



**GREATER
MANCHESTER
INDEPENDENT
PROSPERITY
REVIEW**

FUTURE OF WORK AND SKILLS

A technical report for the research on
Skills

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The views expressed in this report are those of the author and, as usual, errors and omissions in this report remain the responsibility of the authors alone.

The Greater Manchester Independent Prosperity Review was commissioned to provide a detailed and rigorous assessment of the current state, and future potential, of Greater Manchester's economy. Ten years on from the path-breaking Manchester Independent Economic Review, it provides a fresh understanding of what needs to be done to improve productivity and drive prosperity across the city region.

Independent of local and national government, the Prosperity Review was carried out under the leadership of a Panel of six experts:

Professor Diane Coyle

Bennett Professor of Public Policy, University of Cambridge, and Chair of the Greater Manchester Independent Prosperity Review

Stephanie Flanders

Head of Bloomberg Economics

Professor Ed Glaeser

Fred and Eleanor Glimp Professor of Economics, Harvard University

Professor Mariana Mazzucato

Professor in the Economics of Innovation & Public Value and Director of UCL Institute for Innovation and Public Purpose

Professor Henry Overman

Professor of Economic Geography, London School of Economics, and Director of the What Works Centre for Local Economic Growth

Darra Singh

Government and Public Sector Lead at Ernst and Young (EY)

The Panel commissioned studies in four areas, providing a thorough and cutting edge analysis of key economic issues affecting the city region:

- Analysis of productivity, taking a deep-dive into labour productivity performance across Greater Manchester (GM), including a granular analysis of the ‘long tail’ of low-productivity firms and low pay;
- Analysis of education and skills transitions, reviewing the role of the entire education and skills system and how individuals pass through key transitions;
- Exploration of the city region’s innovation ecosystems, national and international supply chains and trade linkages; and sources of global competitiveness, building on the 2016 Science and Innovation Audit; and
- Work to review the infrastructure needs of Greater Manchester for raising productivity, including the potential for new approaches to unlock additional investment.

A call for evidence and international comparative analysis, developed in collaboration with the Organisation for European Cooperation and Development (OECD) and European Commission, also supported this work.

All of the Greater Manchester Independent Prosperity Review outputs are available to download at www.gmprosperityreview.co.uk.

This technical report is one of a suite of Greater Manchester Independent Prosperity Review Background Reports.

Introduction

The purpose of this paper is to reflect on current conceptions of ‘the future of work’ and what they mean for skills formation and skills utilisation in a city-region like Greater Manchester. The narrative of improving skills has long been critical to the economic ambitions of city regions and the country as a whole. Yet building the skills base of an area, let alone persuading employers to change the way they manage the skills and abilities of their workforces, are long-term and complex policy objectives that appear to rest on a view of the future. How, and at what pace, is change likely to unfold? Will the occupations that expand and contract in the next twenty years be much the same as those that grew or shrank previously? And how will the nature of work evolve within them?

The ‘future of work’ or ‘futuresology’ is the endeavour of identifying trends that are of epochal significance, yet its record of anticipating major economic change is not wholly encouraging. Very few commentators saw the possibility of the financial crisis, yet allied with recession and austerity policies, the impact on labour market has been profound with high employment in low-paying and low-skilled insecure jobs.

It is also noteworthy how ‘traditional’ some of the futures identified by futurologists typically are. Concerns about the job-killing potential of technology and machine learning tend to be re-stated every few decades: in the 1990s there was talk about the ‘end of work’ emerging with jobless production¹, while the workerless factory was a dream of the 1960s. Meanwhile, insecurity and precariousness at work, feeding through into inequality and greater uncertainty in life more widely, have been favourite topics of social theorists and futurologists for many decades. Although such phenomena are of unquestioned importance, at the time of writing the UK is experiencing record employment. And although ‘atypical’ work is an increasing presence, permanent, full-time work remains both normal and normative – which was not the expectation of some commentators and social theorists prior to the millennium².

Nevertheless, given that skills planning and the Industrial Strategy needs a context to plan against, the dominant findings of researchers are the best insights available. What rapid digital transformation means for the skills of the nation as a whole and in Greater Manchester is important to consider. The notion that ‘more skills’ are needed to cope with economic change has been axiomatic ever since the decline of agriculture, seemingly irrespective of whether the nature of work is inherently more skilled or not. The digital revolution is likely to entrench this view. Research (discussed below) implies that lower skilled areas may be most affected by technological substitution. More generally, there are concerns that existing issues – namely, poor levels of basic skills and a limited focus on higher level technical education – may be increasingly exposed and exacerbated by relatively rapid digital change. The inequalities that are currently obvious in the city region may rise as a result.

¹ See Rifkin, J, *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-Market Era*, Tarcher, 1996

² Some writers suggested most employment would come in freelance, self-employed or non-permanent forms. According to Richard Scase, writing in 2000, in a book called *Britain in 2010*: “By far the greatest number of jobs will take the form of non-standard employment.” See Scase, R., *Britain in 2010: The New Business Landscape*, John Wiley, 2001

This report discusses recent thinking about the future of work; it also attempts to identify, as far as possible, what the consensus position is regarding the labour market of the future. The paper concludes with some thoughts about what technologically-driven change is likely to imply for future skills policy in the UK as a whole and in the city region of Greater Manchester.

The Future of Work

As in many previous eras, a series of forces are shaping and reshaping the world in which we live. History shows us that such changes can be extremely profound, but they are often difficult to predict. In recent decades as well as in earlier centuries we have seen the effects of industrialisation, globalisation and technological change. In many ways, most of the 'mega trends' talked of today fall into these familiar categories, some of which can be traced back over hundreds of years. None of these trends are new and many began hundreds of years ago – and some here in Greater Manchester.

This paper takes as its starting point the identification of mega trends by Carl Frey and Thor Berger (2015)³, which identifies technological change and digital disruption, growing global and local inequality, demographic change (specifically migration and ageing) and increasing urbanization as the most significant trends impacting the future of work over the next 20-30 years. This paper concentrates on technological change and global/local inequality as the two most significant in the context of the medium-term labour market and economic change in Greater Manchester in this period.

