

NEW ECONOMY 2020 AND BEYOND

THE UK'S FUTURE: THE SMARTEST NATION ON EARTH?





CONTENTS

	Page
Chief Executive's Preface	1
List of Illustrations	2
Background	3
Introduction	4
Article 50: Negotiation Priorities	8
Towards a New Economic Vision	18
Radical Devolution of Power and Opportunity	30
Education: The Best System for the Smartest People	37
Digital for Outcomes, Consumers and Citizens	48
Annex A: Acknowledgements	57
Annex B: Summary of Main Conclusions and Recommendations	60

CHIEF EXECUTIVE'S PREFACE

On the morning of 24 June last year, as the final votes were being counted in the EU referendum, our thoughts turned to: 'What's next'?

Neither side in the campaign – for and against exit from the EU – had lifted the sights or the spirits of the British people. We were a divided country – by geography, education, generation and politics. We were about to embark on the most complex set of negotiations in our history.

Following a number of conversations with our leading member firms, and deliberations at an emergency meeting of the MCA's Board, it became clear that the management consulting industry could and wanted to make a significant contribution ourselves.

Our member firms are advising government departments and their private sector clients on their post-Brexit options. In many cases, it is the counsel and support of consulting firms that is ensuring that businesses continue to invest and, therefore, to grow. The MCA is also directly engaged with ministers and officials as they formulate and inform their strategies for our negotiations under Article 50.

But it was quickly clear to us as well that yet bigger issues were at stake – and that further action was required.

The referendum decision – however we voted – has revealed the urgent need for the UK to agree, communicate and implement a new, ambitious and transformative economic and industrial strategy, with a clear set of objectives. And to do so in a way that can bring the country together, across the UK's nations and regions.

As this MCA report makes clear, many of the most significant issues facing us were there pre-Brexit, and many of the opportunities that people now talk about were open to us within the EU. But departure from the EU brings them into sharper focus. This is the moment when we can take the actions we need. We need to know what we are good at and where we want to improve. We must agree where we need to invest. We need a strong national story for our economy and society.

So it was doubly encouraging that the new Prime Minister seemed to agree with our view when she created a new department of Business, Energy and Industrial Strategy, and when she launched the Government's own Green Paper in January. This MCA report is, in part, our response to the Government's approach. And it also signals the start of a major initiative by the UK consulting industry to inform and influence the development of policy.

I want to congratulate Paul Connolly, who cajoled our member firms so that they provided their ideas and analysis, added his own, and then authored this Report. And I also want to thank Luke Cummings and other members of the MCA team who supported this project.

Our conclusion is simple to say but difficult to achieve: we want Britain to become the Smartest Nation on Earth. That lodestone should now guide our policies and action on education, digital, devolution and the economy. It is time to be bold.

Alan Leaman
Chief Executive, MCA





LIST OF ILLUSTRATIONS

		Page
Figure 1	For which of the following is the UK's access to the Single Market significant? (MCA Quarterly Brexit Survey, October 2016)	10
Figure 2	MCA Northern Powerhouse Event, September 2016 (polling)	35
Figure 3	Expenditure on R&D (OECD, 2015)	42
Figure 4	Average weekly household spending, £ per week (ONS, 2017)	43
Figure 5	Government expenditure on education (UNESCO, 2014)	44
Figure 6	Government expenditure per student, PPP\$ (UNESCO, 2014)	44



BACKGROUND

Brexit is a seismic moment. It presents extraordinary challenges. It offers significant opportunities. But it is also a chance to reflect, think, debate and chart a new course for the UK and the economy. This report, *The New Economy 2020 and Beyond*, represents the management consulting industry's first contribution to that process of reflection, argument and renewal.

The chapters in this report constitute initial discussion of a range of topics, including transformation of the economy, devolution, education and digital. We also comment on the nature of the Brexit negotiations themselves. In doing so, the report constitutes the Management Consultancies Association's formal response to the Industrial Strategy Green Paper, while also commenting on the Brexit White Paper, the Government Transformation Strategy and the recent Digital Strategy.

In effect, though, this is management consulting's own Green Paper. Each of the chapter headings here will initiate a range of new work streams for the Association. We will use these to continue our constructive engagement with Government on the implications of Brexit and to furnish policymakers, as well as partner interests, clients and our own member firms, with ideas and tools to help make Britain's post-Brexit future a success.



INTRODUCTION

Policymakers, business leaders, citizens, consumer groups, indeed all of us have a duty to reflect periodically on the type of country we wish to live in. Even before Brexit, the rapidly moving dynamics of the Digital economy, the speed of commercial modernisation, the intensifying dynamics of globalisation, highly fluid labour markets, and the emergence of new industrial paradigms were enough to warrant consideration of what sort of economy and society we want to inhabit.

Brexit has, however, brought these issues into sharper focus. The downside of the many freedoms advanced capitalism affords are concomitants of that very freedom: hazard, winners and losers, control versus powerlessness, extreme unevenness in the distribution of wealth. Rarely have capitalism's winners been at once so conspicuous and so remote. Rarely have the losers, even those in advanced economies, felt such acute disconnect between the prevailing economic narrative and their own personal circumstances. Winners and losers inhabit different spheres, from Davos to the 'Rust Belt', and are mutually wary and mistrustful, even hostile. Sometimes the contemporary economic model's operations seem impersonal, almost autonomous, even for the relatively prosperous. Marx's concept of *Entfremdung* or alienation, and his belief in the productive forces of industry, have been discredited by mainstream economists.¹ Yet those ideas were born of the powerlessness first generation factory workers felt, as the intense mechanisation of their working environment unleashed changes they could scarcely comprehend. One does not have to accept his analysis unqualified to find it nevertheless sobering that the critics of the globalised economic model are reviving Marx's thinking. Seemingly instantaneous flows of capital, relocation of productive output away from traditional concentrations to new low cost or highly skilled centres of excellence, the spectacular rise of digital with its creation of new orders of value and equally relentless destruction of existing business models, the potential of AI and automation:

all this can seem, even to the educated and engaged observer, like a future that is choosing itself rather than one humanity is consciously selecting.

For economic actors and institutions, such as the MCA, who regard industrial modernisation as an almost inalienable good, these underlying implications of the Brexit vote are sobering. Many people in the UK, especially outside the South East and beyond the larger conurbations, plainly regard the economy's recent return to growth as something that is nothing to do with them. They feel few of its benefits. They do not trust business experts (as innumerable surveys confirm) and have voted, they believe, to take back some control of their lives. Whatever our perspectives on this interpretation of economic realities and interests, the frustrations driving it are real and warrant response. There were many reasons for the Brexit vote. But one was clearly a revolt by the casualties of economic modernisation. It is imperative that in developing a vision for our economic future, we elaborate something inclusive and devolved, which works for the greatest possible number of our citizens. This will not only be the right thing to do. It will also help restore faith in business, a faith badly damaged in the aftermath of the Global Financial Crisis of 2008.

Brexit also presents more than just underlying messages and a pause for thought. There are material post-Brexit challenges any new economic model must address. As the Government's recent statements and the Brexit White Paper have confirmed, loss of membership of the EU will mean the loss of certain benefits. We will no longer be members of the Customs Union, the Single Market or the pan-EU pool of labour. There is potential to negotiate new relationships with each of these entities. These arrangements are however unlikely to have the same force as full involvement. Make no mistake, were the referendum to be rerun tomorrow, MCA members would almost certainly recommend what they did last time – a

¹For the former, see Marx, Karl. 'Comment on James Mill', *Economic and Philosophical Manuscripts of 1844*; for the latter see *The German Ideology* (1845), and *Capital* (1967-83).

vote to remain. Nevertheless, they do not believe this will happen any time soon. Our member firms are pragmatists – and also optimists. They have continued to advise business to invest and innovate, and not to regard Brexit as a cautionary ‘data point’ warranting delay. They are keen to help solve business’s immediate problems flowing from Brexit. Accordingly, they want Government to articulate a prioritised approach to the dimensions of that challenge. Given that it will be impossible to secure precisely the same benefits from non-membership as from membership, what should be our priorities? How can new arrangements beyond the EU match and improve on the advantages of membership? The Government’s comparative recent clarity on these matters, while welcome, is only a step in the right direction. More detail is now needed on the aims of reengagement, together with the trading goals and skills-flow arrangements beyond the EU the Government aims to foster.

Some of these matters are immediate and concrete. The UK economy is internationalised. UK digital and digitally dependent businesses operate in global contexts. Much of the regulation they are subject to is European, both for the purposes of trading with the EU and to demonstrate competence (for example in the handling of data) to the wider world.² How should we continue to participate in such regulatory schemes while also using the freedom of being outside the EU to enhance the regulatory landscape? How can we reduce burdens on new digital entrepreneurs and help ‘scale’ this vital industry?

Then there are the global value chains in which UK businesses are involved. In many ways, the UK is the world’s most successful ‘value-add’ economy. There is comparatively little we make ourselves *wholly* that the rest of the world wants to buy. But the services, components of larger products and business enhancements we sell are exports. They also support the growth of overseas companies. These pan-national value chains are crucial to UK success.

How will the EU dimension of these value chains be protected? In the Brexit White Paper, the Government has belatedly

(and imperfectly) acknowledged these multilateral trading dynamics and their importance for Britain. But their fragility needs to be recognised and practical proposals for protecting them proffered. Moreover, given that we may lose trade with the EU and must aim to compensate for this through trade outside it, how will we establish similar networks with what will often be culturally more remote economic actors? It would of course be good to establish more wholly British brand leaders. But assuming that the greater part of our success comes from our global interconnectedness, and continues to do so, at least in the medium term, how will we ensure that our service offers are relevant to new target markets?

This is plainly linked to the skills challenge represented by departure from the EU. EU membership was interpreted as indicative of Britain’s global character. Participating in its freedom of movement arrangements was seen as concomitant with our openness and desire to win the global war for talent. It ensured we attracted many great people and harnessed their insights. It can be easily argued that access to the talents the UK needs is not synonymous with EU movement of labour (though such a significant percentage of the developed world is not to be sniffed at and most skills, if not the actually required quanta of them in practical migration terms, can be found within it). Nevertheless the speed of access to skills afforded by that pool of labour must be replicated in any future migration arrangements.

Of course many people voted to leave the EU to protest against immigration. But the UK’s destiny will not be well served by pulling up the human drawbridge. So access to global skills will need to be complemented by ensuring that we get the best out of the domestic labour force. That may mean a step change in the distribution not only of economic opportunity, but also in educational investment.

That extension of educational and economic opportunity is connected to some underlying questions the UK needs to face, irrespective of Brexit. By far the most striking is our productivity crisis. UK productivity performance is poor. While some argue that this may be in part a function of poor and outmoded

²This is at least true in matters of data. As we shall see, however, a significant proportion of the argument about EU regulation is notional.

productivity measures, which understate digital value in particular, nevertheless the sluggishness of UK productive output is potentially injurious to long-term economic wellbeing. But some proposed remedies, such as digitisation and automation of certain economic functions, including the further development of AI, are not without problems. They cut to the heart of the matter: what sort of economic destiny do we want?

Realising this, the Government's decision to create a Department for Business, Energy and **Industrial Strategy** was wise. The Department will face the post-Brexit challenge of articulating what sort of economy we want. The Government's Industrial Strategy Green Paper is welcome. It starts to marshal some of the materials needed to promote a successful economic destiny for the UK. But the MCA believes that this good start needs to herald a far greater boldness. What is needed is a compelling economic *vision*. Without this, the Industrial Strategy's building blocks will look like a set of welcome and improving initiatives, rather than the mechanisms for economic transformation and renewal.

Any serious economic vision will need to make choices and take positions. Will the UK be a highly digitised centre of excellence in innovation? Will we aspire to be the greatest such centre? Will we be a globally open, value-creating, technologically advanced, highly educated nation – and thus a high wage economy? Will we exploit the flexibilities of the gig economy and the cravings of millennials for diversity and freedom to challenge some of the more hide-bound models of corporate life, and unleash a nation of entrepreneurs? Will we fuse the analytic abilities of the City of London with the creativity of our entertainment and arts industries, and using digital, create a generation of business-savvy creatives and visually literate business analysts? What role will manufactures, given a temporary shot in the arm by the low pound, play in our future? Will we become a low sterling economy, aggressively exporting manufactures and other sterling denominated products? If so, what will these manufactures be, and how will new techniques such as 3D printing transform the industry? Will we indeed become digital by default, automating a whole host

of industries that have lagged behind retail and music in their digitisation? In doing so, how should we avoid digital's dead-ends, recognising that what matters is outcomes for consumers and businesses? Do we have the right mix of deep domain digital experts and intelligent, informed, generalist commissioners of digital? Will we become a centre for green enterprises, and connected, electric and autonomous vehicles? Will we harness the consumer and citizen, the ultimate drivers of business and public service innovation, by empowering them with digital and with their data? Will we support and extend our professional and business services reach, cheering on our world class armies of consultants, architects, designers, advertisers, marketing specialists, lawyers and accountants, helping modernise their industries and ensuring they remain a great British export? Will we remain very dependent on our financial services sector, a vital industry, but one where our over-exposure cost us dear in 2008? What role will worldclass infrastructure play in supporting our growth, both the infrastructure we build here and the value we input to physical assets across the globe? And how will we meet the energy needs associated with our vision of the future?

The Green Paper has begun to address some of these matters. Now it is up to policymakers to cohere its list of good and improving intentions into a striking and challenging economic vision.

A vision is especially important in times of fiscal scarcity. Throughout this report we refer to the 'incentives' Government can provide to various sectors, innovations and business models. Some of those incentives will be tangible: tax breaks, supportive investment and other Government activity. However, since the MCA has no interest in adding unduly to the UK's budget deficit, these new commitments should, as far as possible, be made at the expense of other activities, with the expenditures connected to them discontinued. Further, Government should not underestimate the degree to which creating an economic vision can have a beneficial impact as a signal, informing and shaping the economic 'narrative', encouraging non-government actors to direct their efforts towards priority areas.

This report is the opening salvo of our work to support BEIS in developing that vision. It will be of interest to policymakers, business organisations and other commentators in their response to the post-Brexit economic questions and challenges. It constitutes our formal response to the Industrial Strategy Green Paper. We will follow it with a series of additional research programmes and investigations. In it, we set out a preliminary account of challenges for the economy after Brexit, the new realities Britain will face and the opportunities we must grasp. Many people outside the UK see our departure from the European Union as one of the most economically suicidal acts ever committed by a nation state. They may prove right. To prove them wrong we must strive to be the most fit-for-purpose modern economy. To do that, our challenge is to become the Smartest Nation on Earth.



ARTICLE 50: NEGOTIATION PRIORITIES

Negotiations conducted in order to support future economic goals

The first area in which the UK can show its 'smartness' is in the conduct of the Article 50 negotiations. Preparations for this, at least until the publication of the White Paper, have appeared anything but smart. However, there is still an opportunity to introduce greater clarity and sensitivity into these matters. If Britain sets out its stall carefully it can engender a 'win-win', multilateralist approach to the negotiations, in contrast to the misplaced 'them and us' language that has characterised negotiations to date. To do so will require certain key negotiating principles to be in place. The first, which we discuss further at the end of this chapter, is that the negotiations should be conducted with a clear focus on what will be required to pursue a successful Industrial Strategy. In a smart approach, the Strategy and the negotiations will be interdependent.

Protection for the right sectors: including our world-class consulting industry

Part of being smart will consist in pursuing a second negotiating principle: protecting the right economic sectors. Although our first principle, correctly, accents the need to lay good foundations for the future, the economic sectors protected should not just be ones isolated for especial future attention by the Industrial Strategy, or examined in later chapters of this report. Many existing successes will feature in our economic destiny. Some may be vulnerable in the Brexit aftermath. The Industrial Strategy, for example, refers to the successes of professional and business services, including management consulting. It is then largely silent on how they are to be protected in the future.³ (This is especially short-sighted given the importance of many of these sorts of enterprise to the 'value-add' economy – see below.) The MCA is obviously keen to see management consulting prominent in Government thinking throughout the challenges ahead. Consulting should be a

top priority industry in the UK Industrial Strategy. It should be accorded special standing in the Brexit negotiations and in UK efforts to deepen trading engagement with non-EU states. The UK is a centre of excellence in consulting practice. The industry generates around £10bn domestically, is an important export, and employs over 100 000 people. It is at the cutting edge of innovation, especially in digital. But aside from being a major employer and export, it is the value generated by consulting that really matters to the UK economy. Consulting grows by helping others grow. Since even before the UK economy returned to a pattern of consistent growth in the first quarter of 2013, consultants have been supporting businesses in their development of new growth propositions and ensuring that enterprises are 'match fit' for growth in the context of digital disruption. Firms see an average 6 to 1 return on their investment in consulting, in terms of the net contribution to their bottom line.

