consultation with industry leaders, the Department for Education should ensure that the T-level curriculum is centred around transferable, economically valuable skills. In essence, T-levels should centre around “trainability” and an increasing ability to adapt to various settings in a particular occupation rather than training for a particular job. Data should be collected on student outcomes; schools should make it easy to discover what percentage of school leavers are in work or further education after their T-level and what type of employment they have gained.

**Recommendation 28:** As outlined earlier, destination measures for T-levels (as well as A-levels and other subject routes) must be published and communicated with secondary school students.

### FE colleges and apprenticeships – a new route to employment

Department for Education data shows the most students leaving education at age-18 go on to Higher Education institutions and less than a half as many seek routes through FE colleges or apprenticeships.<sup>252</sup> Our research shows that many students still feel university is the best route to good employment, even though this may not always be the case. The Government has made headway on ensuring provision of good quality careers advice for students from age 12 to 18. The National Careers Service (NCS) was set up in 2012. JCP employment advisors can now enter schools and offer students advice on career options and job opportunities locally. The Careers and Enterprise Company (CEC) works to establish partnerships between schools, FE colleges and local employers. Enterprise Co-ordinators connect young people with LEPS, businesses and career training providers so that they have every post-school option available to them. However, a recent survey found that a third of school leavers did not know what they wanted to do with their life,<sup>253</sup> whilst an increasing number of workers are considered unmatched in their current role (see Chapter 4).

This paper seeks a culture change in the way that post-16 education and employment is presented to students. The CSJ recommend a national communication drive led by the Department for Education that ferments the 3-Track option in the population's mind. Teachers and careers advice professionals (from NCS, the CEC, and JCPs) should emphasise the 3-Tracks for advancement for every student: (1) apprenticeships, (2) PTE (T-levels) in FE Colleges and (3) graduate degrees at university. 78.5% of young people receive their careers advice from their parents,<sup>254</sup> so teachers and careers advice professionals should target parents and legal guardians as well as students. Seminars, advice sessions and personal contact between Head Teachers and parents would be an essential component of the 3-Track campaign.

252 Department for Education, Provisional destinations of key stage 4 and key stage 5 students in state-funded institutions, England, 2014/15 (Gov.uk, October 2016) [accessed via: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/559888/SFR47\\_2016\\_text\\_2.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/559888/SFR47_2016_text_2.pdf)]

253 AllAboutSchoolLeavers.co.uk/YouGov, “The School & College Leaver Careers Market 2016,” 2016. [accessible via: [www.allaboutschoollleavers.co.uk/employer-advice/latest-research](http://www.allaboutschoollleavers.co.uk/employer-advice/latest-research)]

254 APPG for Education, How well do schools prepare children for their future? [accessed via: [www.educationappg.org.uk/wp-content/uploads/2017/04/Preparing-for-the-future-inquiry-report.pdf](http://www.educationappg.org.uk/wp-content/uploads/2017/04/Preparing-for-the-future-inquiry-report.pdf)]

**Recommendation 29:** *3-Track Campaign* – The Department for Education should lead a national campaign directed at both 14–18-year-old students and their parents that presents the diverse and equal options for school leavers. Students and parents will be informed of opportunities in apprenticeships and FE colleges as well as at universities. The long-term aim will be to see equal numbers of school leavers going into any of the three tracks.

Further Education Colleges are the bedrock of a sound education and adult skills system. Our research established that too few students see the long-term value in shorter technical qualifications from FE colleges and, as a result, the UK have fewer students flowing through the FE system than comparable countries like Germany. The US also has a thriving two-year community college system that is an important lever for social mobility. Reeves and Rodrigue (2016) comment that

Community colleges are a vital part of America’s opportunity structure, not least because they often provide a way into higher education for adults from less advantaged backgrounds. Each year there are around 10 million undergraduates enrolled at public, two-year colleges. Among first-generation students, nearly 38 per cent attend community colleges, compared to 20 per cent of students with college-educated parents.<sup>255</sup>

However, one of the often-cited failures in the post-compulsory education has been leakages in the system. This paper commented earlier on the sense of ‘failure’ among students who do not make it to university and drop out of education altogether. The Perkins Review of Engineering Skills in 2013 identified the ‘leaky pipe’ effect where students who were unaware of the transferability in and out of further education, higher education and employment, often left the education system. It is essential therefore that students see a diverse route from secondary school into either sixth form, apprenticeships, FE or HE. To achieve this the Department for Education should work on harmonising the course credit system and supporting the transfer of credit between FE colleges and universities. A 2017 Department for Education report stated that “*credit transfer is widely understood as a concept but is not observed in practice very often*”.<sup>256</sup>

**Recommendation 30:** FE college credit should be transferable into 3-year university degree courses and university credit should be transferable into an FE college course. Clear information on options open to students regarding transferring credit between an FE college or university should be communicated to all new students. This responsibility should be measured as part of the Teaching Excellence Framework (TEF).

Public Further Education funding in the UK has declined by 14 per cent in real terms and has been structurally altered in recent years. The Adult Skills Budget (ASB) fell by nearly a third between 2010/11 and 2015/16, linked to “*the replacement of grant funding with loan funding for some learners from 2013–14 onwards*”.<sup>257</sup> An increasingly large portion of the ASB goes towards apprenticeships and new Employee Ownership pilots. However public funding for FE is approximately 10 per cent of investment made by the private

<sup>255</sup> Reeves, R and Rodrigue, E. *Transfer season: Lowering the barrier between community college and four-year college* (Brookings Institute, 2016) [accessed via: [www.brookings.edu/blog/social-mobility-memos/2016/06/21/transfer-season-lowering-the-barrier-between-community-college-and-four-year-college/](http://www.brookings.edu/blog/social-mobility-memos/2016/06/21/transfer-season-lowering-the-barrier-between-community-college-and-four-year-college/)]

<sup>256</sup> Department for Education, *Credit Transfer in Higher Education* (Gov.uk, 2017)

<sup>257</sup> House of Commons Library Briefing, *Adult Further Education Funding in England since 2010* (April 2017)

sector in skills training. Employers spent “an estimated £36bn on training their workforce in 2013/14”.<sup>258</sup>