It is significant that many of these 'mega trends' are interconnected. It is, for example, difficult to disentangle the technological from the global or the geopolitical. Taking these broad themes, we can develop an analysis framework for Greater Manchester to understand how they impact on the future of work and skills in the city region. But any framework exists with necessarily broad parameters. Whilst commentators, academics and futurologists tend to agree on the broad themes, there is significantly less consensus on the rate or pace of change stemming from these trends. Some are vigorously contested and others set out wildly different scenarios over the coming decades. We should therefore proceed with some care in how we set out these, often opposing, views and the policy lessons that we then take from them.

³ Berger T and Frey C, 'Future Shocks and Shifts' London, OECD, 2015

Global 'mega trends' driving the future of work between 2020-2050?

Political (inc geopolitical) 'mega trends':

Globalisation, continuing power shifts to the Global East and South?

Continuing rise of mega cities and city regions as population and economic centres

Dislocation of the global and local 'left behind' (de-industrialisation and economic/social marginalisation of poor/peripheral areas: rural, urban)

New political and geopolitical forces in local, national and international spaces (populism, nationalism, extremism, terrorism) with new pressures on traditional politics, parties, institutions and democratic and other government systems

Shift of political (and economic) power to high performing mega city regions

Economic 'mega trends':

Globalisation of markets, further shifts of supply and value chains to the Global East and South? Rise of new non-Western economies e.g. BRICs⁴ (Brazil, Russia, India, China) and the MINTs⁵ (Mexico, Indonesia, Nigeria, Turkey)

Emergence of new global systems, new sectors, new sources of value

Continuing impacts of previous shocks, economic restructuring – labour markets still vulnerable to shocks from geopolitical change

Significant labour market disruption driven by technological change

Continuing problems (financial, cultural, philosophical) from the global financial crash and recession 2007-10

Social 'mega trends':

Ageing societies (particularly, though not exclusively, in the developed world)

Migration and immigration – between/within regions, countries to 'Mega Cities'

Changing demographics, changing communities, households, societies

Increasing inequality in most advanced economies

Polarisation of jobs and societies, emergence of the super-rich in all economies

Changing work organisation and identity ('Digital Taylorism' driven by globalisation and technological change – see Lauder and Brown) changing occupational structures, work practice, supply chains

Growing global middle classes but hollowing out of labour markets in advanced economies

Prolonged austerity in many countries – cuts to services, benefits and other expenditure

Security – personal/national issues

Technological 'mega trends':

Rapid technological change – including automation, digitisation, big data – a 'fourth industrial revolution' or a new 'machine age' (see Brynjolfsson and McAfee)

Labour markets and economic impact (see Frey and Osborne)

Climate change and the development of new/ alternative energy sources

New transport and transport technologies

Science and Technology as focus for public and education policy

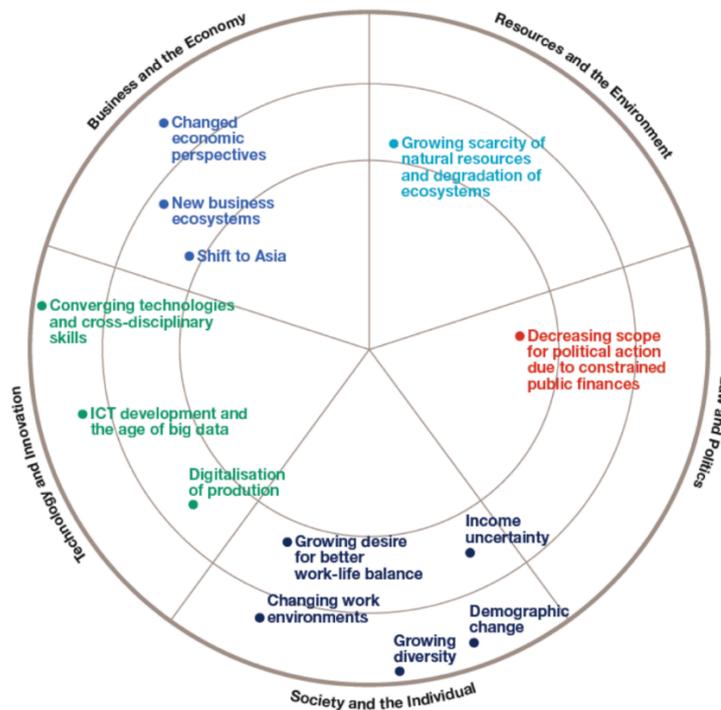
Technology and impact on other areas – politics/policy, geography, economy, society

⁴ As coined by the Economist Jim O'Neill: [O'Neill, Jim](#) (30 November 2001). Building Better Global Economic BRICs, Global Economics Paper No: 66, Goldman Sachs.

⁵ Boesler, Matthew (13 November 2013). "The Economist Who Invented The BRICs Just Invented A Whole New Group of Countries: The MINTs", Business Insider

Some observers see the interconnections and overlaps of these forces in the following way:

Figure 1: Trends Driving the Future of UK Jobs and Skills⁶



Technological Change and the Future of Work

Technologists and other commentators now tell us that we are standing at the beginning of a new industrial revolution – ‘a second machine age’⁷. It is clear that technology is disrupting and transforming much more than just one part of the economy. It is changing our lives, our work, our society and our politics. It is fundamentally altering the world in which we live, establishing new connections, new systems, new lifestyles and new communities. Its impact is all around us, all of the time, from public transport to agriculture and from household goods to financial services. Scientists have recently landed a robot on a comet over 600 million miles away, but more mundanely, robots are now stacking shelves, driving cars and cleaning floors. Big data is also transforming healthcare and medicine as well as retail, manufacturing and the arts.