Consulting thus enhances all sectors of the economy. That ability to improve business performance and to do so often by working across multinational and multiagency projects – a defining characteristic of modern capitalism – is critical to its success as a major UK export. Consulting is vital to complex projects such as infrastructure and energy, in which it again has globally renowned expertise. Moreover, the frequently symbiotic interdependence of high quality consulting with the fortunes of financial services – a critical UK industry but one which, as the Financial Crisis of 2008 and beyond demonstrated, is in frequent need of attention and reform – is almost reason enough for the sector to be accorded special standing in the negotiations. That international renown has an obvious concomitant of openness – to ideas, expertise and people. Such openness is essential. To remain leading edge, the industry must access insight from across the world. It must also have the human capacity to operate at all. The industry currently employs substantial numbers of

³See Industrial Strategy Green Paper, January 2017, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/586626/building-our-industrial-strategy-green-paper.pdf, p. 97, for example. As indicated, the text is complimentary about professional and business services. But the argument is something of a cul-de-sac. Little is said elsewhere about supporting those enterprises in the Brexit aftermath.

highly skilled migrant workers from the EU and beyond.⁴ Moreover it is able to deploy them quickly. In response to a request from a British client for insights into cutting edge German thinking on automotive, the UK arm of a global consultancy can deploy a team comprising UK and German expertise rapidly.

Yet it is not our intention to focus unduly in this section on the important but parochial interests of our sector. Rather, consulting's vantage and its support for all other economic sectors allows us to comment in an informed fashion on what Government priorities for the negotiations should be, to help ensure the UK is well placed to pursue an attractive post-Brexit Industrial Strategy, in good order and good standing.

Clarity about negotiation aims – especially around migrant labour issues

The third key negotiation principle is clarity. A lack of clarity about what the UK aims to get out of the negotiations in the first months following the referendum was widely noted. The Prime Minister has now revealed that the UK will leave the Single Market and the Customs Union. This has been confirmed by the Brexit White Paper. But the notion of a graduated, transitional approach introduces more uncertainty still. Clear timelines for these arrangements will be needed, as well as prioritisation. For which sectors will transitional arrangements be made – and why? What can be achieved quickly should be. But Government should not needlessly rush delicate matters, especially those in which there are wins for the UK *and* the 27, merely in the interests of appeasing a section of opinion. Furthermore, as we shall see, new uncertainties develop as a result of withdrawal from the Single Market, not least the need to strike a whole host of new bilateral deals with jurisdictions with which the EU previously negotiated on our behalf. What will the governing principles of such deals be? Moreover, as we shall discuss shortly, exiting the Single Market itself has profound implications for pan-European value chains in which UK firms participate. How will these be bolstered in the changed

conditions of Brexit?

Clarity is especially important when it comes to the issues of migrant labour that are at the heart of the negotiations. The primacy that the Government has chosen to place on control of borders has implications which need to be addressed at both a policy and rhetorical level. Clarity about why the UK Government sees border control as fundamental to Brexit is needed, as well as openness about the implications of this position. It is worth noting that Brexiteers themselves are divided on this matter. After the result, Eurosceptic Daniel Hannan said that he had not backed Brexit to reduce immigration but to regain decision-making sovereignty.⁵ Others, by contrast, campaigned as though immigration was the paramount (even sole) issue. David Davis has suggested recently that the achievement of restrictions on large volumes of EU migrants will take many years.⁶ By accenting border control, which need not be the most prominent feature of Brexit, the Government is choosing an interpretation of the result. It cannot pretend that interpretation is without consequences.

The Government has, of course, as Davis's recent interventions exemplify, tried to reassure industry by counterbalancing the border control message with generalities about being open for business and warm words about the current resident EU migrant population. But this rhetoric needs substantiation. If the Government does seek to control borders to achieve a net reduction in migration, it should first be clear that it will need to do rather more than exit the EU freedom of movement arrangements. It is inconceivable that some current EU migrants would not score highly in future quota systems designed to meet migrant labour needs in core industries. Moreover, as the Government's own figures show, non-EU migration to the UK is the largest share of net migration over the long term.⁷ So to secure 'control of our borders' and by implication, net migration reduction, the Government will need to tackle the total quantum of migrant labour.

⁴15% of respondents to our forthcoming *Consulting Excellence* survey self-identified as non-British, over 7.5% as non-British EU nationals.

⁵See for example *Financial Times*, 8 October 2016, <https://www.ft.com/content/5ed95f78-8c94-11e6-8cb7-e7ada1d123b1>

⁶See *The Guardian*, 22 February, 2017, <https://www.theguardian.com/politics/2017/feb/22/uk-not-about-to-shut-the-door-on-low-skilled-eu-migrants-says-david-davis>

⁷See Brexit White Paper, p. 26, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/589189/The_United_Kingdoms_exit_from_and_partnership_with_the_EU_Print.pdf

Yet one of the main reasons that both EU and non-EU migrant numbers are rising is obvious. Even within the EU pool of 500m people, containing almost every conceivable type of skilled worker, the UK cannot secure all of the human capacity it needs for digital, infrastructure and house-building. In its current incarnation, the UK economy faces acute long-term skills shortages relative to its needs and outputs. With a comparatively small number of non-active workers, even with a concerted effort on domestic skills, the UK will not meet its skills needs without either significant curtailment of its economic ambitions or comprehensive reinvention of how the economy works. Without this reinvention, and facing the absence of guaranteed quanta of labour, some industries will, in the short-term at least, cut their output.

For it cannot be stated enough: the UK's success is partly a function of our international character. The Government must not underestimate the degree to which that international character has hitherto been enshrined in our presence within the EU. It must also recognise how far withdrawal is perceived as undermining that avowed internationalism. Language about winning the global battle for talent is welcome, not least as it has much to counteract.

MCA firms are already trying to reassure their own overseas employees, both EU nationals and others. They report similar activity among clients. Their overseas networks suggest that the UK is already being seen as a less desirable place to work, live and invest. EU migrants recruited by the NHS, especially from Iberia in recent exercises, are already returning home. The current quantum of EU workers in the UK will include longstay and shortstay, habitual residents and attritional labour. All types are currently vital to industries as diverse as construction, farming and leisure. In the first, for example, the UK remains a long way short of being able to deliver the required 275 000 new homes per annum.⁸ While there are many reasons for this, skills and human capacity are among those frequently cited.

Evidence from MCA engagement with non-EU nationals, such as those at business schools, is shot through with negative mood music following the referendum. Feedback from MCA member firms and the findings of our first EU survey bear this out. The UK's presence in the Single Market has positively influenced our attractiveness to non-EU talent. 22% of respondents to the first MCA Quarterly Brexit Survey indicate that Single Market Presence has been a relevant consideration for their non-EU recruits (figure 1).⁹

Figure 1

For which of the following is the UK's access to the Single Market significant?



(Source: MCA Quarterly Brexit Survey, October 2016)

The Government needs to clarify soon to EU nationals resident in the UK how welcome and how fundamental to our success they are. David Davis's recent contributions to this debate provide some reassurance and a further overlay of confusion. Is his point that reduction in EU migration, which remains a policy goal, will take years and should thus be transitioned, with no indefinite guarantees provided to currently resident EU migrants? Or will some, the greater part of, or all current resident migrants be protected?¹⁰ Government should seek early reciprocal guarantees with the 27 on EU migrant status and that of UK citizens overseas. And if the EU departure is fundamental to reductions in net migration, the Government needs to say what contingent arrangements it will deploy to mitigate impacts on outputs, at least pending strategic reinvention of how we manage the economy. It must explain these and how it intends to implement them.

⁸See *Arcadis Talent Scale*, 2017, https://www.arcadis.com/media/4/B/9/%7B4B999107-2F44-42E2-94D7-43FDD0963378%7D9784_Talent%20Scale%20FINAL%20WEB_2102.pdf

⁹Many of the relevant findings are in our first Quarterly Brexit Survey, <https://www.mca.org.uk/reports/reports-data/consulting-excellence-after-brexite-quarterly-eu-survey-findings-1/> as well as throughout a range of other Brexit materials.

¹⁰David Davis appears to be suggesting that current residents will be protected. As yet, however, the Government has resisted attempts to make this an explicit, a priori 'non-negotiable'.

Will it relax immigration requirements for other parts of the globe, in the short term, to compensate for potential losses of EU migrants working in the NHS or agriculture?

Furthermore, the Government needs to clarify how it intends to replace a key feature of the access to labour that membership of the EU affords. Speed. In the fast-moving conditions of the globalised and digitised economy, enterprises need to flex their teams rapidly in response to new orders and emerging business priorities. Clients may ask professional services, as well as digital businesses, architects and engineers, for leading edge capabilities and insights that are not readily available in the UK. If such capabilities can no longer be marshalled, with almost no bureaucratic impediment, from within the EU, then the labour market will lose lubricity. The Government must explain how new arrangements, at least pending the looked-for reinvention of how we do things in the UK, will match the speed and ease of the status quo ante.

The Value-Add Economy: critical to UK success

A fourth principle of negotiation, linked to the first three, should be the recognition and protection of what currently gives the UK its economic strength. In some ways, we are the world's most successful intermediate or what we call throughout this report *value-add* economy. This is different from simply being embedded in and requiring secure supply chains, as the Industrial Strategy notes. Rather this is about the complex, international nature of value creation: the global networks in which UK firms operate. There is comparatively little we *wholly* produce ourselves, especially in terms of completed products, that the rest of the world wants to consume, certainly compared with China, Germany, Japan and the US. As the Government's own figures show, only around 11% of UK firms export at all. Rather, what we are able to do is provide service support, enhancements and components that contribute to economic success, often that of overseas partners. UK creative industries input into US films. Highly specialised UK SMEs contribute components for German cars. UK digital firms provide support for the development

of IoT solutions for overseas products. UK infrastructure experts help integrate major assets, energy systems, often of a pan-national character. The UK contributes to Eurofighter and Airbus. UK firms provide cyber solutions to global giants. Our financial services underpin the investment ambitions of firms and consumers across the world. And UK management consultants advise on, participate in and integrate supply and value chains across the globe.

The Brexit White Paper has started to acknowledge this issue.¹¹ However, its references are mostly to supply chains and the dependency of UK firms on them to produce what they want to produce. This is not quite the same as the UK's position in important but very fragile networks of mutual support. Of course, there is a case for more freestanding, wholly UK-produced goods and services. This report will touch on some areas in which this ambition might be achievable. Nevertheless, it is a deeply rooted and probably irreversible reality of modern capitalism that its production and value-creation methods are global. Firms and nations operate in complex ecosystems of supply and exchange, that are interdependent and collaborative.

These value chains are especially important for services, particularly those supporting or adding value to products and manufactures. They are economically important – the UK has a trade surplus in services with the EU – and vulnerable. The Brexit White Paper acknowledges that the Single Market for services is incomplete. MCA member firms have argued that its completion is inhibited by localised procurement rules, especially from public authorities, requiring a local presence and employment impact. This is often a legitimate requirement – and one very frequently deployed in UK procurements, especially by local authorities. But it is illegitimate where it is an informal protectionist measure, inhibiting the efficient delivery of services remotely or by the temporary placement of an overseas or mixed team on the ground. Yet it is difficult to see how the UK will be able to argue against this sort of practice from outside the EU. Indeed UK bidders for EU contracts are likely to face increased use of EU alternatives. Former EU Ambassador Sir Ivan Rogers has suggested in evidence to

¹¹Brexit White Paper, p. 39, paragraphs 8.8-8.9

the Commons Brexit Select Committee that there is a danger that the EU may allow the UK a minimalist trade deal on goods (where the UK is in deficit with the EU) but not in services.¹² That would be disastrous.

The political mood, reflected by the referendum outcome and the Trump US Presidential Election victory, is embracing protectionism. Business is resisting these autarkic tendencies, not least as it is simply impossible to see how they can be enacted without huge damage to global prosperity and security. There are certainly lessons to be learned from these political events, not least in the management of economic modernisation. But whereas thoughtful policy interventions can help extend economic modernisation's beneficial reach and counteract its negative impacts, protectionism is simply the opposite of modernisation. It is economic backwardness. As a nation, we have upheld and defended free trade for many years. We must continue to promote it, fearlessly, in all contexts.

The Government should accordingly make clear how it believes these pan-national value chains are compatible with Single Market absence. The danger is that large companies will nearshore towards those EU interests they supply, relocating out of the UK, while smaller UK firms lose out to EU competitors altogether.¹³

Positive language on these issues might also help slow any outward flows of investment or business relocations. As well as attending to the usual speculations here – the possible moves of law firms to Ireland, financial services to Germany, property services to Madrid, FinTech to Iberia – MCA member firms' clients (especially in financial services) do suggest that they are weighing up their options. This is unsurprising, given that 70% of respondents to the first MCA Brexit Quarterly Survey indicated that the standing of financial services would be adversely affected by Brexit.¹⁴ Press coverage in recent weeks of the deliberations of Goldman Sachs, Citibank

and others is not encouraging.¹⁵ How far their deliberations will be affected by confirmation of the UK's withdrawal from the Single Market remains to be seen. More generally, some MCA digital experts report the relocation of developers and some internationally mobile digital start-ups to the US and parts of the EU.

The potential effects of Brexit on public services are significant. Our health service is hugely dependent on overseas labour, including doctors, nurses, care workers and support staff from the EU. Over time, we could train our homegrown workforce better, but it is highly unlikely that, given the escalating health needs and demands of ageing population, such gains could ever compensate for a substantial reduction in migrant health workers.

Claire Kennedy, Managing Director, PPL

Negotiation as partnership

This need to protect our position within global value chains gives rise to a fifth negotiation principle. The Government must build on the improving language of the White Paper to remove the last vestiges of adversarialism from its negotiation approach. Properly conducted, these dialogues should not be characterised by the tiresome them and us, winners and losers, war, card games and boxing match language that has overlaid some negotiation commentary thus far. If we are embedded in EU supply and value chains, we have no interest in defeating the EU in the negotiations. They are partners. They need to understand that we can help them to grow and achieve their ambitions. We need to understand this too, and absorb its implications. We must articulate what is in it for them, demonstrating where a strong outcome for the UK is also enlightened self-interest for the EU. While the Brexit White Paper has started to recognise this, the tone of certain sections, such as paragraph 1.11, remains misplaced, founded on the notion that secrecy and protection

¹²See <https://www.theguardian.com/politics/blog/live/2017/feb/22/pmqs-may-corbyn-ivan-rogers--eu-ambassador-ivan-rogers-questions-by-commons-brexit-committee-politics-live?page=with:block-58ad7301e4b08ddc9a5e2762#block-58ad7301e4b08ddc9a5e2762>

¹³Indeed, those SMEs will suffer significantly if one potential, if slightly paradoxical, downside of leaving the EU comes to pass: more, not less red tape. Rather than complying with one set of EU regulations, incorporating not just the rules for EU trading but also the terms for engagement with the wider world, in the post-Brexit context British firms may have to comply with a range of standards associated with bilateral agreements in which the UK is not necessarily the senior partner. This may impact cost, further undermining UK SMEs' competitiveness.