The CSJ do support the transfer of grants into loans for funding student enrolment at FE colleges, both as a means of equalising student experience at university and FE college as well as a means of financial sustainability. We do not forecast a significant reduction in demand for FE colleges due to increasing cost of university tuition, an increase in the number of students across the country (there were half a million more school students in England in 2016 compared to 2010<sup>259</sup>) and a push to increase the number of in-work employees seeking qualifications at FE colleges. However, the CSJ cautions the Government against cutting the FE skills budget any further because public funding is accountable for over 80 per cent of total FE funding, and strengthening FE colleges and non-university routes from education and into employment are both key means of boosting skills in our economy and improving productivity. Public funding per FE college student is calculated at £5,639.<sup>260</sup> This is half the cost to Government related to funding a student at university (£10,500). Universities will undoubtedly benefit from the increase in funding related to R+D (£7.9 billion or 24 per cent of total university funding in 2014/15<sup>261</sup>) as well as recent loosening of the tuition fee cap. This report therefore supports a complete review of the funding towards FE colleges in the UK with the clear intention of equalizing the funding available per student in FE. Any increase in funding should be strategically directed at improving the quality of FE college education in the UK.

**Recommendation 31:** HM Treasury should look to increase funding for the Adult Skills Budget and Higher Education Funding Council for England, earmarked for FE colleges. The focus should be on improving the quality of teaching and course provision.

**Recommendation 32:** FE colleges offering apprenticeship training should be able to drawdown the total cost of providing an apprenticeship course from the Government immediately. The financial pressure of slow drawdowns is causing a number of colleges to experience financial hardship. Allowing colleges to frontload payments reduces risk of this occurring.

Further Education Colleges should exist symbiotically within the post-18 education framework with universities. During a period of budgetary pressures, there are benefits to both universities and FE colleges working together to provide a suite of courses across multiple disciplines. A theoretical example would be universities providing a medical school, while local FE colleges would provide courses in technical areas such as phlebotomy, radiography, and physiotherapy. Fundamentally, FE colleges and universities would pool resources, share facilities, and teaching staff could work across both the FE college and university. An example where this could work would be in Leeds where business courses

258 Department for Business, Innovation and Skills, Mapping investment in adult skills – which individuals, in what learning and with what returns (Gov.uk, 2016) [accessed via: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/523037/bis-16-47-mapping-skills-investment.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/523037/bis-16-47-mapping-skills-investment.pdf)]

259 Department for Education, Schools, pupils and their characteristics: January 2016 (2016) [accessed via: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/552342/SFR20\\_2016\\_Main\\_Text.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/552342/SFR20_2016_Main_Text.pdf)]

260 Belfield, C., Crawford, Cl. And Sibieta, L. *Long-run comparisons of spending per pupil across different stages of education* (IFS, 2017)

261 Universities UK, University Funding Explained [accessed via: [www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2016/university-funding-explained.pdf](http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2016/university-funding-explained.pdf)]

are offered by Leeds City College, as well as Leeds Beckett University and the University of Leeds. Universities that are known to have worked on partnering with local FE colleges include Coventry University, Strathclyde University and the University of Warwick.

**Recommendation 33:** All FE colleges and universities should look to develop partnerships in related study areas (law, business, health etc) allowing the pooling of resources, sharing of facilities and avoiding the duplication of courses in nearby areas.

The CSJ supports policy to increase the number of high quality apprenticeships available and the apprenticeship levy for businesses. However, apprentices are unable to support themselves on the £3.50 minimum wage. Many do not even qualify for Statutory Sick Pay, as sick pay requires an average salary of £111 per week. Between the lack of a living wage and lack of access to maintenance loans, apprenticeships are not accessible to individuals with financial commitments. Instead of underpaying apprentices to make them attractive to employers, the UK should adopt a Canadian-style apprenticeship scheme, where apprentices are paid living wages and employers are incentivised with tax credits.

**Recommendation 34:** Government should take action so that apprentices are paid the living wage.

### In-work progression and good employment

The UK has a low rate of occupational progression, and while this is in line with other European countries, the evidence suggests that opportunity to progress incentivises people to work harder and for longer, generates loyalty, improves job satisfaction and provides purpose in the work environment. Occupational and wage progression are also both positive proxies on productivity. How to increase in-work progression is less well understood. Whether it is an individual with low educational attainment, working in low skilled job or a recent university graduate who gets stuck in low paid work, a failure to move up the value chain is linked to different inefficiencies within the economy. During our discussions with both employers and employees, there was a recurrent theme that the best way to improve levels of productivity and occupational progression was through:

- Better terms of employment,
- Investment in Professional Development Training
- Reducing barriers to progression

#### 1. Better terms of employment

Discussions with both employers and employees found that a strong relationship between the two often resulted in a greater sense of loyalty, co-operation, motivation and consequently productivity. Employers noted that their experience in other countries where the culture of employment reduced leverage of the employer over the employee, was that this had a very positive impact on long term productivity.

Introducing tougher employment regulations seemed unnecessary with some of the employers we met, the emphasis was much more around inculcating a culture of better

employment. The CSJ are therefore calling for the introduction of a good employer manifesto and accreditation scheme that will support employers who practice 'good employment'.

The *Good Employer Manifesto* incorporates many of the practices that we have anecdotally found to help develop good relations between employers and employees as well as boost productivity across a workforce. The *Good Employer Manifesto* would be modelled on the Living Wage campaign, which was independent from government but used an accreditation scheme to raise awareness of employers who practiced living wage employment. Each employer would be allowed to interpret the manifesto in whatever way they saw fit; all equity partnerships differ in format, appraisal schemes in a law firm would work differently from an appraisal scheme on a shop floor. However, the accreditation scheme would be used to support all forms of employment practice that support better employment..

### Good Employer Manifesto

1. Profit sharing partnerships
2. Introduce non-financial incentives to contracts
3. Training commitments at both entry, mid and management level
4. Employee appraisal schemes
5. Occupational health provisions
6. Flexible work arrangements

**Recommendation 35:** Start-up an independent accreditation programme that identifies employers who sign up to the '*Good Employers Manifesto*' (manifesto commitments include: equity partnership for employees, training commitments, non-financial incentives, physical/mental/occupational health commitments and time-off allowances).

Outside of an independent accreditation scheme, the Government can work towards promoting better employment terms through their own procurement processes. During our discussions with government contractors, many blamed the prevalence of zero hours contracts on the procurement process always prioritising low cost suppliers. The CSJ therefore call for a review of government procurement that demands contractors to practice better employment terms and support the least advantaged in society.