‘We’re living in a time of astonishing progress with digital technologies – those that have computer hardware, software and networks at their core. These technologies are not brand new; businesses have been buying computers for more than half a century and Time Magazine declared the personal computer its ‘Machine of the Year’ in 1982. But just as it took generations to improve the steam engine to the point that it could power the Industrial Revolution, it’s also taken time to refine our digital engines.’⁸

⁶ UKCES, Working Futures 2014-2024, (2012)

⁷ Brynjolfsson, E., and McAfee J, ‘The Second Machine Age: Progress and Prosperity in a Time of Brilliant Technologies’ (2014)

⁸ ibid

However, the social and economic opportunities offered by such rapid technological advances are matched by their potential to disrupt existing paradigms:

*'The Internet is among the few things humans have built that they don't truly understand. What began as a means of electronic information transmission – room sized computer to room sized computer – has transformed into an omnipresent and endlessly multifaceted outlet for human energy and expression. It is at once intangible and in a constant state of mutation, growing larger and more complex with each passing second. It is a source for tremendous good and potentially dreadful evil, and we're only just beginning to witness its impact on the world stage.'*⁹

So it is not the beginning of computerization or of the science of information or communications, but rather the intensifying and refining of it that is changing how we live, work and communicate. This is a manifestation of Moore's Law – that, over the history of computing hardware, the number of transistors in a dense integrated circuit doubles approximately every two years – itself coined as long ago as 1965.¹⁰

In evidence to the House of Lords Select Committee in the UK¹¹, the Skills Minister, Nick Boles, described the 'everythingness' of digital change. Such pervasiveness brings both opportunities and risks. Over the next two decades it is estimated that some 35%-47% of jobs in the UK and US are at some risk of being automated.¹² Today, over 90% of jobs already need at least a basic level of digital literacy. Maggie Philbin's recent review of the UK's digital economy estimated that 46% of the workforce must become 'digital workers', a further 37% 'digital citizens' and at least 10% 'digital makers'.¹³

There are, of course, both challenges and opportunities during such fundamental and wide-ranging technological change. Many headlines – including those coming from the publication of the House of Lords Select Committee report – have focused on the threat to existing occupations and businesses. This assessment has led to many 'march of the robots' headlines and has intensified calls on government to support new approaches to both the firms deploying such technologies as well as to the individuals most at risk of losing their jobs or falling out of the labour market. Both can be important features in the Greater Manchester and UK Industrial Strategy.

The occupations and organisations considered¹⁴ to be most under threat vary from traditionally low to high skill sectors with particular challenges in areas such as sales, administration, transport, and manufacturing. Healthcare, management and education are some of the sectors considered to be at lowest risk of computerisation.

But public policy can do more than just limit the damage or disruption caused by such changes. There are also likely to be more positive opportunities if the workforce can be prepared and trained in digital capabilities. This is the opportunity and the

⁹ Schmidt E., and Cohen J, The New Digital Age: Reshaping the Future of People, Nations and Business, 2013

¹⁰ Moore, Gordon E. (1965). "Cramming more components onto integrated circuits" Electronics Magazine.

¹¹ Digital Skills Committee Report, House of Lords 'Make or Break?' 2015

¹² Frey, C. and Osborne A., The Future of Employment: How Susceptible are Jobs to Computerisation, Oxford Martin School, University of Oxford, September 2013

¹³ Philbin M, 'Digital Skills for Tomorrow's World' Report of UK Digital Skills Taskforce (2014)

¹⁴ Frey C, and Osborne A, op cit

challenge that stands before Greater Manchester as it considers how best to react to digital and technological change (and also to the interrelated trends that will affect its labour market and economy).

Whether 'citizens', 'workers' or 'makers', those that embrace change and acquire new levels of digital skill will find new opportunities. This is true at the firm as well as the individual level. 'Industry 4.0,' or the fourth industrial revolution, will create the conditions for 'Work 4.0' and for 'Worker 4.0' too. Paradigm change might apply across existing conceptualisations of each of these.

Clusters of rapidly growing 'tech' firms in Greater Manchester and London will need digital 'makers' in sectors such as artificial intelligence, robotics, gaming and cybersecurity. But there are skills needs that will spread much further than these hi-tech sectors. New general-purpose technologies are driving changes throughout the economy and society. Communication, connectivity and information are changing services, organisations, places and many aspects of our daily lives.

There are many who fear the impact of technology and digital change on both our economy and society. There are both 'dystopian' and 'utopian' visions for the economy and the labour market. At one end there is a digital apocalypse in a labour market still adjusting to the last set of shocks caused by deindustrialisation, globalisation and sectoral change. Even if the nature and pace of digital change is possibly overstated – perhaps like the 'Millennium Bug' – there's still the prospect of globalisation and 'Digital Taylorism'¹⁵ (or organisational co-invention as described by Brynjolfsson & McAfee) driving significant and far-reaching change. It is perhaps less a 'rise of the robots' and more the continuing trends of global supply chains, digitised knowledge and 'off shoring', where tasks and products are broken down and reassembled across borders. Either way, the impacts will be significant as Professor Dani Rodrik, explains¹⁶:

'A spectre is haunting the world economy – the spectre of job-killing technology. How this challenge is met will determine the fate of the world's market economies and democratic politics, in much the same way that Europe's response to the rise of the socialist movement during the late nineteenth and early twentieth centuries shaped the course of subsequent history.'

Rodrik sees the world economy 'on the cusp of another explosion in new technologies' with new applications in 'robotics, biotechnology, digital technologies and other areas are all around us and easy to see'. But he points out that 'the trouble is that the bulk of these new technologies are labour-saving' and that they 'entail the replacement of low and medium-skilled workers with machines operated by a much smaller number of highly skilled workers.'

Some observers are more sanguine about both the impact of technology and the likelihood that new jobs will be created because of these technologies. Diane Coyle implores us to worry about either the automation of jobs or the poor productivity of

¹⁵ Brown P, Lauder H and Ashton D, 'The Global Auction: The Broken Promises of Education, Jobs and Incomes' (2010)

¹⁶ The 'spectre of job killing technology' Dani Rodrik, Princeton <http://www.project-syndicate.org/commentary/labor-saving-technology-by-dani-rodrik-2015-01#6Pg1V5XSyTKy9os1.99>

largely Western economies suffering from what is described as 'secular stagnation', but not both¹⁷.

Coyle cites Martin Weale of the Bank of England's Monetary Policy Committee, who points out that 24 of the OECD economies have been experiencing unusually weak productivity growth since the financial crisis¹⁸. A recent OECD study also casts some doubt on the extent and pace of change¹⁹. By studying tasks rather than occupations, Arntz, Gregory and Zierahan find that the likely percentages of jobs at risk are much lower (though still significant).