¹⁴MCA Quarterly Brexit Survey

¹⁵See <https://www.ft.com/content/a2af5c60-de16-11e6-9d7c-be108f1c1dce> and <https://www.ft.com/content/fec01e76-e70e-11e6-893c-082c54a7f539>

of our 'hand' is the route to success.¹⁶ Even if this tactic were correct, Government's record to date on keeping a water-tight, leak-free operation, has been poor. But it is not the right approach in any case. Clarity with our partners on what is in our interests and theirs, counterpointed by openness with the British people, will serve the negotiators better. This will be especially important in managing the debates around the UK's ongoing EU liabilities, where recently the Commission has started to harden its language.¹⁷

Every negotiation is a careful mixture of preparation, planning, strategy, tactics, power management and above all personal verbal behaviour when face-to-face with the other party. Any negotiator who seeks to abuse their power makes a continued relationship after the negotiation is concluded much harder to achieve. They need to think hard about what the world looks like from the other person's perspective: what that person's best, worst and acceptable outcomes would be across every single one of the range of massively complex issues. If we are to secure a strong Brexit outcome, Britain will need a sophisticated negotiating team. That team must see its goal as achieving a strong outcome for the UK and the EU alike. If it sees its role as achieving win:lose outcomes, it will fail in its mission and everyone will end up worse off.

**David Freedman, Director of Sales,
Huthwaite International**

Equally, offensive triumphalism should be avoided. Whatever we may think of the EU, its members see it as a voluntary association of free peoples. We may be leaving this association, for a variety of reasons. But this is not a process of liberation.

This accent on collective interest will also help counter an early issue affecting the aftermath of the referendum result: anti-British sentiment in EU procurements. MCA members report mixed findings. While many procurements have been unaffected, some, notably in Germany, have been lost, and explicit reference made to the referendum outcome. Many EU organisations and individuals will consider

our departure from the EU as a betrayal of a valued partnership. Throughout the negotiations and beyond, we must adopt the posture of a nation that, while leaving the EU, remains a committed ally and European partner. This will also serve to engage EU interest. While some jurisdictions are actively hostile to what the British have done, others are indifferent. We must not assume that because Brexit is top of mind for us it is so for everyone. Some MCA members cite French and Belgian businesses and institutions for which, rightly or wrongly, Brexit is very low on their risk registers.

Pragmatism and imagination on regulations

As well as ensuring that the UK remains therefore embedded in a whole range of EU initiatives, supply and value chains, notions of mutual interest should underpin a sixth principle: a pragmatic approach to regulation. This issue should be critical to the disengagement/re-engagement narrative. Owing to some of the initial adversarialism following the referendum, the Government has taken too long to foreground the obvious point here. The UK is currently compliant with the regulatory and standards conditions for free trade based participation within the Single Market. It is not in the position of a new trading supplicant, such as Canada. Disengagement and realism about loss of certain rights and benefits could thus be paralleled with an accelerated, albeit restricted, reengagement process. Again, the receptivity of EU interlocutors to this approach will be a function of the accent placed on collective interest.

This would provide key pointers for assessing and paring back the current freight of business regulation. The main determinant for retaining any regulatory requirement would be obvious. The EU is currently the UK's largest market. After Brexit, exporters of goods and services will need to conform to its requirements to trade within it. Further, EU regulation is often the mechanism for entrenching global standards in UK law. Hence, the view in relation to the (genuinely EU) regulatory landscape going forward should not be a mindless hostility to 'red tape' but rather establishing whether conforming to the regulation actually helps UK businesses

¹⁶Brexit White Paper, p. 11

¹⁷Compare the contrasting House of Lords and Commission positions summarised here: <https://www.theguardian.com/politics/2017/mar/04/european-leaders-warn-uk-must-honour-financial-obligations>

sell goods and services.

That is not the same as simply retaining the existing framework. While we are currently compliant as members of the EU, we can assess that compliance in comparison with what is required of non-member free trade partners. This will facilitate a review of our approach to regulation more generally. It will remove, inherently, that most common excuse for regulatory burden – our membership of the EU. Mature consideration can follow of how far burdens on business derive in reality from the pre-1973 settlement. We can determine whether they stem from domestic challenges, like incorporating EU principles in English Common Law. We can expose the continuing default usage of regulation as a policy instrument by UK ministers, and identify where EU regulations are effectively repatriations of (often especially exacting) requirements Britain itself has fought to have enacted EU-wide.¹⁸

The twin assessments of a regulatory regime going forward would thus be a principled domestic examination against the Better Regulation/deregulation assumptions notionally governing the UK's regulatory approach since the Hampton Review, and an enlightened self-interest assessment of whether compliance with a regulatory regime – as well as the extent and nature of that compliance – promotes business with the EU. And beyond. Given that the EU is interconnected with a host of other partner economies and that many of its regulations, far from being autonomous, are enactments of global standards, or are being adopted as global standards, this approach will also support our trading aims elsewhere. But it should also help derive some reductions in the regulatory burden sufficient to satisfy moderate Eurosceptics and business interests alike. Rooting out those domestic causes of regulatory burden previously hidden under the blanket excuse of being 'the EU's fault' and applying the test of sufficient compliance as a partner versus full compliance as a participant, should derive some appreciable differences.

One immediate illustration of the self-

interest test is in the area of digital.

As we shall see, leaving the EU may afford opportunities to recast regulation and support systems for domestic digital players. However, digital's global character, especially in the Cloud era, is unavoidable. Pan-national standards for digital – and in particular the protection of data – are inevitable. The EU's General Data Protection Regulation (GDPR) is an example. The test for whether the UK should conform to this requirement is not whether we like it. Indeed, in the run-up to its enactment, knowledgeable MCA member firms argued against some of its finer points. Rather, the test should be whether non-conformity to its standards would damage the UK's trading interests and the ability of UK players to do business in Europe – and, given the ambitions of those who produced this regulation, beyond. Since non-conformity would be demonstrably hazardous to our trading interests, we should conform. While the White Paper hinted at, but was not explicit on, these matters, it is gratifying that the new Digital Strategy makes a firm commitment in this area.¹⁹ Nevertheless, the principle also applies reflexively, as it were, to domestically controlled regulation, especially relating to digital. If any domestic legislation were felt to be problematic for pan-global data partnerships – for instance the uniquely invasive Investigatory Powers Act 2016 – then it should be repealed.

Implications of the first principle: how a good Article 50 process can help set a new course

It is worth reflecting on our first principle, the interdependency of a constructive negotiation approach, and the successful delivery of a new Industrial Strategy. To some degree, business (especially big business) chooses to regard Brexit and the negotiations, together with other matters, such as the election of Donald Trump, as risks. They are an excuse to pause, to delay investments in new plant, innovations and products. This is understandable, especially given the lack of clarity from the

¹⁸Brexit's potential to refocus attention on the domestic regulatory culture is further explored in later chapters.

¹⁹Brexit White Paper, p. 45, and UK Digital Strategy <https://www.gov.uk/government/publications/uk-digital-strategy> Throughout this report, we draw attention to the positive nature of Digital Strategy, not least as a genuine strategy. The report is published on the DCMS website in a series of HTML links without page numbers. References throughout will be to the relevant HTML document, in this case <https://www.gov.uk/government/publications/uk-digital-strategy/7-data-unlocking-the-power-of-data-in-the-uk-economy-and-improving-public-confidence-in-its-use>

Government in the immediate aftermath of the referendum and the continuing need for increased clarification.

Brexit, like other major political events, is a major data point in the risk registers of large organisations. Some see such events as a good pretext to have a fundamental re-examination of what they do, to try new approaches, to innovate. Others freeze and put everything on hold. We're trying to encourage our clients to do the former, to maintain competitive advantage and potentially get ahead of the field.

Paul Winter, CEO, LiveStrategy

To some degree, conservatism in UK corporate culture is responsible here. Many of the UK's largest enterprises are longstanding, stratified and complex. In them, decision-making can be a slow process. Perceptions of risks can inject further delay. However, such delays, especially when they become protracted, are very dangerous. They can undermine pursuit of competitive advantage and cause stagnation. MCA member firms report client delays in initiating new strategic projects, often in critical areas such as financial services and even, despite its current export advantages, manufacturing.

We will examine the issue of the UK's business culture in the next chapter.

Government must help mitigate business perception of risk and recourse to delay. To do that, it must ensure that the furtherance of business interests is paramount in the negotiations. The implications of negotiating positions for business must be transparent. Their beneficial dynamics and interdependency with the future economic strategy should be explicit. The obvious corollary is that business leaders should be involved in the negotiations as closely as possible. That should include direct secondment of senior leaders from business and trade bodies into negotiating teams.

A diametrically opposite point about business behaviour also applies. Should uncertainty persist about the smooth ride from Article 50 negotiations to a satisfactory economic future, then some

businesses will simply take matters into their own hands. They may do so irrespective of the perspectives of the UK and its partners. No EU jurisdiction is as yet holding out a begging bowl to a particular UK sector such as financial services. Indeed many may well share the UK Government's view that breaking up the City of London would be injurious to the EU's interests. But if a number of global banks decide to move to Dublin or Frankfurt, neither the Government of Ireland nor Germany will turn them away. Business will create some of its own momentum, depending on its risk calculus. The Government must do more throughout the negotiations and beyond to reassure entrepreneurs that the UK remains a credible investment bet. To that end, the demonstrable and meaningful interpenetration of the negotiation goals and the delivery of a stretching Industrial Strategy really matters.

One key indicator of normality and continuity is the degree to which Government itself can avoid sclerosis and delay, and progress its normal business. The 2015-16 Conservative Administration seemed hampered in its domestic ambitions by the forthcoming EU referendum. The current administration must not in turn be hamstrung by the negotiations. A lot of effort is being devoted to them. Fundamental machinery of government changes have been made. Interdepartmental implications are still being worked through. Civil service skills and capacity issues are being examined. Further changes will follow, some very significant, such as the reintroduction of customs barriers. However, much government policy affecting the economy is not immediately bound up with the EU. Fiscal policy is domestic. So are many regulations and business incentives. In deepening its Industrial Strategy, while acknowledging the obvious interrelation between the manner of Brexit and our economic future, there are some aspects of UK decision-making Government can still boldly direct: the scale of infrastructure investment, education spending, tax breaks for business. It should do so.

There are also a host of economic variables associated with or sensitive to the referendum outcome and the negotiations. The picture is mixed and volatile. Government should avoid drawing

too much heart from buoyant consumer spending or housing market confidence. Neither should it be excessively succoured by the fact that the economy has not collapsed as some seemed to predict in the run-up to the referendum. We have not yet 'done Brexit'. Its long-term impacts thus remain unknown. Underlying messages, such as business investment patterns, output, relocation, or FDI should be scrutinised carefully for early warning signs. Despite some intimations of business, investment and talent outflows, actual and potential, many of the main economic indicators remain positive. But the Government must do everything it can throughout the negotiations to reassure business and investors. MCA member firms are already receiving enquiries from foreign investors concerned about whether the UK remains a sound proposition since the referendum.

Moreover, the Government should judge whether any changes in economic indicators since the referendum are desirable enough to be encouraged. The most obvious concerns sterling. Since the Brexit vote, the value of the pound has fallen substantially. The upside is that certain exports of goods and services are now more competitive. The downside is inflationary pressure. MCA members working in infrastructure have cited price inflation of up to £8m in a single contract *on cladding alone*, with other project costs in some areas rising by 8%. High street inflation has been accompanied by a variety of impacts on business, with IT licence and hardware costs rising in early 2017.

Historically, export-led recoveries based on low sterling valuations – for example in the aftermath of UK ejection from the ERM – have been shortlived. The City is usually uncomfortable with inflationary impacts and sterling's associated downgrading as a reserve currency. There is evidence however that the UK Stock Market can withstand a low pound, not least as many businesses quoted on it are not actually sterling denominated. If the Government wishes to diversify and 'rebalance' the economy – and even use Brexit as a catalyst – then while it does not control monetary policy, let alone the currency markets, it can signal that it is comfortable with a 'competitive' pound. If necessary,

it can also amend the priorities within the monetary framework it sets for the Bank of England.



SUMMARY

The MCA believes that the Brexit negotiations should be underpinned by six key principles:

1. The Article 50 negotiations should be conducted with a clear focus on how they support the delivery of a successful Industrial Strategy. Negotiators must never lose sight of the interdependency between negotiation outcomes and ‘teeing up’ a promising economic future for the UK. The negotiations should be used to reassure business and investors about the ongoing climate for investment. Government should send out positive signals about the advantages of continued innovation to counter the tendency, noticeable among larger corporates, to use Brexit as an excuse to pause. This will also help add positives about the UK to the calculations of any more proactive businesses considering moves elsewhere. Government should also use the negotiation period to progress agendas that are not Brexit dependent. Conversely, it should give clear steers about its preferences in relation to macroeconomic factors impacted by Brexit. It cannot control sterling. But it can comment on this matter and, if necessary, amend the assumptions governing the Bank of England’s conduct of monetary policy. In the interests of getting the tone and business narrative right, senior industrialists should be seconded to the UK negotiating team.

2. The Government should aim to protect priority sectors. These should not just be those currently identified for special measures in the Industrial Strategy, important though those are. Rather, there should also be an emphasis on current successes, some of which may be vulnerable in the Brexit aftermath. Sectors that specifically contribute to the UK’s preeminence as a ‘value-add’ economy (see below) should be accorded particular standing. These include management consulting and other professional and business services.

3. Building on the Brexit White Paper, Government should ensure that the negotiations are conducted with the utmost clarity. Clear positions need to be taken not just on priorities, but also on the implications of those priorities. Government has prioritised border control. It must make clear how that will be consistent with maintaining the UK’s position as a global hub for talent. It should be clear about how in future arrangements it intends to match the benefits of ease and speed afforded by EU labour market access in securing necessary talent and capacity.

4. Negotiators must recognise that much of the UK’s current success, and doubtless much of its future, stems from its position as a ‘value-add economy’, embedded in interdependent, global value chains. The protection of these value chains must be a primary objective of the negotiations.

5. The negotiations should be characterised by empathy and the principle of partnership. The enlightened self-interest of both the EU and the UK in a harmonious outcome should be accented. Consistent with that, negotiating positions should be open and subject to the scrutiny of UK stakeholders and EU partners alike. Triumphalism, the language of competition, spurious sporting or card games analogies, or any suggestions of winners and losers should be avoided.

6. The Government should be pragmatic and imaginative about regulatory compliance. The UK, unlike other supplicants to the EU for trade deals, is already manifestly compliant with trading requirements. This should be used to the UK’s advantage. Distinctions between compliance as a member and compliance as a trading partner, where advantageous in terms of burden reduction, should be identified and acted on. Advantage should also be taken of withdrawal to review the ‘domestic’ character of some regulatory burdens (explored further in the next sections). For the purposes of the negotiations, compliance with a regulation should thus be a function of its usefulness as a means of securing trade, within the EU and beyond. The Government’s decision to comply with the General Data Protection Regulation when it comes into force in 2018 is welcome.



TOWARDS A NEW ECONOMIC VISION

Transformational ambition

We have welcomed the Industrial Strategy Green Paper. But we have also noted that it could benefit from an injection of transformational ambition. As we have discussed, the Green Paper also perhaps assumes that certain areas of economic success will withstand Brexit. It underplays the degree to which they are fragile and may be adversely impacted by the hazardous Brexit process.

This is in marked contrast with the recently published Digital Strategy. This impressive document is genuinely strategic and in places visionary. For example, it aims “to make the UK the best country to start and scale a digital business”.²⁰ This aspirational language is not to be dismissed. Provided this is a genuine priority, with Government taking an honest account of other things it will no longer be able to achieve, it is a very useful statement. It gives signals to investors. It helps officials target and measure their efforts. It is ambitious. The Digital Strategy is also full of practical immediate steps flowing from that clarity of ambition.

The difficulty the Digital Strategy faces is that, to some degree, it is dependent for its additional impact on equally ambitious and prioritised intent in the Industrial Strategy. (To an obvious degree, since what matters are the industrial, trading and economic outcomes, the Digital Strategy should *serve* the Industrial Strategy.) For example, the Digital Strategy makes a valiant attempt to distinguish between the needs of the digital sector and the digitisation of other sectors. Yet without greater ambition, coherence and prioritised sharpness within the Industrial Strategy, the Digital Strategy’s broad objectives beyond the tech sector might not be achieved.