**Recommendation 36:** A review into Government procurement practices should develop a new framework for contracting out services, that prioritises contractors that practice the '*Good Employment Manifesto*'. The Government should also include the social benefit of contractors services when calculating the total cost of acquisition.

## 2. Professional development training

The PIAAC survey shows that the UK skills deficit that exists between British and international 16–24-year olds is closed by their mid-thirties. This is despite the UK having some of the lowest levels of in-work professional development training expenditure. This does not negate the logical and evident necessity for better training of workers who are both in employment and unemployed. Improving an individual's skill attainment will

improve their chances of both occupational and wage progression, and then ultimately their productivity. But also, because the economy and labour market will go through many significant changes in the foreseeable future, and developing a more skilled workforce is important to weather these changes:

- Automation and technology will continue to reduce the need for human labour in some occupations. A report by PWC found that 30 per cent of UK jobs were at risk of automation by 2030.<sup>262</sup> The jobs most at risk involve routinised processes with little creative or autonomous decision making. The CSJ agrees with leading academic Carl Frey who believes that automation won't reduce the number of jobs but redefine the existing number.<sup>263</sup> To ensure this redefinition has the lowest social and economic impact requires extensive training and the development of modern transferable skills.
- Globalisation continues to put pressure on economies and labour forces to lower prices and increase output. This has had damaging effects on the low paid, who have seen jobs related to low value manufacturing move to lower cost countries, and low skilled immigration put downward pressure on local wage levels. This has led to a level of disenfranchisement across western economies amongst those who feel free market and open capitalist economies no longer deliver improved quality of life for the working class. The best means of reducing the risk of unemployment and low living standards is to boost productivity across the low skilled demographic. The best means by which the UK can avoid disruption caused by globalisation is developing the UK as a high skilled and high value economy.
- A report by the Office for Science found that *"the proportion of the working age population aged between 50 and the state pension age (SPA) will increase from 26% in 2012 to 35% in 2050 – an increase of approximately 8 million people."*<sup>264</sup> This is a good thing, but the cost to society must be managed and one of the best ways to do so will be to encourage longer working lives. Work has been proven to help individuals mental and physical health, and can therefore be an important mechanism for reducing associated cost of health and social care for individuals in later life. Supporting an ageing working population will therefore require more opportunities for older workers to develop and diversify their skills.

Improving access to mid-career professional development training will require better organised funding, and greater co-operation with employers. The CSJ recommend that the Government trial Advanced Learner Loans to be operated by employers. Currently the Government lends the cost of a professional development or training qualification directly to an individual. However, this report advocates a scheme where employers lend employees the money to seek professional development or training qualifications. The benefits are multifaceted; government costs are reduced, employees who take out learner loans through their employers are likely to feel a sense of investment from their employer, training courses are likely to be more economically valuable and linked to improving skill capacity at work, and lastly default risk is reduced as the employer is incentivised

262 PWC, *Will robots steal our jobs? The potential impact of automation on the UK and other major economies* (March 2017) [accessed via: [www.pwc.co.uk/economic-services/ukeo/pwcukeo-section-4-automation-march-2017-v2.pdf](http://www.pwc.co.uk/economic-services/ukeo/pwcukeo-section-4-automation-march-2017-v2.pdf)]

263 [www.theguardian.com/us-news/2017/jun/26/jobs-future-automation-robots-skills-creative-health](http://www.theguardian.com/us-news/2017/jun/26/jobs-future-automation-robots-skills-creative-health)

264 Government Office for Science, *Future of an Ageing Population* (2016) [accessed via: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/535187/gs-16-10-future-of-an-ageing-population.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/535187/gs-16-10-future-of-an-ageing-population.pdf)]

to continue employing the individual and repayment can be taken straight out of an employee's monthly wage.

**Recommendation 37:** Advanced Learner Loans should be restructured so that they are offered through an employer and not the Government. Employers will be able to lend staff the resources needed to pursue a training or education qualification, and will then deduct the monthly repayment from salaries. The funds set apart for employee training would be deductible against a company's tax liability.

For the people, out of work and therefore not able to access an Advanced Learner Loan from their employer, Universal Credit (UC) should incorporate a training credit. Individuals looking for work and on UC should be encouraged to access training to improve their skill attainment. A Job Centre Plus (JCP) Work Coach would be best placed to encourage a claimant to access training at a local FE college using their UC. Most importantly, the training credit would be an additional UC allowance, and not involve the reduction in UC's financial pay-out.

**Recommendation 38:** UC should include a training credit that can be activated with the agreement of a JCP Work Coach.

In our discussions with CSJ Alliance members, we found many organisations were picking up where JCP Work Coaches were failing. Alliance charities often found themselves working with clients who needed assistance writing a CV, interview practice, and support with access to level 2 and 3 qualifications. There was however a recurrent theme with regards to what worked – one-to-one mentoring.

### **CSJ Alliance case study: Ricky at Resurgo<sup>265</sup>**

*"Before joining Spear, I spent two years looking for work. I spoke to employers and worked hard on editing my CV but I never got any responses. I tried everything I could think of to improve my chances of getting a job, but nothing seemed to work. I was really struggling for money and felt under a lot of pressure from family and friends to get a job.*

*I started going in to the Job Centre and overheard Chris, one of the coaches at Harrow, talking to someone else about Spear so I went and asked her what it was about. She told me that Spear helps get you ready for work, and you visit companies to see what the workplace is like, which sounded really interesting. She said Spear stays in touch with you for 12 months after you finish the programme, which sounded brilliant. I figured I had to nothing to lose.*

*Joining the programme, I was so struck by the level of personalised 1-2-1 support Spear offer; it felt so personable. It was so helpful to have a dedicated coach to support you through the process of looking for work and to talk through anything outside of work that was having an impact on me. Learning about the power and victim mentality on the programme really made an impression on me; I realised I'd seen myself as a victim for a while, blaming everything else, but now I realise I do have options, I can be proactive, and so it's really changed my outlook".*

<sup>265</sup> Note: [www.resurgo.org.uk/](http://www.resurgo.org.uk/)

The role of JCPs and JCP Work Coaches must be fully reviewed in more detail. UC is now almost entirely claimed online, and in discussions with employment-related service providers, respondents often noted how JCP Work Coaches were more focussed on increasing rates of employment and not rates of job retention. Ultimately the CSJ supports the role of a JCP Work Coach increasing the employment rate among claimants, however job retention and in-work progression are fundamentally important for long term productivity growth for those who were previously unemployed and in low paid, low skilled work. Previous recommendations from the CSJ's report entitled 'Tackling Low Pay' including claimants and new job entrants "*completing progression plans, setting out detailed steps to boost skills and progress*".<sup>266</sup> This report recommends amending the means of measuring success for a JCP Work Coach, calling for job retention and both long term wage and occupational progression of claimants to be measured. This will require better data collection by the DWP and improved communication between DWP, JCPs and claimants on what works and best practice.