*'These studies follow an occupation-based approach proposed by Frey and Osborne (2013), i.e. they assume that whole occupations rather than single job-tasks are automated by technology. As we argue, this might lead to an overestimation of job automatibility, as occupations labelled as high-risk occupations often still contain a substantial share of tasks that are hard to automate...Overall, we find that, on average across the 21 OECD countries, 9 % of jobs are automatable. The threat from technological advances thus seems much less pronounced compared to the occupation-based approach. We further find heterogeneities across OECD countries. For instance, while the share of automatable jobs is 6 % in Korea, the corresponding share is 12 % in Austria.'*²⁰

In the UK, the figure is just over 10% and therefore considerably lower than the 33% suggested by Frey and Osborne²¹). The authors conclude that the scope for change remains significant but considerably less dramatic:

'The main conclusion from our paper is that automation and digitalisation are unlikely to destroy large numbers of jobs. However low qualified workers are likely to bear the brunt of the adjustment costs as the automability of their jobs is higher compared to highly qualified workers. Therefore the likely challenge for the future lies in coping with rising inequality and ensuring sufficient (re-)training for low qualified workers.'

Furthermore, as the figure below indicates, the OECD study also points the anticipated impact rather more firmly towards those individuals and occupations at the lower end of the skills distribution. This would suggest that interventions at lower levels of the workforce ('horizontal' or 'general purpose') might be the most pressing.

¹⁷ 'Worry about robots or secular stagnation – not both' Diane Coyle, Financial Times <http://on.ft.com/1CrN0Vb>

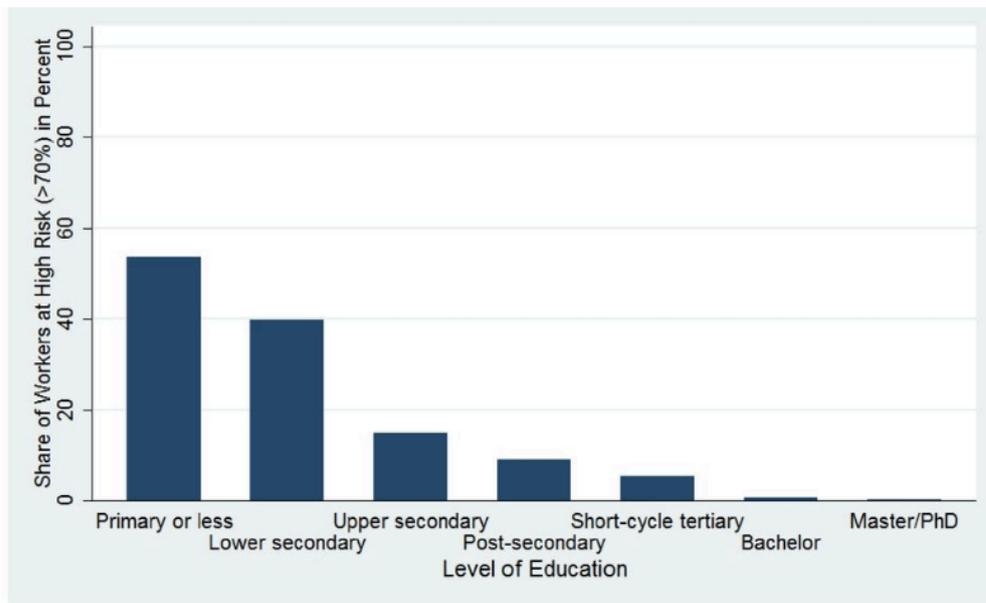
¹⁸ Martin Weale speech: <http://www.bankofengland.co.uk/publications/Pages/speeches/2014/785.aspx>

¹⁹ OECD Social, Employment and Migration Working Papers: *The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis* Arntz M, Gregory T, Zierahan U, May 2016

²⁰ OECD Social, Employment and Migration Working Papers: *The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis* Arntz M, Gregory T, Zierahan U, May 2016

²¹ OECD Social, Employment and Migration Working Papers: *The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis* Arntz M, Gregory T, Zierahan U, May 2016

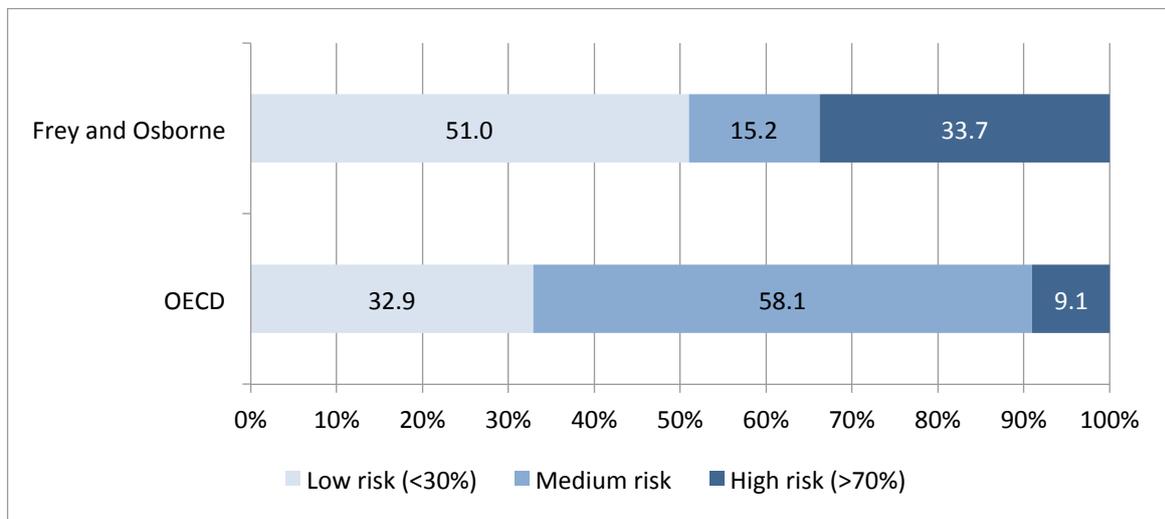
Figure 2: Share of Workers with High Automatability by Education²²



Source: Authors' calculation based on the Survey of Adult Skills (PIAAC) (2012)

The comparison of the Frey and Osborne analysis with the OECD risk scenarios do show a significantly different distribution.