These next sections furnish some of the ideas needed for a transformational approach to Industrial Strategy. Government and business can use them to assemble a compelling vision for the economy. It is not for us to say,

beyond providing some strong steers, what that vision should *ultimately* be. However, without vision, any strategy lacks coherence and looks like a series of improving initiatives. The emerging perspective of MCA member firms in relation to the future of the economy is that to succeed post-Brexit, the UK must do more than improve. We must become the best. We must become the Smartest Nation – and thus Economy – on Earth.

Strong fundamentals: to be protected

While the challenges of Brexit are not to be underestimated, there are associated opportunities. The UK’s underlying economic fundamentals remain strong. FDI is high. Barring a sudden Brexit exodus, and provided policy protections to prevent such erosion are in place, London, for example, should remain a global trading centre and concentration of talent for years to come. Business has always sought stability and will always prefer clarity where it is possible – hence its desire for greater explicitness on negotiating priorities, which Government has started to provide. However, British business, aided by UK consulting, has learned in the fast-moving Digital Age how to grow, even in the most ambiguous and uncertain conditions. Despite previous observations about the conservatism of parts of corporate Britain, UK enterprise is significantly more agile than it used to be. Brexit will bring some inevitable uncertainties. Much of British business is well placed to cope with them.

Nevertheless, there is an onus on Government to secure these fundamentals and protect British success stories. In the last chapter, we highlighted the need to protect the ‘value-add economy’ and core industries within it, such as professional and business services, throughout the Brexit negotiations. That objective should also be central to a new Industrial Strategy.

Brexit as a catalyst for re-examination of our economic model

Certain Brexit opportunities are things we

²⁰Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/3-the-digital-sectors-making-the-uk-the-best-place-to-start-and-grow-a-digital-business>

as a nation should be looking at, Brexit notwithstanding. Some are brought into sharper relief by Brexit. Nothing inherent in our EU presence prevents us exploring non-EU markets more thoroughly. But Brexit plainly necessitates urgent examination of options. Proper analysis of our productivity challenge is long-overdue. The creation of the Productivity Council is welcome.²¹ Brexit provides an additional catalyst for a new assessment of what can be done to improve the UK's performance and output ratios.

The obvious point however is that success in new markets, new sector advances or productivity gains will only constitute growth, rather than correctives, if the same depth of EU trading activity is sustained or, if it diminishes, new business significantly outstrips that diminution. Protecting existing successes will remain of paramount importance. However, this is not inconsistent with the root and branch examination of our industrial mediocrities, failures and unreconstructed practices.

Selling existing successful value chain propositions into new cultures

Indeed, despite the increasingly global nature of trade, this diversification would require more than selling what we currently do, how we currently do it, elsewhere. Trade is positively impacted by shared culture. So it is no accident that the EU and US are our largest markets (the latter our largest single-nation trading partner, but very much smaller than the former as a totality). That the Government's own data about recent growth areas beyond the EU is, despite the numerous trade missions of the Coalition years, so unspectacular, with the most significant gains in percentage terms being made in the global false-teeth giant of Lichtenstein, is instructive.²²

The importance of cultural alignment applies in goods to a significant extent. But it is absolutely critical to the sale of many services. Anything we do to help manufacture more widely exportable products will be welcome. But there will also be an urgent need to review the saleability of what we already do, especially in services and value-chain enhancement, in new markets. While that

value is undeniable, the art of selling it will entail fully understanding what is in it for the new cultures targeted. In both the EU negotiations and in overtures to the US and others, the Government has tended to emphasise how much the rest of the world needs Britain. On the whole, other parties tend to be less sanguine than oneself about one's manifest destiny. But getting into the shoes of potential new partners and walking around in them will facilitate sensitive adaptations. Business leaders and Government, especially in the context of new trade missions, must collaborate to get the messaging right.

Increasing productive output: getting the balance of human resources and automation right

One aspect of Brexit now emerging and examined in the previous chapter is that in future the UK is likely to have at the very least a different kind of overseas workforce. We have argued that the availability of a pan-EU labour force ordinarily affords speedy access to labour. We have called for this speed to be matched in any new arrangements. We have also suggested that graduated changes to the scale of non-EU migrant labour availability are likely to be needed. Later, in the chapters on education and devolution we contend that the migration debate needs realism. Assessments of migrant labour needs should be more closely linked to improvements in regional growth outcomes and investment in domestic skills.

However, MCA member firms acknowledge that the EU pool itself is not necessarily, in both its practically available extent, and how it is used, synonymous with a solution to all the UK's industrial challenges. Indeed, some have argued that access to such quantities of cheap labour has perhaps encouraged UK businesses, especially in areas such as construction, agriculture and services, to deploy labour intensive solutions to problems, rather than invest in more productive approaches. Whatever the merits of this analysis, exploring more innovative solutions is at least desirable. So although we have argued for reasonably open borders for skilled and essential labour, if the Government is serious about reducing net migration, then gains in

²¹See Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/4-the-wider-economy-helping-every-british-business-become-a-digital-business>

²²Brexit White Paper, pp. 53-54

automation and other forms of productivity will be essential. (These will include substantial up-skilling of the domestic workforce, which we discuss later, to withstand the ‘shared autonomy’ revolution that automation and AI will create in the relationship of human and machine inputs in economic value-creation.²³) And if the Government *is* serious, then it must also show an equal commitment to supporting business to make the necessary investments for improved automation and productivity.

Productivity gains and digital: for a high wage, high value, inclusive economy

If the UK wishes to move from the insecure pre-Brexit economic model, which many citizens used the referendum to protest against, to an inclusive, high wage, high value economy, with prosperity for all, productivity gains will be essential. Many of these will be linked to the current and continuing phase of industrial modernisation that will doubtless be a key focus for the Productivity Council: digital.

The UK’s future after Brexit is almost inescapably digital. Digital is the future of the economy internationally and Britain has no option but to grasp it. To exploit digital fully, we must also become a very highly educated and skilful people.

Digital and education warrant extensive coverage as topics in their own right. We devote separate chapters to them. However both link to the headline industrial agenda itself. Brexit must not signal a reversion to pre-globalisation economic conditions. Modernisation must continue apace. Indeed if anything it must be more relentless than ever. The difference is, as the Prime Minister has repeatedly argued, that it must now be inclusive. Future modernisation must extend opportunity more widely than was the case pre-Brexit. That aim will rest on the linked foundations of education on the one hand, and economic and political devolution on the other. Both will be facilitated to some degree by digital.

Certain industries in the UK, such as retail and music, have grasped digital’s potential, and others, such as financial services,

especially in the disruptive FinTech sector, are beginning to do so.²⁴ Yet while there are pockets of activity in infrastructure, energy and manufacturing, there is a long way to go. We must relentlessly digitise those parts of the UK economy that have yet to be technologically transformed. Certainly modernisation must be more inclusive. The AI revolution must lead to new job opportunities and value-creation, rather than just automations that produce human redundancy. We will discuss the implications of this in later chapters. Nevertheless, some value chains are unreconstructed and ripe for digitisation. We must explore the potential to automate everything from production processes and events management, through to conveyancing and legal services. Even sectors already extensively digitised may need further innovations. In the context of a potentially reduced high-street labour supply, retailers may have to move online completely or create blended models of showroom viewing/online purchasing. While some of this will require cutting edge innovation and R&D, many of the necessary technologies are already in place, but have not yet been comprehensively deployed. Renewed digitising efforts should also lead to productivity gains. Indeed, it is in digitisation, in its capacity to automate, to reduce the distance between the consumer and the producer, and in its targeted deployment to realise business goals, that we see the most likely emergence of productivity improvements.

These will be touched on in the education and digital chapters. There, we will also reflect on the distinction between the needs of the digital industries on the one hand and the challenges of digitising traditionally ‘analogue’ businesses on the other. The Digital Strategy, as we have noted, draws a reasonably good distinction between the two. Yet the implications of that distinction, in terms of the UK’s forward skills needs, are far-reaching. Digital’s potential to help realise devolution and educational goals will be examined in the relevant chapters.

²³In the shared autonomy model, highly skilled human beings and autonomous technologies occupy complementary economic roles.

²⁴For good commentary on the FinTech revolution, see Digital Strategy <https://www.gov.uk/government/publications/uk-digital-strategy/3-the-digital-sectors-making-the-uk-the-best-place-to-start-and-grow-a-digital-business>. This revolution now needs to reach back into the mainstream banking and finance worlds, parts of which remain hidebound, slow-moving and as yet digitally unreconstructed.

Towards a more entrepreneurial culture – aided by diversity and the highest ethical standards

This modernisation should also reach into the UK's corporate culture and transform it. Despite two major phases of growth in this century, the period commencing in the mid-1990s, leading up to the Financial Crisis, and the current period of uninterrupted growth since the first quarter of 2013, parts of the economy still look largely as they did many years ago. Modern business should move fast to react to what is required, restructuring quickly, taking decisions promptly. But corporate Britain remains hierarchical, and often conservative. The depressing persistence of the public school grip on the very highest echelons of commercial and political life seems to reverse the gains of the 1960s.²⁵ This also impacts entrepreneurship and business start-ups. Baroness Mone's review found that start-ups tended to be lower in deprived areas, with wealthier people better placed to set up their own enterprises.²⁶

Advances have been made in diversity, but have not transformed our boardrooms to the extent we would wish in gender and ethnicity terms. Indeed, more industry sectors should commit to the highest standards here. They should examine their diversity, taking full and active account of the backgrounds of the people they hire. They should consider their social value. They should strive to look and feel like contemporary Britain. And they should do so on the sound basis that diverse business is good business. Partner organisations are likely to have diversity and inclusiveness targets and will only reluctantly work with firms that lack a similar ethos. Many talented millenials simply will not work for organisations that do not set out a road map to equal pay, espouse gender equality, support LGBTQ rights, and pursue a wider ethnic and socio-economic mix. The MCA is leading the way here. Our new *Consulting Excellence* initiative commits member firms to the highest standards of ethical behaviour, client service and value, and staff development. 2017 is our Year of Diversity, in which we will explore our best practice, our advances on gender and LGBTQ issues, our international flavour,

while examining honestly and directly those areas, such as recruitment from black African Caribbean backgrounds and disability issues, where we need to do very much more. British business needs to modernise inclusively. It also needs new ideas, securing perspectives from the widest range of mindsets and backgrounds. Diversity is at the heart of all those aims.

In the pursuit of improved entrepreneurship more generally, the Review announced in the Green Paper is welcome.²⁷ Yet entrepreneurship's truest foundation, innovation, is not 'safe'. It is countercultural. It puts noses out of joint. Some of this is about diversity, but some of it is about skills. Changes to our education system are needed to support entrepreneurship. These changes must foster not just technical accomplishments, but also creative, original thinking. Some of the necessary changes are outlined in the education chapter. One to note here is the suggested review of business school curricula, to establish whether they are up-to-date, and how far they foster originality and creativity.

From Better Regulation to Best

A key issue in the promotion of entrepreneurship will be the regulatory and incentives environment for business, touched on in the previous chapter. The prime calculation for Government should be whether retaining a regulation or evidence of compliance with it supports trade with the EU and beyond. Meanwhile the Better Regulation and deregulation agendas should continue apace. They should become a new agenda: *Best Regulation*.

How far employment law should be changed, however, must be handled with care. Many UK voters chose Brexit because of job insecurity. Recent scandals about the exploitation of zero-hours contracts have intensified the focus on the UK's perceived economic unfairness, its stark regional variations in wealth, and spectacular pay differentials. Changes in employment law unduly impacting the least well off might be imprudent. Nevertheless, the emergence of the so-called gig economy, which counterparts the ambitions of more empowered millenials and the restlessness

²⁵By contrast, the Social Mobility Commission reports a drop in the progress of poorer children at secondary school. See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/594363/Progress_at_Secondary_School_report_final.pdf

²⁶See Baroness Mone's Be the Boss Review, March 2016: <https://www.gov.uk/government/news/baroness-mone-publishes-be-the-boss-review>

²⁷Industrial Strategy Green Paper, p. 69

of many digital businesses, could be the future for many professions. The degree to which the model can be supported in those professions by the tax and benefits system should be explored. However, to restate, a free, middle-class entrepreneur's dream, the gig economy is a nightmare for cleaners, ancillary workers and labourers. So that more people can exploit its opportunities, there must be increases in the UK's overall level of educational attainment. One immediate regulatory change could be to introduce more extended student loan repayment terms for graduates who set up businesses, even incorporating reductions in loan liability proportionate to the creation of new jobs (calculable from payroll tax).

In discharging its regulatory functions, Government should modernise its dealings with business. More direct recruitment from business backgrounds into relevant functions of the public sector, mutual exchange and secondments should be encouraged. Moreover, the relationships should be transparent and digitised. Indeed Government should lead the UK's step change in digital adoption by example, as we will explore in the relevant chapter.

The Greenest Economy on Earth

Government targeting of incentives for entrepreneurs, its broad apportioning of some of its own direct support, and its steering of other such spend, should plainly relate to headline economic goals.

There should, for example, be serious incentives for infrastructure. These should include a major uplift in Government spend (or more extensive underwriting of private investment). That spend should be directed to give early assurance about the UK's energy destiny. We must use Brexit as a pretext to disentangle ourselves from politically volatile and environmentally unsafe fossil fuel supply chains. We should invest heavily in nuclear, tidal and solar power. The ambitions of the Industrial Strategy here are laudable, but not revolutionary.²⁸ Government should set even more stretching goals for the nuclear share in the energy mix. And the welcome suggestion of significant R&D on battery storage for renewables only becomes more than merely a 'nice-to-

have' if the Government sets out an equally challenging objective – such as becoming the leading European or G12 economy for renewable energy usage and/or innovation.

The Most Modern and Digitised Transport Infrastructure

Substantial spend should be focused on digital infrastructure, and also on transport. Where possible, they should be linked. Crucially, transport investment should not just be about upgrading rail and road networks. If Britain is to be seen as an outstanding place to work, to win the global war for talent, to cultivate entrepreneurship, then it needs a suitable infrastructure. The Southern Rail dispute has dramatized the disastrous errors in the system of rail franchising and some of the most backward looking union activity. As well as overhauling the ownership structures and incentives for rail, the UK should look to be early adopters of emerging alternatives, such as Hyperloop. We must support green and cutting edge transport on our roads, from electric to driverless cars. We could aim to be *the* location for exciting new transport technologies and associated green industries. Tax incentives and risk-underwriting could be constructed accordingly. Government investment should be deployed to create digital connectivity in infrastructure, with buildings, roads, rail, and bridges all part of a connected, IoT policy for infrastructure. This would benefit commuters and businesses directly. It would also generate new datasets, allowing digital transport integrators to develop new products and services.

Purposive Infrastructure

The emphasis on infrastructure in the Industrial Strategy Green Paper is welcome.²⁹ So are other Government initiatives, such as the announcement in the Autumn Statement 2016 of £100m investment in the requirements for testing autonomous vehicles.³⁰ But to some degree, the Government's 'approach' is merely a list of projects. All highly desirable, no doubt. But as we articulated in our MCA Think Tank report on infrastructure, investment in physical assets is only optimised if it responds to a clear

²⁸Ibid, p. 89 et seq.

²⁹Ibid p. 51 et seq

³⁰See <https://www.gov.uk/government/news/autumn-statement-2016-some-of-the-things-weve-announced>

economic and social vision.³¹ Without that vision, the relative standing of investment options cannot be calibrated. And without it, projects are not necessarily secure over the long term.

In the run-up to the creation of the National Infrastructure Commission (NIC), some commentators argued that the new body would benefit from complete political independence. While others suggested that was impractical, the MCA took a middle course. The NIC should be tasked to respond to the Government's economic vision within a given set of budgetary constraints. It would then lay its suggested infrastructure priorities, consistent with that vision, before Parliament. Government would then respond to the plans. Where it amended them, it would be compelled to explain how such changes were compatible with its own vision. As an executive agency of the Treasury, the NIC's current governance model is not exactly as envisaged here. But it could operate along similar lines. To do so, however, it must respond to a clear vision for the economy. While the Industrial Strategy Green Paper is a step in the right direction, it does not yet constitute that vision.