**Recommendation 39:** JCP Work Coaches need to be accountable on measures of job retention and earnings growth over time. The integration of UC and Real Time Information (RTI) will make this easier over time.

**Recommendation 40:** DWP need to better deliver data on what works and help develop best practice guidelines on both 'getting in to work' and 'in work progression' for JCP Work Coaches. Work Coaches will need an entirely new set of coaching skills going forward and DWP must ensure there is the appropriate support for Work Coaches to access additional training for their new role.

### 3. Barriers to progression

The final means of improving occupational progression and boosting productivity requires reducing non-skill based barriers to progression. The most prominent barrier to occupational progression includes short term mental and physical health conditions. The CSJ established in a 2017 report that "*83 per cent of disabled people acquire their disabilities while they are in work and approximately 300,000 people a year fall out of work due to health conditions*".<sup>267</sup> The risk is that individuals either spend regular periodic times out of work reducing their chances of progressing in work, or that a short-term condition is not properly treated or supported by the employer, healthcare system or individual, and can lead to long term unemployment. The 2017 CSJ report stated:

too many people who take sickness absence do not return to work. For instance, 50 per cent of people who are off sick for six months do not return to their employers, while those who are off for longer almost never return. And a recent study found that 45 per cent of Employment and Support Allowance (ESA) claimants who had worked in the year prior to their ESA claims had periods of sickness absence before leaving employment.<sup>268</sup>

<sup>266</sup> Skelton, D. *Tackling Low Pay* (CSJ, 2015)

<sup>267</sup> Scales, J. *Rethinking Disability at Work* (CSJ, 2017)

<sup>268</sup> Ibid

The CSJ calls for the Government to continue enacting the many recommendations in the report *Rethinking Disability At Work* (2017). However, this report calls for emphasis to be placed on employers to provide occupational health support for employees. In discussions with employers we regularly found that companies who supported an individual's short term mental and physical health conditions, offering time-off, counselling, specialist health care providers, were often the most productive. The provision of occupational healthcare is an important facet of a good employer, reducing job insecurity and improving relations between employers and employees. The UK has a sophisticated patchwork of occupational healthcare schemes available to employers, including *Access to Work* and *Fit for Work*. However, just 25 per cent of employers know what *Access to Work* is, and "only 51 per cent of employees have access to occupational health support through their employers". More should be done to raise awareness of occupational healthcare schemes in the UK.<sup>269</sup>

**Recommendation 41:** The Department for Health must increase awareness and uptake of occupational health schemes across UK employers.

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<sup>269</sup> Ibid

## chapter nine

# Place

Our analysis concluded that productivity growth can best be generated through area based policy initiatives, and for it to be successful Government policy must focus on:

- Building local competitive advantage across regional city based clusters.
- Spending on physical and social infrastructure.
- Attracting 'Big Employers' to a cluster.
- Pairing a local growth plan with a radical anti-poverty agenda, ensuring inclusive productivity growth.

### Generating local competitive advantage

Establishing local competitive advantage is key to building the clusters of economic power that drive productivity growth in the long term. London has built a competitive advantage in financial services, Sunderland is home to some of the worlds most sophisticated car plants, Milton Keynes attracts corporate headquarters, and the South-East commuter belt is home to a number of high tech firms (IBM, Panasonic, Hitachi and Sony).

The best way to build local competitive advantage is to increase the degree of control and autonomy held by local government. Michael Heseltine stated in his 2012 report *No Stone Left Unturned*;

Every place is unique. Local leaders are best placed to understand the opportunities and obstacles to growth in their own communities. Policies that are devised holistically and locally, and which are tailored to local circumstances, are much more likely to increase the economy's capacity for growth. National policies devised by central government departments can never be as relevant to all different circumstances of our local economies as strategies that originate in those places to start with.<sup>270</sup>

The coalition government recognised the need to devolve power to local authorities as a means of generating local economic growth. They expanded combined authorities, introduced city deals with elected mayors, Growth Deals, Local Enterprise Partnerships, and Enterprise Zones.

Combined authorities and devolution deals have been one of the most significant policies, redesigning local government in the UK. There are nine combined authorities, consisting of 54 local authorities in England. By bringing together multiple local authorities, a combined

<sup>270</sup> Heseltine, M. *No Stone Left Unturned* (Gov.uk, 2012)

authority can co-ordinate, plan and direct resources in a far more efficient way for a large homogenous economic area. A National Audit Office report corroborated this sentiment,

There is a clear purpose to establishing combined authorities, especially in metropolitan areas... As economies and transport networks operate at a scale greater than individual local authority areas, there is a logic to establishing strategic bodies designed to function across conurbations and sub-regional areas.<sup>271</sup>

An example of a successful combined authority would be the North East Combined Authority which consists of Durham, Gateshead, Newcastle Upon Tyne, North Tyneside, Northumberland, South Tyneside and Sunderland. Durham has a population of over 500,000 and the council has a budget of £860 million. However, as part of the North East Combined Authority, the total population of 1.9 million has a combined budget of £12.5 billion, allowing for far greater economies of scale and agglomeration.

In our discussions with businesses, one of the consistently referenced problems (specifically in the transport industry) was the lack of co-ordination across jurisdictions when planning for major infrastructure projects. Smaller authorities lacked the expertise and personnel to bid for large scale government funding for infrastructure projects. Smaller and less economically affluent areas in the North East and North West lose out to the interests of big cities such as Manchester, London and the wider South East.