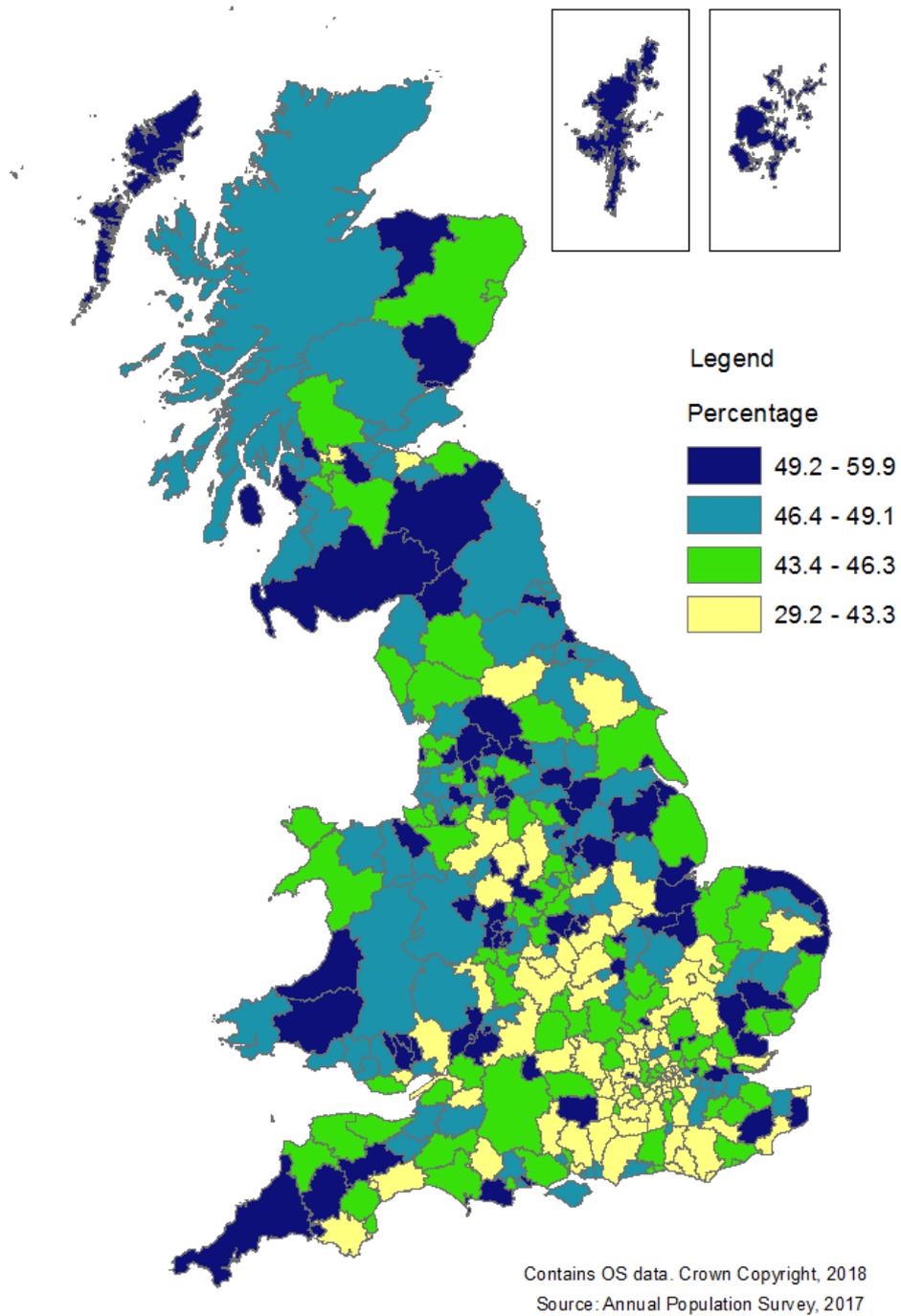
Figure 3: Different 'risk scenarios' from automation



There is then a wide range of possible trajectories regarding automation in the labour market. This extends to opportunities for new jobs and firm growth as well as the range of estimates of job losses. Nevertheless, even amongst the lower, less sensational estimates, the impact is likely to be significant. Taken together with the Office of National Statistics (ONS) assessments of fragility and opportunity (see below), it is likely that Greater Manchester will be significantly affected and in some places and sectors more than others.

²² OECD Social, Employment and Migration Working Papers: *The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis* Arntz M, Gregory T, Zierahan U, May 2016

Figure 4: the Probability of Automation in the UK 2017 (ONS)²³



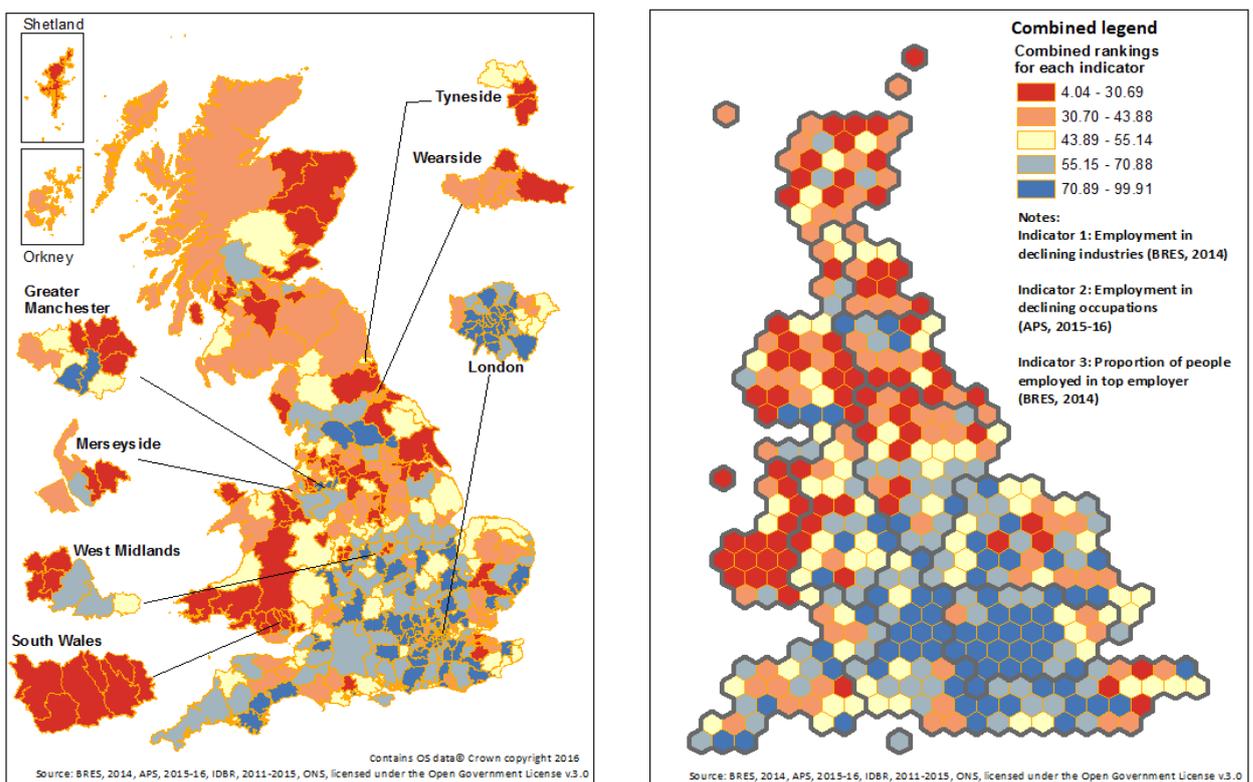
²³ White S, Lacey A and Ardanaz-Badia A 'The Probability of Automation in England 2011 and 2017': Office for National Statistics (2019): available at: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/theprobabilityofautomationinengland/2011and2017>