Let us imagine even a crude version of the economic vision. It might express the goal of building on our position as a global hub, by deploying new innovations, *to make the UK the most internationally renowned place to do business* (owing to ease of connectivity and speed of getting from A to B). It might simultaneously articulate a goal of *inclusive and sustainable* modernisation. Target investments in digital infrastructure would flow from these precepts. So too would investments in new transport systems (including regional networks), together with digital enhancements of existing infrastructures – such as the introduction of satellite navigation for the railways, which could potentially improve the system's productivity by a third.³²

The outline vision would act as a reference point to assess how these sorts of investments benefit growth, sustainability, or the image of business-friendliness, compared with alternatives. It would

help rank various projects. Extensions to the broadband network would get the green light and government underwriting. Overhauling London water supplies might not. Nuclear new build would be accorded higher priority than investments in fossil fuel capacity. A new Manchester to Leeds high-speed rail service would have the edge over another scenic London bridge. Clear decisions on airport expansion could be made, including regional enlargement, but other extensions of polluting networks would give way to sustainable investments, such as electric car infrastructures. Such a vision would prioritise support for holistic approaches to digitised infrastructure and social management, such as Smart Cities initiatives, over anything more tokenistic, piecemeal or ephemeral.

The construction industry is undoubtedly ready to respond proactively to the government's industrial strategy but success will depend on the reliability of the government's long term spending commitments and the optimal use of constrained resource. Both will depend in part on Government's infrastructure plans becoming more than just a list of worthwhile projects. They should be a clear set of priorities, linked to key economic goals and desired outcomes. Only then will we get the best out of the infrastructure industry in order to meet the UK's critical need for modernised networks and built assets.

William Waller, Market Intelligence Lead, Arcadis

Modernising Government Contracting and Service Management

Infrastructure and transport are not the only areas where Government buying behaviour matters. The Industrial Strategy Green Paper accents government procurement's importance in driving innovation.³³ We have already mentioned Southern Rail as an example of a contract that achieves anything but. However such examples are legion. Since the late 1990s, the Government has produced dozens of reports highlighting weaknesses in its procurement methods, as well as in subsequent supplier management. *Pace*

³¹*Building Blocks: How Britain Can Get Infrastructure Right*, 2013, <https://www.mca.org.uk/reports/reports-data/building-blocks-how-britain-can-get-infrastructure-right/>

³²See <https://www.gov.uk/government/news/autumn-statement-2016-some-of-the-things-weve-announced>. Again the Government's announcement of £400m of funding for rail signal digitisation is welcome.

³³Industrial Strategy Green Paper, p. 71 et seq.

the Industrial Strategy Green Paper's implications, most of the problems are domestic. Departure from the EU may remove requirements to advertise domestic procurements EU-wide and affect UK suppliers' access to European contracts. But the UK's public procurement culture will not be greatly impacted, for good or ill.

In several reports on service outsourcing the MCA has advocated the radical professionalisation of procurement functions.³⁴ Recently, we have been involved with the Crown Commercial Service (CCS) on the development of the new framework for management consultancy. Throughout two years of activity, there has been almost no continuity in the team deputed to oversee this change. And while the Green Paper notes a radical simplification in the assessment culture in CCS, there are still many examples of over-complication, such as recent proposals – now relaxed – to burden advisory suppliers with providing evidence of their worked hours.

Nevertheless, the culture is slowly moving in the right direction. One thing that might accelerate matters is the incorporation of meaningful standards of public service, innovation and client satisfaction within the supplier base itself. Recognition by the CCS of the potential of the MCA's *Consulting Excellence* framework to sponsor client value and innovation should be counterparted by the sponsorship of similar initiatives in other sectors. We recommend this in our report *The Future of Outsourcing*.³⁵ Further, all procurement functions across government, in line with best practice, should become smaller and more senior commercial directorates. Indeed, where appropriate, Government should consider outsourcing procurement and project management altogether, or establishing arms-length bodies for project duration. Such arrangements were in place for the London 2012 Olympic Games and are critical to the success of major initiatives such as CrossRail.

Setting proper priorities for R&D

Innovation itself is, of course, substantially a function of R&D. Meaningful productivity gains depend on the combination of relentless improvements in process and better organisation of existing capital and human resources on the one hand, and step changes wrought by wholly new ways of doing things on the other.

Government directly controls significant R&D spend. But as we shall see in examining research funding in the education chapter, too prescriptive direction of its own grant aid (which in any case is low by international standards) may be less powerful than translating its economic vision into clear steers about where the consequent R&D priorities lie. Non-government actors, such as banks and private investors, as well as those rightly independent ones, research institutions, would pick up on these 'nudges'. Together with this prioritised language focused on a core of economic themes, a corraling of tax incentives and policy support would also inevitably influence the R&D choices of non-government actors.³⁶

What might these priorities be? We have the makings of a list from the implications of this and later sections of the report. It would include support for:

- The UK's value-add and value chain economy. The Industrial Strategy targets some of this, such as automotive, while assuming that other portions, such as advisory services, will thrive by themselves. The potential damage departure from the EU might do to professional services, creative industries,³⁷ and aspects of digital, warrants attention. Critically, the conversion of value-add service products that have been successful in EU contexts into saleable commodities in culturally less proximate contexts, may need to be supported
- Innovative and extensive decarbonisation of energy supply
- The most modernised and digital

³⁴See particularly, *The Future of Outsourcing*, May 2016, <https://www.mca.org.uk/reports/reports-data/the-future-of-outsourcing/>

³⁵Ibid, pp. 49-51

³⁶A collective prioritisation of vision here, helping focus a huge array of R&D streams, would have rather more impact than the Industrial Strategy Challenge Fund priorities (Industrial Strategy Green Paper, pp. 30-31), which are considered in the final chapter.

³⁷The Industrial Strategy's announcement of the Bazalgette Review of the role of the creative industries is welcome (p. 103). It is to be hoped that it also examines the importance of creativity to business in general, especially the imaginative use of digital.

infrastructures. Here, the Government Digital Strategy's emphasis on IoT and Smart Infrastructure is welcome³⁸

- Digitisation of manufactures (see below)
- The most cutting edge digital products. A separate list to draw from is suggested in the final chapter.

(One ongoing source of development and sophistication for these priorities would be the Industrial Modernisation Study and any standing structures flowing from it, including a potential relationship with the Productivity Council. The proposed study is described in the education chapter.)

R&D should be deployed to support the UK's status as a value-add economy. As well as supporting digital, professional services, advertising, design, and the creative arts, should all be targeted for assistance. To signal this, in advisory services for example, Government should accent in its trade campaigns Britain's leading-edge expertise in supporting international value chains and integrating them. To that end, these and other professional services should feature in the 'Team UK' approach to exporting and opening up new markets mentioned in the Industrial Strategy Green Paper, not least by being strongly represented in trade delegations to target markets.

Digitising manufactures

There is an emerging case for onshoring some manufactures previously offshored. Additive manufactures – more commonly known as 3D printing – offer a way to modernise manufacturing and to create new business adaptations and processes. How this form of manufacturing could contribute to regional regeneration is explored in the next chapter. Its potential to revolutionise other industries should also be incentivised. House builders currently cannot get all the staff they need even within the context of EU membership. They may have even fewer skilled employees in the future. However, if aspects of the housing value chain such as conveyancing, even aspects of survey work, can be radically automated, then the construction process itself could benefit from a next

generation approach to system building in which additive manufactures could be used. 3D printing of homes and offices to acute specifications may be the UK's future in housing supply. (The perspective of some MCA firms active in this arena should nevertheless be noted. They argue that such measures could *mitigate* the challenges of the skills shortages facing the industry, which a mishandled Brexit might worsen, but would be unlikely to *eradicate* them.³⁹)

As we have indicated, the long-term health of UK manufacturing will relate in part to the exchange rate. Government cannot control this. But it can signal what it wishes to see in terms of the overall competitiveness of the currency. In doing so, it may need to consider how it reshapes the wider signals that inform monetary and interest rate policy. It should be restated that the low exchange rate has benefited manufacturing exports in the short term, as well as having potential to benefit tourism. Such benefit should of course be weighed against the impact on other target sectors of the economy, not least digital, as well as the overall long-term importance accorded manufacturing, itself currently only around 9% of the economy. However, moves to scale our digital industries and give them global export reach could also be energised by competitive exchange rates.

Politicians and commentators place plenty of emphasis on digital as part of our post-Brexit salvation. While that is fair enough, manufacturing must play a major part in our future. After all, digital is underpinned by real hardware. A rebalanced economy needs to match our service success with new successes in product exports. That means an overhauled, modernised and expanded manufacturing base.

Mike Notman, Managing Partner, Bourton Group LLP

Targeting credit

Historically both our entrepreneurship, especially in terms of start-up support, and our capacity to invest in R&D has been constrained by credit short-termism. The necessary replenishment of bank balance

³⁸Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/3-the-digital-sectors-making-the-uk-the-best-place-to-start-and-grow-a-digital-business>

³⁹The Arcadis *Talent Scale* report is again instructive here.

sheets in the aftermath of the financial crisis has further constrained this. Prudence has been injected into bank credit, despite low interest rates, and that is no bad thing. However, innovation, startups and R&D still need more investment. Government must provide tax incentives for micro-financiers and those private investors willing to give long-term support to target areas of innovation. The Government's Patient Capital Review is plainly welcome.⁴⁰

But again, perhaps a fundamental and transformational challenge to the investment culture is needed, building on some recent micro-financing innovations. For much of the UK venture capital environment remains somewhat remote from the challenges facing entrepreneurs. This is not universally the case across the globe. In some contexts, more venture capitalists have start-up background themselves.

UK venture capitalists predominantly come from traditional corporate finance backgrounds and see investing in startups through that lens. With limited experience in building user-friendly products, they want quick returns and will focus on companies as balance sheets with risk profiles. Silicon Valley venture capital, by contrast, is often led by technology entrepreneurs. They earned their seat at the investment table by building companies, products and services. They are not passive in their role. But they know how to advise startups on the holistic growth of their enterprise not just the corporate financial aspects. To create an investment environment that helps build successful companies, the UK should think about importing them, their expertise—and their cash.

Jeff Sinick, Senior Digital Consultant, CSC

Further, Government has already used its resources and relationships with a number of financial institutions to create the British Business Bank. There may be a case for its funds at least to be channelled (if only in general terms) towards priority themes. Moreover, its funding base might be enlarged, potentially by incorporating some of the various Challenge Fund resources. (These could possibly include the Industrial

Strategy Challenge Fund, or some part thereof. We suggest another alternative for this fund in the education chapter.)

Extending business ownership

Credit short-termism is rooted in the wider corporate culture. The primacy of creating shareholder value has driven innovation and returns for some businesses, especially those where shareholders are well informed or have a concerted agenda. Others simply demand their dividend and don't really care how they get it. It is beyond this report's scope to recommend changes to relevant company law. But building on the findings of the Kay Review, a further radical study of how far the creation of shareholder value and innovation investment can be made fully compatible could prove beneficial.⁴¹ Meanwhile, effective shareholding is democratised shareholding. The Government should encourage wider business ownership. Enlarged public interest in business conduct, outlook and philosophy, through small investments and the exercise of voting rights, would be healthy for British capitalism.

Supporting business ethical commitments

Ownership extension is connected to another key post-Brexit mission. In the run-up to the referendum, almost all business groups recommended a vote to remain. Large sections of the population ignored them. In part this was connected with the unfortunate downgrading of experts. (It is important that all expert judgements are subject to thorough and informed scrutiny in a free society. Experts should always be challenged for signs of group think. Yet the day experts are wholly ignored is the day malevolent ideologues triumph.) But substantially it is about the low opinion the public has of business (especially big business). In poll after poll, especially since the Financial Crisis, majorities of respondents have registered their distrust of (and even hostility towards) business. The Government could make its award of Industrial Strategy sector deals conditional on adopting new industry commitments on ethics.

The management consulting industry is critical to the development and integration

⁴⁰See <https://www.gov.uk/government/publications/patient-capital-review>

⁴¹For the Kay Review (2012), see https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/253454/bis-12-917-kay-review-of-equity-markets-final-report.pdf

of the value chains mentioned throughout this section. It is at the heart of digital. As a growth generator for its clients, consulting understands all economic sectors, but has the objectivity of the independent advisor. It is a great export. Critically, having adopted a voluntary standard for business ethics in the form of *Consulting Excellence*, we are ideally placed to support Government drives for more ethical, diverse and trusted enterprise. As such, while we will collaborate with other parts of the Professional and Business Services Council in dealings with Government, we believe that management consulting is a substantial and important sector in its own right. And we will accordingly seek to develop a suitable sector deal of our own with BEIS.



SUMMARY

1. The Government's Industrial Strategy Green Paper should pave the way for significantly more transformational intent. Strategies should navigate towards a clear and prioritised vision of the economic future. As yet, the Strategy lacks such a vision.
2. Protecting the UK economy's strong fundamentals should be a paramount consideration for any future Industrial Strategy. While much of this is Treasury and Bank of England business, it is also imperative that BEIS works to bolster sectors that have historically contributed to the UK's fundamental strengths and are globally recognised differentiators.
3. Brexit should nevertheless occasion a fundamental re-examination the UK's economic model. Successes should be built on. But unreconstructed sectors and practices must be challenged.
4. As part of protecting and enlarging on existing successes, business will need to adapt 'value-add' propositions to new markets. Some of these will lack the cultural 'immediacy' of existing markets. Value-add propositions should accordingly be prominent in future trade missions to jurisdictions being targeted for post-Brexit trade deals.
5. Business should review its blend of human resources and automation in pursuit of productivity gains.
6. In supporting this new model, the Industrial Strategy could target a high-value, high wage economy. This is the most inclusive approach to the automation and AI revolutions, building on the concept of shared autonomy, in which highly skilled human beings and automated technologies occupy complementary economic roles. To that end, Government should encourage, and business must pursue, the ruthless digitisation of digitally unreconstructed parts of the economy. (The educational and skills implications of this are explored in later sections.)
7. Both as a principle, and in order to challenge the hidebound nature of some parts of UK corporate culture, Government and business should work together to encourage a diverse business environment.
8. Government should use Brexit to initiate a fundamental review of its regulatory environment under the heading *Best Regulation*. While flexibility and voluntary engagement with the dynamics of the 'gig economy' should be encouraged, particular care should nevertheless be exercised where regulations protect workers' rights.
9. The Industrial Strategy might set an ambition for the UK to become the Greenest Economy in the World. In any case, a step change in the role of nuclear and renewables should be targeted.
10. The Industrial Strategy might set an ambition to create the most modern and digitised transport infrastructure. This could promote investment not just in the existing transport modes, but in new innovations like Hyperloop.
11. In any case, Government should take further steps to meet the longstanding criticism of its approach to infrastructure, namely that it consists of well intentioned projects, rather than a prioritised portfolio, aligned to a clear economic and industrial vision. Infrastructure investment should be strategic and purposive.
12. To realise the Industrial Strategy Green Paper's ambition of Government procurement supporting innovation, there must be a significant increase in the calibre of procurement and project management professionals and structures. In line with recommendations in previous MCA reports, Government procurement functions should comprise smaller cadres of more senior and skilled professionals. Where appropriate, building on London 2012 and

other experiences, commissioning and project management functions should be placed within dedicated structures, or even outsourced. Providers to the public sector should be encouraged to adopt commitments to value-creation and ethics, similar to the MCA's *Consulting Excellence* framework.

13. Government should issue sharper messages about its targets for R&D to provide signals to investors and innovators alike.

14. A key priority could be the digitisation of manufacturing, especially through 3D printing, as a means of revitalising an ailing sector and helping rebalance the economy.

15. The UK should look to make venture capital more business-friendly. We welcome initiatives like the Patient Finance Review. Moreover, we should foster an environment in which more venture capitalists are themselves successful start-up veterans, not least by encouraging such investors, including those currently clustered in Silicon Valley, to work in the UK.

16. The Government should encourage further extensions in UK share ownership.

17. Government and business leaders should work together to foster reputation-bolstering ethical commitments across UK economic sectors. Initiatives such as the MCA's *Consulting Excellence* framework should become more widespread.