So far, combined authorities have been broadly successful as a means of correcting this problem. The combined authority with the greatest number of devolved powers is the Greater Manchester Combined Authority (GMCA). Sir Howard Bernstein, Chief Executive of GMCA wrote in 2012 that:

Speaking with a single, clear voice means we can be more persuasive in our conversations with external decision-makers and stakeholders. Working in a coordinated fashion means we can be not only strategic but also, crucially I believe, imaginative – coming up with new ways of doing things which challenge orthodox thinking.<sup>272</sup>

Government support for combined authorities remains strong. The Conservative Party Manifesto reaffirmed commitments to combined authorities in non-rural areas;

We will support those authorities that wish to combine to serve their communities better. For combined authorities that are based around our great cities, we will continue to support the adoption of elected mayors, but we will not support them for the rural counties.<sup>273</sup>

**Recommendation 42:** The Government must accelerate efforts that support the creation of combined authorities through devolution deals across the UK. The Government should also consider acceleration of disbanding district councils to create unitary authorities. This will reduce complexity in the local government framework and improve local government coordination on major spending projects.

271 National Audit Office, *Progress in setting up combined authorities* (July 2017)

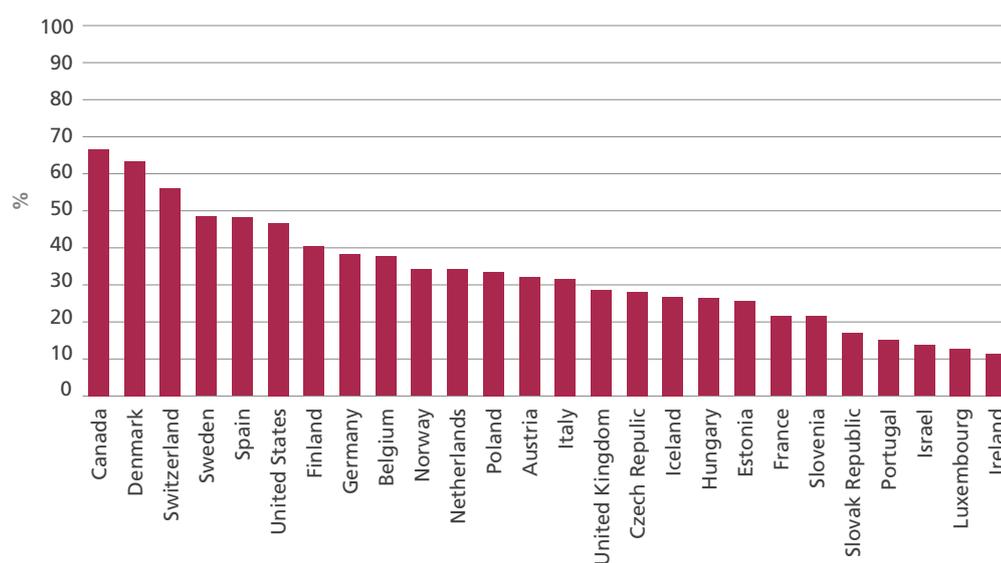
272 Sir Howard Bernstein, *Greater Manchester Combined Authority is a model for regional cities* (15 October 2012) [accessed via: [www.theguardian.com/public-leaders-network/2012/oct/15/greater-manchester-combined-authority-regional](http://www.theguardian.com/public-leaders-network/2012/oct/15/greater-manchester-combined-authority-regional)]

273 Conservative Party Manifesto, *Forward Together*, 2017

**Recommendation 43:** Each new combined authority created via a devolution deal should stipulate the creation of a directly elected Mayor. The Mayor will have greater power to oversee the setting of both council tax and business rates across constituent authorities (see below) and be a direct advocate for the area when applying for funding from the Regional growth and Productivity Fund (see below).

The UK has one of the most centralised tax systems in the world. Approximately 5 per cent of taxes<sup>274</sup> are raised and less than a third are spent locally. The most lucrative taxes in the UK (income tax, national insurance, and VAT) are all set and levied at a national level. Local authorities in the UK have the discretion to levy just council tax. In 2015, Chancellor George Osborne announced that local councils will be able to retain business rates revenues after 2020. However, council tax and business rate receipts contribute to a quarter of total local government funding.<sup>275</sup>

Figure 40. International comparison of the percentage of general government expenditure spent by sub central government (2010)



Source: Heseltine report

This centralised system is compared to other more productive OECD countries that operate devolved tax systems. In Sweden, local government is responsible for 47 per cent of total government expenditure (including the majority of health expenditure).<sup>276</sup> Canada raises and spends roughly half of government revenues at the local level.<sup>277</sup> Switzerland devolves tax raising powers to its 26 cantons. Germany similarly devolves taxation powers to the Bundesländer. The US Federal System also allows individual states to levy taxes on income, consumption and corporate earnings. US cities are also major generators of tax revenue; *“At the city level, municipalities rely on locally raised revenues, with only 20 per cent of*

<sup>274</sup> Adam, S. et al. 'Taxation in the UK', in *A Survey of the UK Tax System*, (Institute for Fiscal Studies, 2006)

<sup>275</sup> Centre for Cities, *Beyond Business Rates* (2015)

<sup>276</sup> Centre for Cities, *What responsibilities should UK cities gain alongside new tax powers* (February 2016)

<sup>277</sup> Centre for Cities, *How do other countries with more fiscal devolution avoid postcode lotteries?* (February 2016)

*their funding coming from grants”*.<sup>278</sup> New York relies on federal funds for just 31 per cent of revenues, Paris 18 per cent and Tokyo just 8 per cent.<sup>279</sup> Alternatively, London receives 74 per cent of revenues from central government.

The benefit of devolving tax powers to local government is that it allows local communities to support economic activity and build competitive advantage. When taxation is set nationally, we fail to leverage the knowledge of local leaders in government and business who are better placed to judge what economic activity to support locally. Devolving tax powers in the US has resulted in the State of Virginia supporting the tobacco industry (a major employer in the state) through the tax system. Virginia levies 30 cents per packet of cigarettes, whilst across the Potomac river, Washington DC levies \$2.50 per packet. Texas levies a tax of 4.6 per cent on the market value of crude oil produced in the state, whereas neighbour Louisiana (a much smaller producer of crude oil) charges 12.5 per cent. The Centre for Cities argue that:

giving places more responsibility to raise and retain their own funding will provide cities with sharper incentives to back investment in the things that can make a difference to their local economy, such as investing in skills and infrastructure.<sup>280</sup>

Currently councils in the UK set council tax rates against bands that are set by the central government. Business rates are also set by central government based on property valuation of a business premise. Combined council tax and business rates are forecast to raise £58 billion in 2016–17. The ability to set the rates, raise and spend the proceeds of both council tax and business rates should be devolved to local councils. Councils could then work with LEPs, combined authority partners as well as central government to optimise the rate that best suits that local economy. Allowing a local council discretion over setting business rates will allow them the opportunity to build incentives for business and industries.