Fragility in UK and GM Labour Markets

The relative resilience (or fragility) of local authority areas is now being assessed by the ONS with the drawing together of a number of key indicators (see Figure 5 below). These include the numbers of people employed in declining industries as a proportion of total employment, the numbers in declining occupations as a proportion of total employment, and reliance on the largest employer. Then a range of additional indicators are brought together that build a picture of future prospects for labour markets. These include the proportion of the population in growing industries and occupations, net rates of business creation and high growth and the proportion of the population with higher level qualifications.

This series of charts show a number of important characteristics across Greater Manchester. Firstly, in respect of both fragility and opportunity that there are parts of Greater Manchester that are performing as well as anywhere in the UK. In terms of the lowest areas of labour market 'fragility' they include Manchester and Trafford. At the other end of the composite scale are Tameside, Oldham, Rochdale and Bury.

Figure 5: Composite Fragility by LA 2018 (ONS)

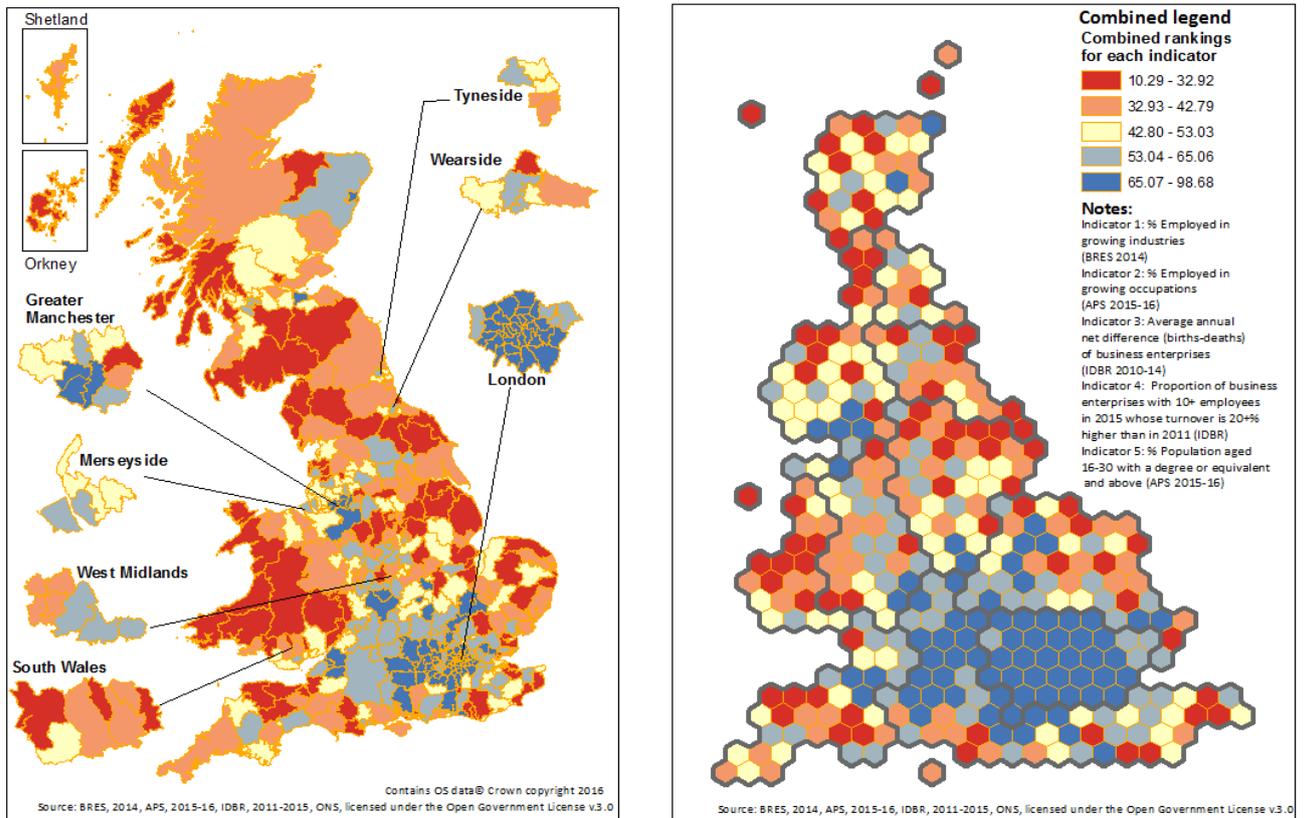


Within Greater Manchester, Manchester and Trafford have the lowest levels of fragility and amongst the most diverse employer bases followed by Stockport and Salford. Tameside, Rochdale and Bury have higher levels of fragility and greater single employer dominance, followed by Oldham, Bolton and Wigan.

The following charts from ONS assess likely conditions for future job growth (proportions in high growth industries and occupations, business creation, high growth and degree level qualifications) and ranks local authorities on their preparedness for growth.

Figure 6: Composite of conditions for future job growth (ONS)

An index of high risk indicators based on combined ranking across the 5 indicators
Great Britain by local authority district



This suggests that there must be some serious thinking in the coming years if the UK and Greater Manchester are to prepare effectively for either the challenges or opportunities offered by digital and technological change. But in the context of an Industrial Strategy, it suggests that Greater Manchester will need to draw on all of the resources and policy levers available to it. As the Industrial Strategy Commission (2017)²⁴ notes, this best done from a position of clear understanding of the issues and challenges at hand (see Box).