RADICAL DEVOLUTION OF POWER AND OPPORTUNITY

Bold economic and political devolution: urgently needed after Brexit⁴²

One reason why Germany would be very unlikely to vote to leave the EU is its devolved economic and political settlement. Berlin is the federal capital. But regional governments have real clout. Bavaria is a powerful cultural centre. Frankfurt is the financial capital. Hamburg, a port with Hanseatic heritage, is still a major trading hub. The Ruhr Valley is one of the world's most significant manufacturing concentrations. Every corner of Germany has a share in its success.

Britain is different. The Brexit vote was, in part, about regional disaffection at the concentration of growth benefits and opportunity in the South East and London. With the exceptions of Scotland and Northern Ireland, together with Liverpool and Manchester, large portions of post-industrial and rural Britain voted for Brexit. For people from the Welsh valleys, South Yorkshire, Lancashire and the North East, struggling for decades to recover from the loss of coal mining, steel, heavy industry and ship-building, or for the decayed fishing and tin-mining communities of Cornwall, or the rural economies of the East of England, the benefits of the return to concerted growth since 2013, which Remain campaigners sought to protect, seemed very remote.

MCA members believe that nothing short of a concerted devolution of power and opportunity to the regions will address this. The Government's Industrial Strategy Green Paper shares this sentiment to a degree. However, this agenda should be about more than honouring a few existing commitments.⁴³ There is an urgent need to radicalise what is on offer in the 'localism' and 'place' agendas. The UK needs a new set of bold devolution principles. In this section, we will explore what those principles should be and set out some

practical suggestions.

The consequences of economic modernisation: a frank examination

First, UK policy makers must engage in a frank discussion of the implications of industrial modernisation and globalisation. In the 1980s and early 1990s, the UK experienced rapid and extreme deindustrialisation. Pits were closed, shipbuilding failed, the steel industry contracted, and the balance of power in the economy shifted from manufacturing to services. A similar process occurred in the US, especially in the 1990s, the fruits of which can be seen in part in the North Eastern and Midwestern 'Rust Belt' voting patterns at the last US Presidential election. The MCA has no nostalgia for some of these industries. Starting the process of decarbonising and modernising our economy was the right thing to do.

But it had consequences. Communities both sides of the Atlantic that had been advised of their strategic importance were suddenly relegated. British miners had been exempted from wartime military service. They were proud of their vital role in powering the economy (a vantage their leaderships often exploited in industrial disputes). The US car industry was a symbol of American might and freedom. The employees of both these industries were not – individually at least – powerful or wealthy. They may not have been able to send their children to expensive schools, but they worked on the assumption that their offspring would also get jobs down the pit and in the factory, would be in the local band, sports teams, church and voluntary groups, stalwarts of a coherent community.

The demise of those industries was the end of many of the places they were located in as effective communities. Industrial infrastructure's decay rotted social

⁴²The focus of this chapter is predominately about English Regional Devolution and the localism agenda. We are by no means ignoring Scottish, Welsh and Northern Irish issues. However, since this is a response to the Westminster Government's Industrial Strategy Green Paper, policy matters within the competence of the devolved national Governments are not touched on here. We will consider them in future MCA work.

⁴³Industrial Strategy Green Paper p. 107 et seq

infrastructure too. Compensating handouts of redundancy pay were shortlived. Without significant levels of local demand, new businesses flopped. Those astute enough to acquire new skills or education, or simply looking for something different, 'got on their bikes', further reducing the skills and demand bases of wounded localities.

Deindustrialisation – but comparatively little re-industrialisation

Deindustrialisation in both contexts was not accompanied by what those communities needed and were perhaps arguably even historically entitled to: reindustrialisation, equipping them with new opportunities and modern industries, a renewed social and business infrastructure, allowing them to regenerate and grow afresh.

This sort of intensive redevelopment is long overdue. During the 1980s and 1990s there were token regeneration projects, such as the Liverpool Garden Festival. Some larger cities, such as Manchester, and more recently Newcastle, subsequently grasped regeneration opportunities more concertedly. But most of the transfers of public resources to deprived areas have been through changes in the funding formulae of local authority and education budgets (as well as some limited relocation of Whitehall functions to the regions). That local people see the fruits of this redistribution depends on the initiative and competence of individual local councils – and in any case, these scarcely constitute, in their piecemeal impact, wholesale transfers of concentrated wealth and power. For example, indices of deprivation have in recent times influenced the direction of capital spend on social housing. While improving living conditions on sink estates is inherently positive, it rarely addresses the root causes of why those environments, set so often in the midst of business and industrial wildernesses, are likely to fail.

Of course, this is not simple stuff. It is easy to destroy, hard to create. The level of reinvestment needed is enormous, the focused effort and local leadership required heroic.

Economic and political devolution: inextricably linked

That is why the political localism and business regeneration agendas are connected. Transport for London commissions and executes regeneration projects. It also has a significant stake in specifying and realising related benefits, such as transforming areas around stations, through land usage and the sale of concessions. This has created benefits that have re-entrenched London's regeneration dominance. The regions require administrative structures with equal clout, to realise similar outcomes.

But political and administrative structures will not work by themselves. Business will need to be present in significant force. At an MCA event last September on the Northern Powerhouse, speakers placed varying emphasis on whether regional business needs or fiscal and political devolution issues should have primacy. Business can help government get on with supplying the right physical, commercial and transport infrastructure. But without good and meaningful representative structures, which can air issues, discuss and help reap real benefits locally, many new plans will be stuck in the planning departments of small district councils for years. Regional political governance must become clouty and professional. It must have the scale to attract outstanding professionals, often from business backgrounds, to forge cross-sector partnerships. Business needs supportive local politicians. Communities need public and private institutions to provide enduring civic and social fabric.

Some people casually confuse initiatives such as the Northern Powerhouse with the 'localism' agenda. They are different but mutually dependent. Without real political devolution, there is no driver for a regionally based approach to economic opportunity. This is best understood where growth is dependent on new infrastructure investment; the case for change has to be argued in ways that resonate with local communities and are tailored to their needs. That is about politics, and a greater level of mutual trust between central and local government than we have at present.

Helen Bailey, Chief Executive, iMPower

Local governance, digital modernisation, and a presumption of localised delivery and accountability

Radical simplification of local government should be the first step. The Government should push for unitary structures across the whole of England. The unitaries should gradually receive significant volumes of localised spending. Whitehall should be set targets for the progressive divestment of **all** its locally delivered service spend to locally accountable bodies, as and when their capacity for delivery is proven. Where appropriate, delivery should be wholly autonomous. Otherwise the local structures should act as regulated contractors or localised sub-commissioners for achieving core national objectives. Thematic integration of spend, rather than its balkanisation across various agencies, should promote both better outcomes for citizens, and also savings.⁴⁴

Savings will be crucial. Despite years of austerity, the UK is not out of the fiscal woods. (Indeed, without the devolution of localised but currently non-local authority public spending to local and regional structures, the forecast rates of spending reduction mean there will be little transferred from central to local government at all. Revenue Support Grant will soon fall close to zero, with many local councils wholly dependent on locally raised funds.⁴⁵ This has huge implications for tax, spend and accountability.) Local leaderships can expect to have a *larger* share of a spending cake that is still *diminishing*. They must thus forge new relationships with external, private sector bodies, to create thriving civic, cultural, and business environments. Local government will need to build on its successes in digitisation, adopting the Digital Strategic Primacy Principle and Citizens Data approaches described in the digital chapter, if it is to manage local demands, promote self-help and also create opportunities for local digital entrepreneurs. Digital will also be central to realising local service (and also health) improvement, especially necessary if an

immediate or eventual impact of Brexit is reduced access to migrant labour. Less labour intensive solutions to local service delivery may prove critically important.⁴⁶ Procurement and provider management must improve. So must community engagement. Most career officials are versed in the requirements of *representative* democracy. Fewer are naturally skilled in the *participative* democracy dynamics needed to create business opportunity, enhance community engagement, and spread the benefits of devolution.

Building local capacity: in leaders, public institutions and businesses

All this will require major uplifts in capacity for some authorities, especially those that, unlike Manchester, do not have longstanding experience of multi-agency partnerships. The Government should work with local government representatives to create a substantial Professionalisation Fund. This would support drives to make regional government more business-focused, more capable of sustaining effective partnerships, more commercially savvy and more able to take on a wider range of responsibilities. Senior secondments from effective delivery agencies and the private sector to the newly empowered regional authorities should be supported.

A successful post-Brexit outcome for the UK will be one of more widely distributed economic and political opportunity. But this will need more than just investments in infrastructure and new devolved structures, important though these are. It will require a step change in local leadership ambition and ability to work together to achieve a more ambitious agenda of stronger and more inclusive growth.

Yael Selfin, Chief Economist, KPMG

(Indeed, across the whole public sector, there should be a goal established that UK services should be at once the most

⁴⁴Many of the ideas in this section are developed from the MCA's report, *Local Government: Time for Reinvention*, 2015, <https://www.mca.org.uk/reports/reports-data/local-government-time-for-reinvention/>

⁴⁵See <https://www.gov.uk/government/speeches/final-local-government-finance-settlement-2016-to-2017>

⁴⁶The local government and health digitisation proposals within the public service Annex to the Digital Strategy are unfortunately very disappointing. A small number of digital initiatives are mentioned. But as with the Government Transformation Strategy (see later text) there is very little sense of the connection between digital and wholesale governance and service reinvention. The Annex is also largely silent on the challenges Brexit might pose in terms of staff shortages and how digital might be deployed to manage them. See <https://www.gov.uk/government/publications/uk-digital-strategy/summary-and-annex>

business-friendly and most business-like in the world. This is not the same as suggesting, as some misguided commentators have in the past, that all of the public sector is a business and should be run along business lines. Rather, all parts of the public sector should aim at the highest standards of efficiency and productivity. Further, business-facing structures in particular should exhibit improved understanding of the needs and interests of enterprise.⁴⁷)

Other measures, which might also assist with local capacity challenges, could accelerate this resource transfer. Radical additions should be made to the initiatives since the Lyons Reviews on the relocation of Government services out of Whitehall. Where a London-based function neither requires direct access to ministers, nor is necessarily otherwise London-specific, the Government should institute a presumption *against* its being located in the Capital.

The multiplier effect of central government relocation to the regions should be complemented by business relocation. The BBC in Salford is at once an opportunity and a force for social transformation. (CBBC viewers will have a quite different conception of the BBC Voice from the author's generation!) So a Google presence in Hartlepool, Microsoft in Huddersfield, Amazon in Norwich or AirBnB in Plymouth would have huge implications for those areas and their image. Government should consider introducing significant tax incentives for those businesses that choose to relocate some or all of their operations outside the South East. Particular incentives should be in place for tech industries, as well as for hi tech manufacturers. There should also be assistance for professional services. Consultants for example are already supporting large authorities' localist ambitions in commercialisation and thematic service delivery. That is driving investment in regional offices and teams. At the MCA Northern Powerhouse event, consultants affirmed their commitment to do more in the regions post-Brexit. Incentives in the tax or planning systems to accelerate that trend and support business 'clustering' would be welcome.

Building skills – and importing them into the regions

Of course, business assesses the attractiveness of such relocations against more than just tax incentives or accelerated planning permissions. It examines the local skills base. In the education chapter we will discuss this topic in detail. Suffice it to say at this point that the intentions of the Green Paper in this respect are good, if occasionally a little confused. The Government commits to make the technical education system more useful for those parts of the country producing fewer graduates, while also acknowledging that graduates do better economically. This is somewhat awkward logic.⁴⁸ The regions will certainly need high quality technical skills. But they will also need the buying power and adaptability of a significant graduate presence.

One way business relocations can be made more attractive is encouraging regional commuting and reverse migration. Government and industry should work together to examine what will make South East based graduate-level employees commute to jobs in the regions or even relocate. Temporary accommodation stock, and even a new generation of commuter dormitories, should be investigated.⁴⁹

A regional infrastructure, supporting opportunities

Plainly, adequate infrastructure will be needed. As we argued in the previous chapter, infrastructure should be deployed to support strategic goals. Central Government departments should work with regional political and business leaders, as well as potential regional investors, to define those goals. One headline strategic aim is likely to be enlarging supply chains and labour markets. As Clive Memmott, Chief Executive of the Greater Manchester Chamber of Commerce, pointed out in the MCA's Northern Powerhouse debate, Manchester is about 69km from Leeds.⁵⁰ That is only 5km longer than the London Underground's District Line and about the same distance as Horsham to London. Yet the lack of District Line or commuter

⁴⁷The lack of anything resembling this kind of mission is further reason why the Annexes (ibid) are disappointing.

⁴⁸Industrial Strategy Green Paper, p. 41

⁴⁹These could potentially be modelled on Japanese 'capsule' hotels.

⁵⁰Lord Adonis, Chair of the National Infrastructure Commission, made a similar point. See *Manchester Evening News*, 20 May 2016, <http://www.manchestereveningnews.co.uk/business/business-news/transport-connectivity-must-north-become-11360097>

belt levels of frequency and speed on the Leeds/Manchester trains means the cities feel much further apart.

Once again, what matters is the clear linkage between a genuine economic and social vision and the deployment of infrastructure investment and assets. If the Government sincerely commits to supporting new growth opportunities outside the South East, then it must shape and prioritise its regional transport plans accordingly. Infrastructure must be deployed to create value chains for labour and regional trade. 'London' really comprises widely dispersed but connected communities, stretching from Ipswich to Winchester. Other parts of the country should be able to create their own wide gravitations, with centripetal labour markets and centrifugal commerce.

Government must also redouble its efforts on digital infrastructure. To that end, the Government's Universal Service Obligation for Broadband is welcome.⁵¹

Internationalising localities; localising nationality debates

The additional attraction – and the controversial aspect of the question of regional development – is its international dimension. We said earlier that London is a composite of communities surrounding it. In reality, it is a rich compound of its residential population, its regional footprint and the wider world. London is a global city.⁵² What was clear from the MCA Northern Powerhouse event was the degree to which Manchester and others aspire to be global hubs themselves. Inward investment and that inevitable concomitant of growth – increased immigration, not just from other parts of the UK, but from abroad – are central to that ambition. Indeed, business leaders in Manchester and in other ambitious regional centres are disdainful of the London-centric nature of the airports debate. For them, making the UK available to the world is more than merely a London issue. They would like to see regional airport expansions in Manchester, Birmingham

and elsewhere, as part of a genuinely nationwide and integrated approach to international networks, one which might open up regional opportunity and even take pressure off the London hubs.

How does this international dimension square with the Brexit vote's obvious anti-immigration sentiment vote or the language of taking back control of our borders? The answer is that it doesn't. There is however some argumentative dissonance here. Much opposition to migration comes from parts of the country that have seen comparatively little. Small numbers of Polish plumbers and agricultural labourers in work might look like a threat to an unemployed person in Rotherham. Vast numbers of migrants in London look like colleagues or service providers to a tech worker in Shoreditch. The difference is in the immediacy and tangibility of the benefit. In the next section on education, we will explore how the Government needs to combine upskilling of the indigenous workforce with a mature longitudinal assessment of the UK's skills needs. This will promote a proper informed debate on migration in which everyone is a stakeholder and the voices of populism, opportunism, reaction and racism are marginalised. But in this section it is worth noting that local networks and local decision-making structures are relevant. If community leaders have a stake in delivering healthy local economies, then they will also have a significant stake in selling the benefits of open labour markets to citizens. Their very proximity to those citizens, as well as the immediacy of the benefits under discussion, will be critical to winning the migration argument. Local retention of some tax revenues generated by migrant labour could also transform these debates.

There is huge local interest in the post-Brexit outcomes. Health Service skills capacity, access to FDI, the future of regional funding after the UK loses access to EU structural funds, environmental and agricultural grants: these will have considerable bearing on devolved service environments and local economies. There

⁵¹See Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/1-connectivity-building-world-class-digital-infrastructure-for-the-uk> We look forward to similar commitments around 5G availability. In the final chapter, we suggest concerted coordination between telecoms suppliers and other utilities to put the relevant infrastructure in place.

⁵²For an example of London's position as a global city, see *Global cities, global talent: London's rising soft power* <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/Growth/deloitte-uk-global-cities-global-talent-2016.pdf> Deloitte, March 2016

is thus an understandable clamour among local leaders for involvement in the Article 50 negotiations. The Government should set up a meaningful and transparent consultative structure involving local leaders in the development of the priorities for DExEU, DIT and BEIS.