**Recommendation 44:** Local authorities should set and retain business rates and have more control over the setting of council tax.

**Recommendation 45:** Government should set in process a review of the tax system with the sole aim of determining which tax mechanisms can be devolved to local government levels and provide a roadmap for that process. Other taxes considered for devolution would include Stamp Duty Land Tax.

## Physical and social infrastructure

Our analysis established the huge importance of improving transport links, digital networks, building new homes, and flourishing social and cultural infrastructure. This report supports the Chancellor’s commitments of £2.6 billion for transport infrastructure, £7.2 billion for housing infrastructure, and £0.7 billion for communications infrastructure through

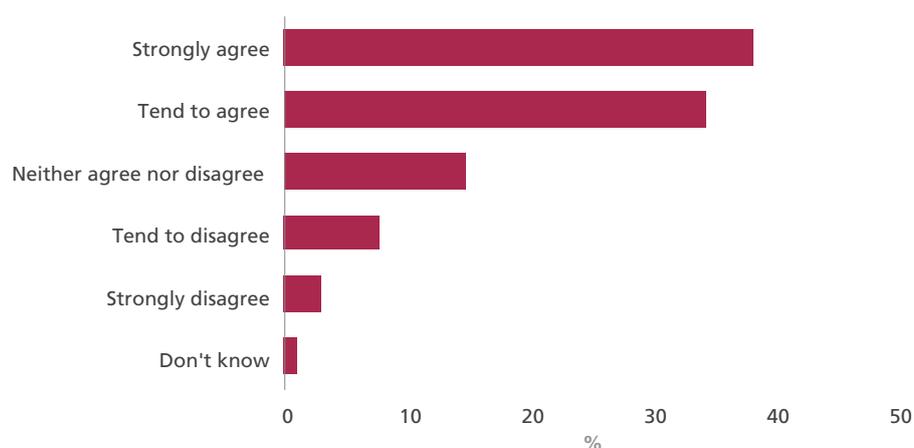
<sup>278</sup> [www.centreforcities.org/blog/how-do-other-countries-with-more-fiscal-devolution-avoid-postcode-lotteries/](http://www.centreforcities.org/blog/how-do-other-countries-with-more-fiscal-devolution-avoid-postcode-lotteries/)

<sup>279</sup> [www.centreforcities.org/reader/beyond-business-rates/evidence-for-fiscal-devolution/](http://www.centreforcities.org/reader/beyond-business-rates/evidence-for-fiscal-devolution/)

<sup>280</sup> Centre for Cities, *How increasing local tax-raising powers can incentivise cities to grow* (December 2015)

the National Productivity Investment Fund.<sup>281</sup> CSJ/YouGov polling shows that the British public rate UK infrastructure (road, rail and telecommunications) as *'fairly good'*, but it is important to constantly upgrade.<sup>282</sup> However, we caution the Government on setting out to fund major projects that require years of planning and regulatory approval. The same CSJ/YouGov survey (see figure 41 below) found many businesses prefer local infrastructure projects over major national projects. Getting the right balance of local and national projects will require a longer term careful review of the planning system, however in this paper the CSJ call for the Government to accelerate plans to develop smaller scale local infrastructure projects that receive cross party support across each relevant local authority.

Figure 41. To what extent, if at all, do you agree or disagree with the following statement? – “I would prefer money to be spent on local road and rail improvements than larger transport projects such as high-speed rail”



Source: (CSJ, YouGov)

**Recommendation 46:** The Government should accelerate smaller local infrastructure projects that have cross party support across each relevant local authority. This would increase the likelihood of smaller infrastructure projects being built over a shorter period of time. The Secretary of State in the Department for Transport, Department for Business, Energy and Industrial Strategy and Department for Communities and Local Government, have the power at their disposal to expedite smaller plans, and should be encouraged to exercise this opportunity.

A key means of allowing local infrastructure projects – housing, transport, digital, social and cultural – to get access to funding there will need to be reform of local growth funding structures. Total funding for local growth remains marginally higher today than it did in 2010, however it has been split across many more funding silos than previously existed:

Over the five-year period 2010–11 to 2014–15 the government will spend a total of £6.2 billion on local growth programmes, including £2.4 billion spent by Regional Development Agencies and £3.9 billion spent on the new funds and structures covered in this report. In comparison, the Regional Development Agencies spent £11.2 billion over the five-year period 2005–06 to 2009–10.<sup>283</sup>

281 Chancellor Philip Hammond MP, Autumn Statement 2016

282 CSJ, YouGov polling

283 NAO, *Funding and structures for local economic growth* (December 2013)

RDAs had a budget of £1.4 billion in 2010–11 which was slowly closed, whilst funding has been separated across a number of different silos; City Deal Funding, LEPs, Regional Growth Fund, and Enterprise Zone Funding.

The Treasury has begun the process of simplifying devolved funding arrangements but only for areas with devolution deals and mayors, *“Single Pot Allocation – The government is announcing that existing mayoral devolution deals will receive ‘single pot’ funding settlements, giving them flexible un-ringfenced budgets to spend on local priorities”*.<sup>284</sup> The National Audit Office have identified £2.86 billion in funds to be allocated through six single pot devolution deals over a five-year period.<sup>285</sup>

However, this report argues for the Government should go further and collapse all local growth funding initiatives into a single pot that, like devolution deals, allocates discretionary amounts directly to local authorities. This ‘single pot’ policy was advocated by Michael Heseltine in 2012, *“We need to brigade the separate funding streams which support the building blocks of growth into a single funding pot for local areas”*.<sup>286</sup>

**Recommendation 47:** Existing local growth funding silos – Growing Places Fund (£730 million), City Deal Funding (£72 million), Local Enterprise Partnerships Running Costs (£21 million), Enterprise Zone Funding (£223 million), Local Growth Fund (£2 billion) and National Productivity Investment Fund (£23 billion) – should be collapsed into a single fund; the Regional Growth and Productivity Fund (approximately £26 billion). The Cities and Local Growth Unit (DCLG/BEIS) would oversee the Regional Growth and Productivity Fund, allocating discretionary amounts to local authorities for local growth projects such as house building, transport upgrades and digital network installations.