²⁴ The final report of the Industrial Strategy Commission (2017) available at <http://industrialstrategycommission.org.uk/2017/11/01/the-final-report-of-the-industrial-strategy-commission/>

Industrial Strategy and Understanding technological change

Technologically-driven change is how economies evolve and develop: To capture fully the benefits of technological change, industrial strategy must have at its heart a sophisticated understanding of the nature of change and possible/likely trajectories. It must also recognise the reality of the UK's position in an evolving global economy.

Technological change offers great potential for productivity gains: The ultimate driver of sustainable productivity growth is technological change, which can dramatically reduce costs and, create new products, services and processes. New technologies generate new ways of organising services and enable the development of entirely new kinds of firms and industries.

Technological change is not predestined or evenly distributed: Technology is not a single thing that proceeds evenly with a single rate of change, nor is it predestined to unfold in a particular way. Very fast progress in one area of technology may not compensate for slower technological change in other sectors. Seemingly important technologies may turn out not to bring big productivity benefits.

The state has an essential role in driving technological innovation: Technological change takes place in a global context, and limits the agency of national governments. It is the private sector – typically multinationals – that drives innovation. However, government is far from impotent in setting the pace and direction of technological change. The history of recent technology gives many examples of world-changing innovations whose development has depended strongly on state support, typically brought to market through considerable subsequent private sector research and development (R&D) and product development²⁵. The state's ability to co-ordinate activities, set technical standards, shoulder risks, enforce competition policy and create markets is key.

Focus on diffusion, as much as disruption: It is a risk to obsess about the new and novel.²⁶ Despite inevitable labour market disruptions, in twenty years many people will be doing jobs that are essentially the same as today. Infrastructures are long-lasting; using, maintaining and upgrading them may be less glamorous than massive disruptive change, but will continue to account for a large part of the economy. While new technology will affect the whole economy, policy must focus on accelerating the diffusion of both new and existing technologies.

A balanced, long-view approach is required: Balanced discussion of the economic potential of new technologies is difficult. Many emerging technologies can (a) take much longer than anticipated to make an impact, (b) not find the markets they anticipated, and (c) fail to make a material impact on the economy as a whole.

Industrial Strategy Commission (2017)

Polarising Economies and Growing Inequality?

Few foresaw the economic crisis of 2007-08. In October 2008, the former U.S. Federal Reserve Chairman Alan Greenspan admitted to not envisaging the 'once-in-a-century credit tsunami' that wreaked havoc throughout the world. Greenspan said the financial crisis had 'turned out to be much broader than anything I could have imagined' and warned the economic meltdown would drive millions of people out of work²⁷.

²⁵ Mazzucato, M. (2013) *The Entrepreneurial State: Debunking Private vs. Public Sector Myths*. London: Anthem Press; Janeway, W.H. (2012) *Doing Capitalism in the Innovation Economy: Markets, Speculation and the State*. Cambridge: Cambridge University Press

²⁶ Edgerton, D. (2008) *The Shock of The Old: Technology and Global History since 1900*. London: Profile Books

²⁷ 24th October, 2008 Alan Greenspan in Evidence to Congress House Oversight and Government Reform Committee

It shook the foundations of the economy as well as the established orthodoxies of economic thought. In 'The Global Auction', Brown, Lauder and Ashton explore the global knowledge economy with particular attention given to America's post-war political and economic consensus – that 'through investments in brainpower, it was thought that nations could deliver prosperity, justice, and social cohesion, companies could develop world-class employees, and individuals could secure a better future for themselves and their family'. They describe this 'faith in the endless potential to create middle class jobs for those who invested in education' as resembling a 'secular religion'²⁸.

So whilst there remains acceptance and support for the knowledge economy narrative and for education policy, there are also significant doubts and questions. This applies to both education as a policy response, but also to a global, free market orthodoxy in our economics. The narrative of skills as an antidote to global economic change has worked well; however, in the present and the future, this may not be as straightforward.

To some extent, a knowledge economy has emerged as politicians, policymakers and commentators of the 1990s foresaw. But it hasn't yet become a reality for everyone. The real trend, alongside the undisputed growth in new technologies and new knowledge occupations, has been polarisation in jobs and labour markets.

Many skilled occupations have disappeared. This is equally true in many cities and countries over a relatively short period of time. Here are the ingredients for the famous 'hour glass effect' in occupational change – growth at the top and bottom of the occupational spectrum, but a shrinking of the middle. The hour glass is shaped by the twin forces of technology and globalisation altering the type and nature of occupations. One possible effect of such a pattern is that it is harder to 'move up' because there are fewer staging posts in a career; the effect may be rising inequality. Indeed, some commentators such as Thomas Piketty, Danny Dorling and Richard Wilkinson and Kate Pickett see high levels of inequality constraining future economic growth and threatening the fundamental bonds of society.

*'A market economy based on private property, if left to itself, contains powerful forces of convergence, associated in particular with the diffusion of knowledge and skill; but it also contains powerful forces of divergence, which are potentially threatening to democratic societies and to the values of social justice on which they are based.'*²⁹

Technological change – accelerating and multiplying – sits alongside the globalisation of knowledge, supply chains and consumer markets as perhaps the most significant shapers of urban labour markets in Greater Manchester as well as many other cities across the developed world. Manchester can claim to have been at the forefront of these changes as the first industrial city or the 'shock city' of the industrial revolution. In turn, this helped create libertarian free trade values alongside a number of social and political movements.

²⁸ Brown, P., Lauder, H. and Ashton, D., *The Global Auction: The Broken Promises of Jobs, Income and Skills*, Oxford University Press, 2011, p15

²⁹ Piketty, T., *Capital in the 21st Century*, 2014 p571

But since the relative decline of industry and manufacturing in the city region from the late 19th century onwards, Greater Manchester has been less the driver of free trade and globalisation and more the recipient of the social and economic changes that it helped to unleash on the rest of the world.