New Workshops of the World

If regionalisation rebalances the economy geographically, it should also be framed to rebalance it by sector. Many infrastructure-led regenerations, such as those around St Pancras International, have produced service growth and some technology concentrations. Services are an essential part of growth. But they are volatile. And they are often, though not always, localised; only highly specialised elements of infrastructure-related service concentrations contribute to exports. Parts of the country that have been the focus of early efforts to devolve political and growth opportunities were once giants of the Industrial Revolution. Manchester was the Workshop of the World. When asked whether they would welcome a manufacturing component within the Northern Powerhouse growth, the audience for the MCA event were clear that it should play a very significant role. (Figure 2.)

These would have to be modern manufactures of course. In the spirit of targeting the digital sector, the UK could revolutionise its approach to manufacturing. Exploiting changing terms of trade, Britain could pioneer the next generation of super-manufacturing hubs, facilitated by 3D printing. Positive incentives for the development of new facilities on reclaimed industrial wastelands (rather than yet more coffee bars) should be considered. Again, these will require an inward investment of people with varied skills, as well as targeted training. That skills base will need to extend beyond technicians. They will of course be needed. But highly adaptable digital creatives, computer scientists and designers will also be essential. There will also be opportunities in logistics, transportation, freight and related support industries – of course including localised services. Helping the UK regions to become significant product exporters once again should be a deliberate policy goal. As well as the prioritisation of R&D and start-up support

funding mentioned in the previous chapter (and discussed further in the final chapter) linked incentives in the planning system should be considered. This priority could in turn influence the UK's overall policy approach to sterling – at least for a number of years.

Figure 2

Poll question	Answer options	Results
Does the concept of the Northern Powerhouse become more or less important as a result of Brexit?	More important	85%
	Less important	10%
	No change	5%
Should a substantial portion of the Northern Powerhouse growth model be based on new manufactures?	Yes	68%
	No	32%
Should management consulting firms look to refocus a substantial portion of their activities outside London?	Yes	90%
	No	10%

(Source: MCA Northern Powerhouse Event, Manchester, September 2016)



SUMMARY

1. The pattern of Brexit voting necessitates a radical localism and economic devolution plan.
2. The UK should face up to and debate the historic consequences of economic modernisation frankly and imaginatively.
3. Policymakers, business leaders and local politicians should develop a common understanding of the link between local economic regeneration and local political devolution.
4. There must be a step-change in the devolution of all currently nationally administered local spend to local governance and control. All English local authorities should be unitaries.
5. To enhance local leadership, a Professionalisation Fund should be created through a partnership between Central Government and the leadership of local government.
6. There should be a presumption in favour of relocating all Government functions that do not have to be in London to the regions.
7. Complementary initiatives to support business relocation should be instituted.
8. Government and local leaders should examine what infrastructure is required to encourage skilled people to commute or relocate to new opportunities outside the South East.
9. Regional infrastructure investments should be clearly focused on a core Industrial Strategy objective of improving opportunity, by extending value chains, markets and enlarging labour supply.
10. Policymakers should openly acknowledge the international ambitions of regional growth initiatives, such as the Northern Powerhouse. Local debates about the migration implications should be encouraged. Linking migration to local benefit (and, as we shall see, to up-skilling of the domestic workforce) will promote understanding and realism about the UK's need for overseas labour.
11. Representatives from local government should be routinely consulted on and involved in the Article 50 negotiations.
12. Reviving and modernising regional manufacturing (potentially through a 3D printing revolution) should be a deliberate policy goal. As well as according this sector the priority needed to help channel relevant business investment and R&D support, Government should look at the role of incentives in the planning system.



EDUCATION: THE BEST SYSTEM FOR THE SMARTEST PEOPLE

Education transformation for success – and survival

In order to withstand the challenges and exploit the opportunities of Brexit, the UK will need to be ingenious. MCA member firms go further. In their view, to succeed in the coming years, we will need to become the Smartest Nation on Earth.

Indeed, this is not just about success. It is also about survival and securing a future for our workforce. As Deloitte's 2016 report *Talent for Survival* shows, the more economies spend on education, the less vulnerable they are to human redundancy through automation.⁵³

The emphasis on education and skills in the Industrial Strategy Green Paper is accordingly welcome.⁵⁴ However, the proposals fall below the radical and transformational. Indeed much of what is 'announced' is not unique to the Strategy, and is consistent with much that is already happening across the education landscape. Moreover, one or two of the emphases are questionable, especially in the context of the desire to achieve better economic outcomes and inclusion.

STEM and non-graduate education: important, but not the full answer

For example, the Industrial Strategy places great emphasis on non-graduate level technical training and on STEM attainment.⁵⁵ These emphases are important. As the Wakeham Review shows, STEM skills are immensely important for the development of strategically significant industrial sectors.⁵⁶

Indeed, it should be stressed ahead of the following analysis that many MCA firms are heavily involved in initiatives to improve the flow of STEM skills into our industry. Some of these initiatives focus on longstanding structural issues, such as the lack of women pursuing STEM degrees or training in technological disciplines.⁵⁷ Many MCA firms are also promoting non-graduate routes into the profession, including apprenticeships. However, the emphases on STEM and non-graduate training are in danger of becoming rather blunt instruments of education policy. These emphases need to be investigated and qualified, as part of the pursuit of a more thoughtful and nuanced education and skills strategy, for a variety of reasons.

Education for creativity and adaptability

One of the key features of workplace effectiveness in the Digital Age is adaptability. Many MCA digital experts, including those who are at the sharp end of innovation in areas such as AI, lament the fact that some of the people they interview for roles do indeed have deep, vocational technical skills – but in applications and techniques that, given the pace of digital change, *may imminently be superseded*. It is highly desirable for there to be more technically able people, and even technical apprentices. But the last wave of industrial apprenticeships died out because the skills apprentices were taught did too. We must ensure that new technical training approaches avoid inbuilt obsolescence.

Further, the general cultural reaction to the perceived oversupply of graduates in the last few decades cannot be allowed

⁵³See <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/Growth/deloitte-uk-talent-for-survival-report.pdf> p. 3

⁵⁴Industrial Strategy Green Paper, p. 25 et seq, and p. 37 et seq

⁵⁵Ibid, pp. 38-41, and p. 44. As we go to press, the Chancellor of the Exchequer announced new T-Levels (technical equivalents of A-Levels) in the 2017 Budget.

⁵⁶See Wakeham Review, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/518582/ind-16-6-wakeham-review-stem-graduate-employability.pdf p. 13

⁵⁷The extent of this problem is spelt out in the Digital Strategy section on inclusion: <https://www.gov.uk/government/publications/uk-digital-strategy/2-digital-skills-and-inclusion-giving-everyone-access-to-the-digital-skills-they-need>

to monopolise discourse.⁵⁸ Graduates earn more. They do so in part because many of them have been taught how to be adaptable. The absurdities of some aspects of tertiary expansion – people doing degrees in hairdressing – should not disguise the fact that many graduates have *learned how to learn*. This is true of many STEM graduates to be sure, especially in those disciplines focusing on enquiry and experimentation, rather than simply the acquisition of knowledge. But it is also true of many graduates in creative disciplines. Wakeham stresses the importance of STEM to professional services.⁵⁹ His observation has some merits, especially in areas such as engineering and computer science. But a constant refrain of many of our digital experts is that such capabilities need to be leavened with creativity. STEM education *can* provide that ingredient. But it is neither a *guarantee* of it, nor the sole route to it, as high rates of STEM graduate unemployment (discussed below) seem to imply.

While it feels intuitively necessary in an increasingly digital world for policymakers and educators to focus on the acquisition and application of STEM knowledge and skills in the workforce, STEM by itself is not sufficient to ensure future employability or economic prosperity... Every worker needs a balanced 'kit bag' of skills – not simply to avoid being substituted by machines but also to help them adapt to working alongside machines in a smarter, more efficient and balanced economy... We have found that although STEM skills and knowledge are in demand, they are not as important as having a blend of strong foundational and general purpose skills and abilities.

Harvey Lewis, Director Deloitte Insight Team, in *Talent for Survival*

Business more generally also needs creativity and adaptability. For as well as needing app developers, firms also need people of an entrepreneurial

mindset. Corporate Britain suffers from an oversupply of analysts and an undersupply of creative entrepreneurs. Of course, we have many great creative industries. But while some institutions in that world could do with support from good business analysts, sectors awash with business analytics could use some creative input.

Digital offers a way to blend creative and analytic skills, to combine technical accomplishments with imagination. Early digital successes, such as CGI and advances in cartoon films, are now complemented by the potential of 3D printing to revolutionise manufactures. Such disciplines bring together technical and design capabilities. They unite science and the arts.

Challenging the 'Two Cultures': more rounded education, later specialisation

There are several corollaries of this argument, some of them longstanding. The separation of the arts and sciences in education, and the associated early specialisation, are damaging to our capacity to increase the skills base of the population. The separation has a paradoxical effect, beyond providing ongoing evidence of CP Snow's 'two cultures'.⁶⁰ We specialise early in order to create huge numbers of generalists. We require our children, who do not necessarily know what they want to do with their futures, which now stretch out for many years, to specialise in particular disciplines at the beginning of their adolescence. Doing so, we pointlessly inhibit the possibility of later specialisation as people really discover their aptitudes and what inspires them.

Certainly we could do with more STEM graduates. But the adaptability and creativity of arts graduates cannot be dismissed as a waste of time (as one recent Education Secretary has suggested) even assuming education is solely about the world of work, which it is not. Yet it cannot be denied that some arts graduates

⁵⁸Indeed, the reaction against graduates can become convoluted in logic. The Chartered Institute of Personnel and Development, for example, in arguing that there is a mismatch in current skills needs and supply in the economy blames excessive numbers of graduates. It cites for instance that the numbers of graduates entering the police at the rank of sergeant or below is up by 2% since 1979. (<https://www.cipd.co.uk/news-views/cipd-voice/issue-7/university-vocational-education-imbalance>) However, the service (where historically graduate entrants, even the latest appointment to Met Commissioner, nevertheless started at constable grade) has been subject to persistent criticism on the quality of case compilation and management. It has seen its status dented by Hillsborough, Lawrence and Leveson. Provided the continuing civilianisation of support functions ensures that new graduate-level recruits are not wasted, many would welcome even more graduate entrants to the service and its associated general elevation in both standing and standards.

⁵⁹Wakeham Review, p. 13

⁶⁰*The Two Cultures*, Rede Lecture, 1959.

would have benefited from wider subject exposure. One route to that is ensuring more people with arts specialisms also do some maths, coding, or physics, helping them change direction or preparing them to take vocational courses later. Similarly, people with technical and scientific training could benefit from some immersion in the arts, learning a language or considering the evidential problems and judgement calls posed through serious literary or historical analysis.

This all invites a change in the mix and style of teaching throughout the education system. The public service Annex to the Digital Strategy is disappointing.⁶¹ In future iterations of the education section, it will be important to examine ‘digital disruption’ to schooling more fundamentally from two perspectives: what is the classroom for in the digital age and how can school be reinvented by digital? There are potential lessons from other countries worth examining here, notably Finland.⁶²

One obvious reform would be the introduction of a more baccalaureate style of education at A-level especially. This could be complemented by greater use of subsidiary modules, some obviously of a practical nature, in undergraduate courses. Both approaches would have the obvious benefit of enlarging the horizons of graduates, including many who currently move from arts degrees into teaching, professions and public service. With exposure to technical or scientific disciplines – and evidence of what use their creative flair might be put to in those pursuits – graduates who might not otherwise consider business or entrepreneurial careers could be attracted.

The second corollary here relates to the continuing importance of graduate status as a route to employment. The Green Paper acknowledges this. It goes on to say that the delivery of high quality vocational training will be especially helpful to people in regions in the UK that produce fewer graduates. The obvious logical problem with this analysis was touched on in the last chapter and does not need to be

restated.

Workplace adaptability and ‘soft skills’

None of this is to decry vocational training or the need for it to be improved. Nor is it to suggest that the graduate courses are the sole route to adaptability in the workplace. It is however to invite some reconsideration of the blunt emphases in current thinking about skills. Not all degrees produce thinking, creative and adaptable people, suited to the workplace, as the employability issues associated with STEM graduates indeed suggest. However, some degrees do, sometimes in unexpected and indirect ways connected to the culture of university life. Feedback gathered in the MCA’s recent Young Consultant survey suggests that in terms of preparation for work, the voluntary and extra-curricular environment of university societies and clubs, especially the leadership roles and teamwork they foster, are almost as important workplace preparation as the core degree.⁶³ To match these dimensions in non-graduate and technical training, courses will need significant elements that promote adaptability, such as problem-solving emphases, rather than simply the acquisition of technical knowledge. They will also need to be set in learning and recreation environments that help prepare for the interpersonal, planning and organisational dimensions of work.

Graduates in STEM subjects, as both Wakeham and the related Shadbolt Review (focused on computer science) show, face significant levels of unemployment.⁶⁴ Wakeham stresses greater alignment and mutual understanding between the world of work and STEM degree environments. Shadbolt, responding to 10% unemployment rates in computer science graduates, stresses not only such alignment and ongoing exploration of the workplace relevance of computer science curricula, but also equipping undergraduates with ‘soft skills’ needed for workplace success.⁶⁵ Recent investigations by the MCA into workplace training needs likewise accent soft skills. Young Consultants in

⁶¹See Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/summary-and-annex>

⁶²Finland’s supposed abolition of core subjects has been overstated. But for a good summary of the radicalism of the reforms, see *The Washington Post*, 26 March, 2015 https://www.washingtonpost.com/news/answer-sheet/wp/2015/03/26/no-finlands-schools-arent-giving-up-traditional-subjects-heres-what-the-reforms-will-really-do/?utm_term=.ec999d96d895

⁶³See *Our Consulting Future*, 2016, <https://www.mca.org.uk/reports/reports-data/our-consulting-future/>

⁶⁴Wakeham Review, p. 36, and Shadbolt Review, April 2016 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/518575/ind-16-5-shadbolt-review-computer-science-graduate-employability.pdf p. 2

⁶⁵Shadbolt, p. 13

particular have called for a rebalancing of their training and development away from technical disciplines towards communications, management, teamwork and presentation skills.⁶⁶ Combined with a more varied, creative and less prematurely specialised school curriculum, and the targeted introduction of more subsidiary elements at degree level, Shadbolt's recommendations could make a significant difference here.

Our suggestion that the position of graduate attainment within the current educational debates needs to be rebalanced also has a social justice dimension. Simply because much has already been done – sometimes patronisingly and needlessly at the expense of quality – to advance the cause of people from more disadvantaged backgrounds in their pursuit of degrees, that does not mean that more still should not be done. However, to restate, a more balanced assessment of the role of graduates in the skills mix does not diminish the importance of providing world-class support and radical up-skilling for the supply of labour beyond the graduate pool, which of course has its equally important social justice dynamics.

Indeed, MCA member firms are at the cutting edge of non-graduate recruitment. Our Young Consultant survey showed a small, but pronounced recent shift towards non-graduate recruitment.⁶⁷ Plainly, anything that can be done to build on this is welcome. But the key thing here is that these non-graduate recruits should be flexible and capable of rapid workplace evolutions. They should be able to retrain – and must be given opportunities to do so. Indeed, where appropriate, they should be able to take a career break to pursue a degree.

Education and skills: a lifelong challenge

This sort of vocational training, which may, of course take place after a degree, is at least as important as some foundational

training. An emphasis on lifelong learning in the pursuit of a radical industrial strategy is accordingly important.⁶⁸ This is not just about improving deplorably poor adult education schemes. It is also about incentivising employers to allocate and spend training budgets. Yet the existence of the Apprenticeship Levy, seen by many as a payroll tax, though very well intentioned, erodes business enthusiasm to fund other, potentially more important training. Apprenticeships, especially in target digital skills, such as automation, virtual reality, IoT support and AI, may prove extremely valuable to recruits. But they are not the sole answer to our skills deficits.