## Big employers

Attracting employers to a cluster is perhaps the single most significant catalyst in generating productivity growth. Local Enterprise Partnerships were created to embody this sentiment and have been broadly well received. CSJ calculations do show that there isn’t a huge statistical difference in the GVA growth between LEPs and the rest of the UK, but our discussions with LEP leaders suggest that the intangible benefits of getting business leader to work with local government officials has had a hugely positive impact on local job opportunities.

### Case study: Tees Valley Local Enterprise Partnership

The creation of a LEP in the Tees Valley area has coincided with an increase in businesses start-ups in the area. More than a thousand companies registered in the areas in the first quarter of 2017, a 6.7 per cent increase over the same period as 2016, and a 13.3 per cent increase on the same period in 2015.

284 Budget Red Book 2016

285 NAO, English Devolution Deals (2016) [accessed via: [www.nao.org.uk/wp-content/uploads/2016/04/English-devolution-deals.pdf](http://www.nao.org.uk/wp-content/uploads/2016/04/English-devolution-deals.pdf)]

286 Heseltine, M. *No Stone Left Unturned* (2012)

Ben Houchen, Mayor of Tees Valley said:

The Tees Valley Local Enterprise Partnership has been quite rightly recognised as one of the strongest and most ambitious public-private partnerships in the country. I am proud that we have attracted a diverse and broadly representative group of business leaders from different sectors, business size, experience and background. What they all have in common is the vision and drive to play a key role in supporting the Mayor's ambitious Plan for Growth and building on the significant successes already achieved. It's vital we tap into their vast experience and invaluable insight to ensure we deliver on the region's huge potential.

An NAO report found that LEPs require more resources to properly carry out the functions that have been prescribed;

"LEPs need access to staff with expertise in complex areas such as forecasting, economic modelling and monitoring and evaluation. Only 5 per cent of LEPs considered that the resources available to them were sufficient to meet the expectations placed on them by government. In addition, 69 per cent of LEPs reported that they did not have sufficient staff and 28 per cent did not think that their staff were sufficiently skilled. The NAO found that LEPs rely on their local authority partners for staff and expertise, and that private sector contributions have not yet materialized to the extent expected.<sup>287</sup>

39 LEPs are allocated approximately £21 million to share for running costs, there is a growing voice for increasing this allocation.

**Recommendation 48:** LEPs must be increasingly empowered so that they can attract big employers to their region. LEP funding should increase to support running costs as they become a more important voice in local economic communities. The new Regional Growth and Productivity Fund (see above) should assume responsibility for funding of LEPs as soon as possible.

More and better information should be available for both young British companies and foreign organisations looking to invest in the UK. The Department for International Trade and Department for Business, Energy and Industrial Strategy should work with the Centre for Cities Catapult to create a UK Cluster Map that has detailed information on clusters that are forming in the UK, Enterprise Zones, LEPs and the location of major international businesses in the UK. This information will help the development of supply chains and encourage the movement of individuals and families who are looking to work in different parts of the country as well as market what the UK has to offer to international investors.

**Recommendation 49:** Department for International Trade and Department for Business, Energy and Industrial Strategy to publish regularly cluster maps with information on clusters and mechanisms for businesses to set-up in/trade with clusters.

287 NAO, Local Enterprise Partnerships (March 2016) [accessed via: /www.nao.org.uk/report/local-enterprise-partnerships/]

## Reducing poverty and inclusive productivity growth

Our analysis showed that productivity growth was often exclusive at a very local level. Areas with high levels of productivity were often areas with high levels of poverty. Efforts to reduce and eradicate this inequity should require a cross department approach that co-ordinate programmes that tackle the complex nature of productivity and its causes. The CSJ has been instrumental in setting the debate on how to tackle the root causes of poverty; educational failure, worklessness, family breakdown, debt and addiction. This report doesn't deviate in supporting the fight against these injustices. However, it calls for great resources to be made available to support local growth initiatives that reduce poverty and generate inclusive productivity growth. The best means of doing this is to empower UK Enterprise Zones to be more than simple vehicles for business growth.

Today UK Enterprise Zones offer incentives to businesses to move to economically depressed areas. Analysis on Enterprise Zones by the 'What Works Growth' has found them to:<sup>288</sup>

- Have positive effects on employment rates.
- Have positive effects on wages.
- Reduce aggregate levels of poverty.
- Increase local residential property prices and rental prices.

### US Empowerment Zones and French Enterprise Zones

The US Empowerment Zones (EmpZ) programme is administered at federal level and involves a standardized package of fiscal benefits applied to neighbourhoods defined at a specific scale (1990 census tracts). As a result, the EmpZ programme offers a largely singular set of benefits and incentives. There comprise the following:

- Employment Tax Credits
- Social Services Block Grants
- Loan Guarantees and Economic Development Initiative Grants
- Enterprise Zone Facility Bonds
- Increased write-off thresholds for tangible business assets
- Regulatory waivers and priority in other federal programmes.

In terms of size, the average Round 1 EmpZ was 10.6 square miles, had a population of approximately 120,000 people and a poverty rate of 45%. The US EmpZ programmes both explicitly targeted disadvantaged neighbourhoods, with the aim of using the tax breaks and other incentives to stimulate rejuvenation of these areas. Thirteen studies look at Empowerment Zones, two cover Enterprise Communities and two cover Renewal Communities. In US EmpZs, a wage credit is provided up to 20% of the first \$15,000 earned by each employee living and working in the zone, whereas for Renewal Communities there is a blanket wage credit provided of \$1,500 per employee living and working in the community.

288 What Works Growth, *Area Based Initiatives: Enterprise Zones* (January 2016) [accessed via: /www.whatworksgrowth.org/public/files/Policy\_Reviews/16-01-04-Area-based-initiatives-EZ.pdf]

French Enterprise Zones were created in the mid-90s in an effort to reduce urban inequality. A subsection of French Enterprise Zones, ZUSs, targeted the 757 most deprived areas in the country, covering a population of just under 5 million. The deprivation of these areas is based on unemployment rates, skills profile, proportion of young people and potential tax revenues. Tax exemptions are available to local firms in the area, but such incentives are only available once a business has hired a set percentage of staff from the local area.

Analysis from the What Works Growth organization found that research on the outcomes of these two Area Based Initiatives, showed positive impacts on both employment growth and poverty reduction.