This has major implications for skills policy as well as for industrial strategy, economic growth and employment. Greater Manchester will need a skills system that is able to exploit growth and productivity gains in key knowledge sectors at the same time as ensuring that low skilled residents and communities are able to both reach national skill levels and access and retain jobs available across the city region. Furthermore, the skills system will need to support firm level strategies and occupational pathways that enable more people (and businesses) to progress from the bottom half of the 'hour glass' to the top.

What does this mean for skills policy in Greater Manchester?

The first thing to point out is that there has been significant growth and investment bringing high skilled jobs, new firms and growing knowledge rich sectors and occupations. This looks set to continue and agglomeration factors, identified in the Manchester Independent Economic Review³⁰ make Greater Manchester well placed to provide a focal point for continued growth in the North. But it is also important to acknowledge the low base from which Greater Manchester starts (and that still persists amongst certain groups, communities and sectors).

Strong sector performance is driving growth and it is anticipated that this trend will continue. The Greater Manchester Forecasting Model³¹ indicates that high growth sectors in recent years have included health, business, financial and professional services sectors, as well as retail. In the future, the model suggests the main sectors in terms of output growth, as measured by Gross Value Added (GVA) will be Business, Financial, and Professional Services, Wholesale and Retail, Creative and Digital Industries and Manufacturing sectors. The main sectors in terms of employment growth will be Business, Financial and Professional services, Hospitality, Tourism, Sport, Wholesale and Retail and Construction.

The shift to a more service-based economy in Greater Manchester has intensified in recent years. However, manufacturing continues to be significant, driving GVA growth through greater automation and productivity, although the sector is shedding lower skilled jobs and less productive firms (as has been happening over many years) as the structure and activity of firms changes and evolves. Manufacturing, though declining in numbers of jobs, remains polarised between the high and low ends. The high end has automated and gone high tech. The low end has reduced in size and is likely to continue to do so.

Some GM sectors look more vulnerable to employment decline in the future than others, particularly back office functions in law, banking, finance and accountancy,

³⁰ Manchester Independent Economic Review, 2009, <http://manchester-review.co.uk/>

³¹ Greater Manchester Forecasting Model, produced by Oxford Economics, <https://www.greatermanchester-ca.gov.uk>

as well as public administration. Other sectors and occupations look less threatened in future scenarios including health – from low-end care to high-end health and life sciences given the human interaction involved and the specialist knowledge required particularly at the higher end. Creative and digital also looks to offer both job and GVA growth, although it should be noted that both are likely to offer job growth at both the high and lower ends, creating new opportunities but ultimately within a similarly ‘hour glass’ shaped labour market.

The Spatial Challenge

A major issue for Greater Manchester is likely to be how these polarising trends and issues play out spatially. The job and sector growth in recent years has not been evenly distributed across the city region. Like the rest of the country, the growth in both jobs and productivity (as measured through GVA) shows a concentration of economic activity in the regional centre³². The extent to which technological change and further globalisation will continue to shape the labour market in Greater Manchester and as such the spatial trends has yet to be seen. Those with low skills, in particular, may be less able to take advantage of new opportunities if they fall out of work or they become even more detached from the labour market. Nonetheless, there are possibilities for policymakers to mitigate and to exploit these shifts. The low skilled can be supported to develop new skills, training can be focused on those jobs and sectors that exist, and investment and higher skills can be focused on those sectors, firms and occupations that are most likely to exploit new global and technological capabilities.

³² The Regional Centre includes Manchester City Centre, inner Salford and Trafford Wharfside.

Conclusion

Experience suggests it is worth being cautious with predictions about the future of work as past prophecies may have under-played the possibility of unforeseen events. Nevertheless, some powerful research contributions suggest change in labour markets is likely to be profound, as digital technology, artificial intelligence and machine learning reshape the work that people do over the decades of the near future.

The consensus view appears to be that although technology will transform almost all sectors of economic activity to greater or lesser extents, the effects will depend substantially on skill. Individuals and places that have the lowest skills appear most at risk of radical technological shocks, which may involve the replacement of large numbers of jobs with automation. As Greater Manchester has relatively low skill levels in general (although this obviously varies substantially by district), and suffers from the related problem of relatively weak productivity, it follows that it is among the city regions that are more 'fragile', to use the language of the Office for National Statistics.

Techno-economic change is likely to be highly specific to individual sectors and types of work. But in general, the implications for skills are likely to include two fundamental priorities. First, there is an urgent need to upskill, and in particular to upskill with an emphasis on digital adjustment, so as to be in the best possible position to adapt. Second, there is a requirement that people affected by digital change in their work are able to retrain in order to take jobs in growth sectors – at whatever stage of the life-course retraining is needed.

This report has noted that in several ways current trends are moving in the wrong direction. Increasingly, people are doing their learning early in life, while participation in adult learning, and flexible learning options are both in decline. The kinds of higher-level technical education that enable people to take advantage of growing employment opportunities, meanwhile, are underfunded, and as a result undersupplied. More fundamentally, basic levels of skills in the overall population are relatively low in the UK in comparison with other OECD nations. This point is amplified in certain areas, given the unbalanced and regionally unequal distribution of skills and opportunities.

These points are hardly new. They have dogged British skills policy for generations. But they are likely to become even more urgent in the light of a digitally-driven transformation of work. The UK, and Greater Manchester within it, is not well-prepared for what, on the best advice available, is likely to affect the labour market in the decades hence.

As the Industrial Strategy Green Paper acknowledges, skills policy should be more flexible and adaptable according to the needs of different places. As in most issues outlined in this report, the UK is 'unbalanced' in both its stock and flow of skills. Most towns, cities and regions outside London and the South East have lower skills levels, volumes and, more often than not, weaker and less well-funded institutions. The gaps within regions are sometimes as large as between most large cities and London. 'One size fits all' approaches in systems, resources or objectives are

unlikely to even things up. A GM approach may maximise efficiency and spill-overs, but more resources will still be necessary.

There is a need to consider what skills implications arise from other investments and objectives in wider industrial policy initiatives – including local investments such as in health and life sciences, advanced materials and in the digital and creative sectors, as well as developments such as HS2.

As the Industrial Strategy acknowledges, new interventions – including new institutional solutions – are likely to be required in areas where skill levels are low and where new ideas are required in addition to the qualification and institutional reforms ('T' Levels and Institutes of Technology) proposed at a national level.

There is a strong case for Greater Manchester further to develop these ambitions and to work with national organisations as well as local institutions in order to do so.