Going forward, Enterprise Zones in the UK should better reflect the successful attributes of the US Empowerment Zones and French Enterprise Zones. Busso, Gregory and Kline (2013) found jobs were created in US Empowerment Zone neighbourhoods, earnings increased substantially for local workers, house prices rose, increased college attendance and suggest that these benefits were accrued to indigenous working-class families.<sup>289</sup> UK Enterprise Zones should encompass greater emphasis on social spending, funded through the Regional Growth and Productivity Fund (see above) to pursue socially advantageous projects that reduce the chances that areas fall into disrepair and become economically marginalised. UK Enterprise Zones should offer extra funding for local employers to employ disadvantaged youth, extra funding for local social services that are looking to get people back into good accommodation and into work, support for family relationship counselling and regenerating town centres that have fallen into disrepair.

The National Audit Office noted that net expenditure by local authorities on economic development fell by 68 per cent between 2010/11 to 2015/16.<sup>290</sup> The Government should look to recoup some of this lost investment. Total spending in the US Empowerment Zone project on block grants was approximately \$400 million, equivalent to \$570 per resident across an area with 700,000 residents over a six-year period.<sup>291</sup>

**Recommendation 50:** UK Enterprise Zones should be increased in number and both central and local government should be empowered to offer a wider variety of policy mechanisms to support business growth and reduce poverty within each zone. Specifically, HM Treasury should consider increasing allocations for Enterprise Zones of approximately £500 per resident in each zone.

Finally reducing intergenerational poverty within an area will involve providing resources to families to move out of poor areas. The Government should trial the Moving to Prosperity programme, a similar programme to the one operated under Bill Clinton in America during the 90s entitled *Moving to Opportunity* (MTO). A Moving to Prosperity programme would offer financial incentives for young families to move out social housing in economically disadvantaged poverty-stricken areas. Studies of MTO found that offering financial incentives to families living in public housing estates, moving them out of poor areas, resulted in a comparatively significant increase in potential earnings for children

<sup>289</sup> Busso, M., Gregory, J. and Kline, P. Results of the Federal Urban Empowerment Zone Program (2013)

<sup>290</sup> NAO, Local Enterprise Partnerships (2016) [accessed via: [www.nao.org.uk/wp-content/uploads/2016/03/Local-Enterprise-Partnerships.pdf](http://www.nao.org.uk/wp-content/uploads/2016/03/Local-Enterprise-Partnerships.pdf)]

<sup>291</sup> Busso, M., Gregory, J. and Kline, P. (2013)

within that family. American academics, Chetty, Hendren and Katz established that moving children out of poor neighbourhoods at an early age, reducing their exposure to poverty and the associated symptoms of poverty including crime, drug abuse and domestic violence, materially increased their earning potential later in life.<sup>292</sup>

**Recommendation 51:** The Government should trial a Moving to Prosperity programme that mirrors the work of the Moving to Opportunity (MTO) programme enacted in America in the mid-90s. The aim of the programme would be to reduce intergenerational poverty in areas of endemic social breakdown.

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292 Chetty, R., Hendren, N. and Katz, L. The Effects of Exposure to Better Neighbourhoods on Children: New Evidence from the Moving to Opportunity Project (NBER, 2016)

# Conclusion

The UK's productivity decline is complex and will require a concerted effort across Government departments to boost the level of high quality innovation across UK industry, build a diverse education system that supports Professional and Technical Education to a high attainment level and that rebalances productivity growth and poverty reduction across the UK.

Whilst this paper's recommendations are largely cost neutral, we make several significant calls for increased grant funding for public R+D, FE colleges and local growth (predominantly through Enterprise Zones). These spending commitments will increase Government spending by several billion each year. However, they represent either a reversal of previous funding cuts that have already been administered (FE Colleges and Local Growth programmes) or a normalisation of spending levels compared to other countries (R+D). We feel these new spending commitments are reasonable, even during a time of rising debt levels and budget tightening.

A lot of these recommendations place the responsibility of growing productivity on the private sector. Businesses and entrepreneurs will disrupt existing markets and create new products that will build a true innovation nation. On the issue of training and in-work progression, the CSJ believe it is not for Government to subsidise an activity that primarily benefits employers themselves. Employers should play a greater role in engaging children at secondary school age and those businesses that practice the 'Good Employer Manifesto' should be recognised for doing so. The reasons for this is that productivity growth can only really be driven in the long term from the private sector. A first-class education system will be redundant if we do not have a competitive economy that supports business growth, job creation and most importantly innovation.

Some of the recommendations call for a continuation of policies that are currently underway and need more support or better implementation – increased R+D funding, Universal Support, further Professional and Technical Education provision, Opportunity Areas and Devolution Deals.

However, we make several recommendations that are a significant shift for Government policy. A new measurement of productivity that better captures unemployment and inactivity will force Government to work towards a more equitable form of productivity growth that doesn't rest on low rates of employment. Tax simplification and devolution could be just as significant as welfare reforms introduced under the coalition Government. New Advanced Learner Loans that are administered by employers, and not Government, will be more affordable and usher in a new age where individuals are incentivised to work more productively and for longer with their current employer. Shifting focus away from universities towards more support for outstanding FE Colleges will mark a change in policy that was initiated in the 1990s. A *Moving to Prosperity* programme could break the dangerous cycle of intergenerational poverty in social housing estates.

Most importantly however, this report is a call for Government to reconsider productivity as an issue that can be best solved by breaking down social injustices that cause poverty and empowering the most disadvantaged by giving them opportunity to thrive. Innovation, business growth and a healthy entrepreneurial environment will only occur when we encourage as many young people from disadvantaged background to get an education and start a business. Many students who fall out of education at 16 without any GCSEs should have more options open to them to pursue PTE and work based learning schemes. Anyone stuck in low paid and low skilled work should be able to access training through their employer or Universal Credit that gives them the tools to move up the economic value chain. Lastly, public money should be available for Enterprise Zones to tackle poverty at its root.

These policies are in their infancy and can be adapted to better suit the environment as they are implemented. However, this report provides substantial evidence to prove that if all measures are put in place, the UK will see an increase in productivity that will put our country back on the growth path it experienced in the last century.

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The Centre for Social Justice  
34a Queen Anne's Gate  
London  
SW1H 9AB

[www.centreforsocialjustice.org.uk](http://www.centreforsocialjustice.org.uk)  
@csjthinktank