Recasting the Apprenticeship Levy as an Industrial Learning Fund might be more fruitful. The investment requirements on business could be rendered more flexible, with businesses meeting their obligations by funding retraining or outreach programmes to up-skill 'feeder' populations.

World-class research: theoretical and practical go hand in hand

The emphasis in the Brexit White Paper, and in the Industrial Strategy Green Paper especially, on ensuring that the UK remains a research centre, and improves its currently weak position in terms of business R&D, is welcome. But again, a truly transformational intent would be more welcome still. The aim should be to make the UK *the* centre for science and technology, and also for business innovation, at least across a range of target areas. Plainly this relates to the educational environment overall, but it is worth examining the research institutions and the tertiary sector in their own right.

The UK has some of the finest academic establishments in the world. Despite decades of financial restraint, we continue to be the home to a number of the best-regarded universities. These prestigious institutions will need to be supported –

⁶⁶*Our Consulting Future*

⁶⁷*Ibid.* As we go to press, the MCA is also publishing its recent *Consulting Excellence* staff survey. Again, this shows a workforce diversifying by educational background.

⁶⁸This accenting of workplace training can also help address some long-term issues expeditiously. The emphasis on getting women into technology and STEM from an early age is laudable for reasons which extend well beyond economic needs. Yet if technology companies simply wait for the results of such initiatives, they may end up employing relatively few women for quite some time. By recruiting able and adaptable women of graduate and non-graduate level, and training them in relevant disciplines, these companies may complement their long-term goals with short-term successes.

and challenged. They must play their part in achieving greater depth of practical research output but also in spreading opportunity more widely.

On deepening the practical research output, it is worth noting that this is not a new obsession. The Industrial Strategy Green Paper is only the latest in a long series of reports to lament the UK's low conversion of intellectual effort into saleable inventions.⁶⁹ Since the 1980s, there has been constant reference to the need for better practical and applied research output, often ranged at odds with theoretical.

This is muddled thinking. While there are exceptions, as many studies show, world-class theoretical (or basic) investigations very often sit alongside practical applied outputs in sophisticated research networks.⁷⁰ Great research cultures are great research cultures. And the theoretical and practical mutually reinforce. You don't get genetic medicine without Watson and Crick discovering the human genome. Prestige is relevant here too. A recent ministerial memoir confesses that the obsession with closing down supposedly wasteful theoretical activities in favour of practical research nearly led to the complete withdrawal of UK funding from CERN!⁷¹

Great research networks produce great theoretical and great practical research. Trying to get an emphasis on the latter at the expense of the former misunderstands many research cultures and might ultimately constrain them. Certainly great research clusters require relationships with each other and with business. They forge networks with communities and with employers, attempting to understand their needs. But it does nothing to promote that understanding for government or business to suggest that theoretical research is irrelevant or wasteful.

Enlightened business partnerships and digital outreach

Business and Ivy League partnerships in

the US are sometimes better at achieving this harmony than those in the UK. That Bill Gates and Mark Zuckerberg could drop out of Harvard and make successful tech businesses is a function of the vibrant technological and entrepreneurial environment around that university. But those clusters derive expertise, influence and prestige from the great theoretical research going on in that great institution.

These networks are based on mutual respect and mutual cultivation. That helps cluster funding, public and private. The great academic and research institutions in the UK need to be encouraged to develop similar networks with business and public sector communities who understand them and are not simply desperate for a quick return. Some of this cross-fertilisation between universities and business is starting to happen. The Digital Strategy notes approvingly initiatives at UCL and Durham University.⁷² Furthermore, the potential here is not just limited to clustering, important though that is. In the Digital Age, geography should be no impediment to outreach. Top universities should deploy digital to enlarge their business ecosystems. Digital should also be used to extend opportunity to the regions, potentially even through franchise models for courses provided through online modules and streamed lectures.

A step change in education and research spending

As we have seen, there is ample scope for Government to articulate priorities that give signals to private investors and accordingly research institutions, especially those with lively and active business networks. However, its own funding, especially the resources it devotes to higher education establishments engaged in scientific investigations, is a subtly different matter. Government's public responsibility is to provide a secure bedrock of funding, so that the intellectual culture, including theoretical research, can thrive in those institutions. While giving clear signals to other funders, Government's own finance for higher

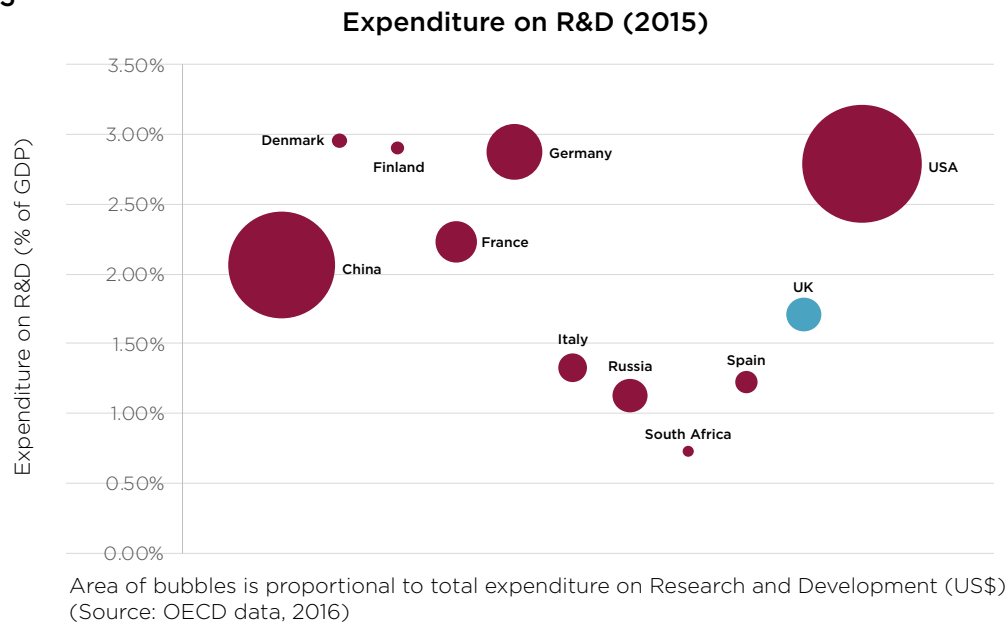
⁶⁹Industrial Strategy Green Paper, pp. 25-28

⁷⁰Exceptions include Sweden, which converts very little of its substantial public funding into new patents. The Green Paper makes much of Japan's high late-stage research, largely privately funded, and low basic science funding (p. 27). But Japan's industrial structure of corporate monoliths is very remote from ours (and Korea and China, also cited as examples, are remote politically). By contrast, Germany and the US have mixed funding economies. Private sector funding is leveraged at least in part by substantial public spend on science and research activity in prestige institutions. For Germany, see http://www.sgi-network.org/docs/2016/thematic/SGI2016_Research_and_Innovation.pdf

⁷¹Ken Clarke, *A Kind of Blue*, 2016, pp. 180-81

⁷²See Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/3-the-digital-sectors-making-the-uk-the-best-place-to-start-and-grow-a-digital-business>

Figure 3



education research must be uniquely enlightened and uniquely 'patient'. It must not link its financial support for this kind of research to overly prescriptive conditions, or engage in frustrated ministerial fist-wagging. That approach would be counterproductive, founded in a basic misunderstanding of how the elite research institutions work. In any case, UK funding for research has a more basic problem than targetting. It is simply too low.

What these great institutions most need, both for their research output, but also as centres of learning and skills development, is resources. The tertiary sector and related elite bodies have survived historically on shoestring levels of public and private research funding (as figure 3 shows). This cannot persist for much longer. The coming decades will see an arms race in education and skills. The UK cannot afford to lose it.

Accordingly, from Sure Start to PhDs, the Government should set stretching new targets for education and research funding.⁷³ This should be the totality of UK spend, not just public, with incentives for endowments, charitable donations, and business support (including any new Industrial Learning Fund).

Indeed, there is perhaps a generational obligation here.⁷⁴ Baby Boomers and

Generation X-ers are disproportionately materially advantaged relative to the young, owing to factors in the property market, and the challenges of funding higher education expansion. Young people will nevertheless, as the next generation of workers, be crucial in dealing with the aftermath of Brexit. That they did not, as a cohort, vote for it, unlike older generations, makes this especially poignant. In times of crisis, such as the aftermath of the Second World War in Japan and Germany, economies have flourished through collective effort, thrift and investment in the future.

Yet as recent ONS data on household consumption shows, while spending may have shifted away from booze and smoking, this seems to evidence the maturing and redirecting of the hedonism of the older generations, not its diminution. (Figure 4 overleaf.) Their party goes on in different forms. UK households spend significantly greater sums on hotels, restaurants, clothing and consumer goods than on education.⁷⁵ Further, for electoral reasons, the asset richness of the elderly has been protected, while young people face often high marginal tax rates and the arduous business of student loan repayment, something their forebears, even graduates, did not have to face.

⁷³The Government's announcement in the 2017 Budget as we go to press of new investment in PhDs is a small start. See <https://scienceogram.org/blog/2015/03/uk-science-bottom-gdp-g8/> for data on how low UK Government funding for science is by international standards.

⁷⁴See *The Pinch*, 2010, by David Willetts, for an analysis of these intergenerational dynamics.

⁷⁵See ONS, February 2017, <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/expenditure/bulletins/familyspendingintheuk/financialyearendingmarch2016> Significantly, household spending on education fell between by around £2 per week per household in this survey compared to the previous exercise.

Figure 4**Average weekly household spending (£ per week)**

Transport	72.7
Housing (net), fuel and power	72.5
Recreation and culture	68
Food and non-alcoholic drinks	56.8
Restaurants and hotels	45.1
Miscellaneous goods and services	39.7
Household goods and services	35.5
Clothing and footwear	23.5
Communication	16
Alcoholic drinks, tobacco and narcotics	11.4
Health	7.2
Education	7
TOTAL	455.3

(Source: ONS Household Spending Analysis, February 2017)

Government should consider incentivising relevant investment through Education Bonds, as well as donations and bequests. But Government spending should in any case rise, and Government must consider what spending it will discontinue or what new taxes or insurance mechanisms it must introduce to make this happen, as well as what initiatives it should consolidate.

As a small start to this (and an alternative to the suggestion of its incorporation within the investment capacity of the Business Bank), the Industrial Strategy Challenge Fund, for example, might be much better redirected, together with a host of other well intentioned but bureaucratically managed funds, towards tertiary education and research.

As figure 5 shows, the UK does not do too badly in global education spend comparisons in GDP terms. But figure 6 shows a more mixed position in terms of per capita spend across education levels. In any case, as we argued at the start of the chapter, citing Deloitte's *Talent for Survival*, the challenge of automation means that economies that spend more on education have the greatest prospect of creating

meaningful roles for their workforces. We anticipate that economies that grasp this fact will substantially increase their education spending. So the UK should try to get ahead of the field. A 50% increase in total education spend by the midpoint of the next decade could be the goal. That would amount to around £40-50bn in terms of public expenditure alone.

Figure 5

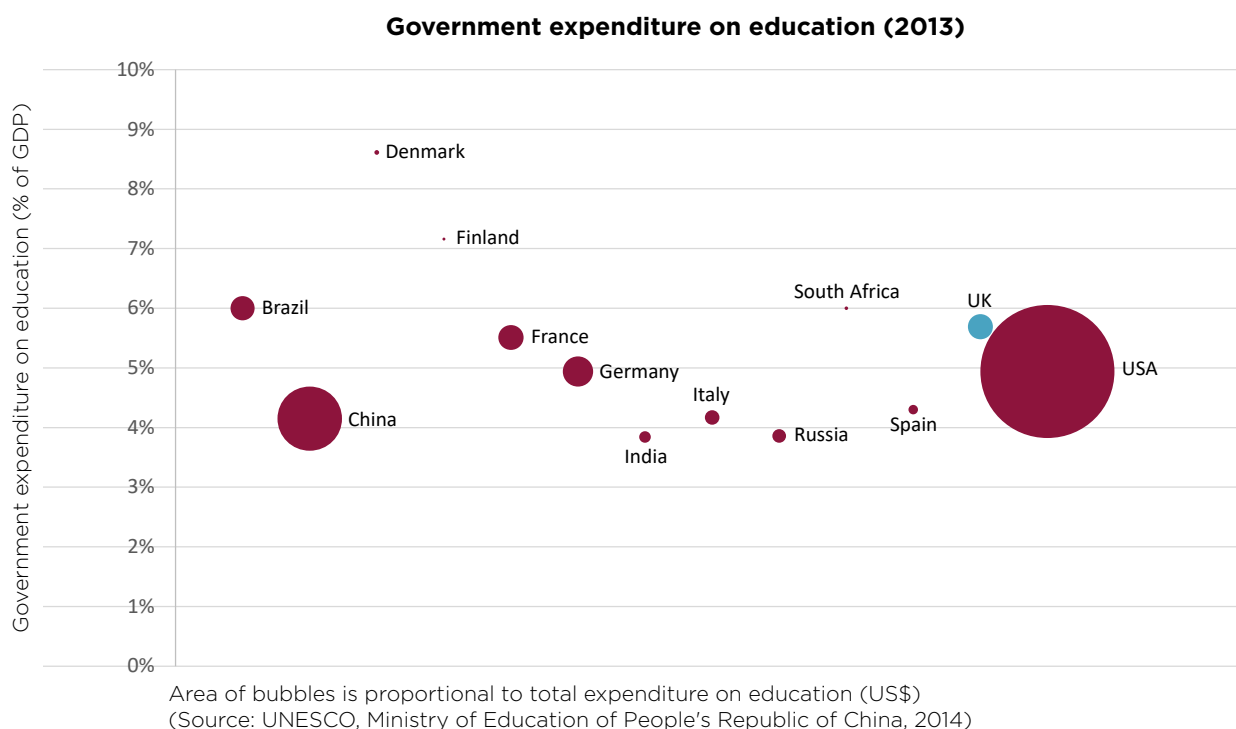


Figure 6

Government expenditure per student (PPP\$) 2013

COUNTRY	Primary student	Secondary student	Tertiary student	TOTAL
Brazil	3,169	3,421	4,666	11,257
China	..	..	..	..
Denmark	11,700	12,895	20,402	44,997
Finland	8,519	..	14,469	..
France	7,055	10,505	13,732	31,293
Germany	7,936	10,469	17,093	35,499
India	481	828	2,419	3,727
Italy	7,639	8,326	9,359	25,325
Russian Federation	..	..	..	..
South Africa	..	..	..	..
Spain	5,867	7,380	7,509	20,756
United Kingdom of Great Britain and Northern Ireland	8,770	8,407	13,663	30,841
United States of America	10,176	11,657	10,888	32,720

(Source: UNESCO data, 2014)

As indicated, there is scope to secure private contributions to this expansion. Nevertheless, since 50% growth would bring education spend closer to current levels of welfare spending, Government might choose to target a partial rebalancing towards education investment and away from benefits.⁷⁶ Political will and courage is needed to challenge the generational tax and asset advantages enjoyed by those with large pensions, homes, who did not pay university fees, and tip the scales towards the young.⁷⁷

Business schools

Two further areas relevant to education and skills could make a significant difference to our economic prospects. The first concerns business schools. These are an important source of business insight and also a prime generator of revenue from overseas students. They are reasonably highly regarded. However, unlike other tertiary institutions they legitimately lend themselves to scrutiny for their business relevance, since business training is what they are there to provide.

Recently, MCA members, as well as other consultees, have suggested that aspects of the core business school syllabuses, especially the MBA, may no longer fully meet the needs of the Digital Age. Their emphasis on technical, but not necessarily digital training, might also, it is argued, produce too few of the creative mindsets needed for true entrepreneurship. We have no conclusive evidence one way or the other for this assessment, but plenty of relevant anecdote. However, there may be a case for the review and potential overhaul of the business schools. Strong emphases on innovation, entrepreneurship, creativity and digital will be needed in the future. Business schools will also need inclusive socio-economic reach, given the findings of the Mone Review concerning the concentration of business start-ups among the comparatively affluent, mentioned earlier. Furthermore, business schools are one area of tertiary education where a clear and direct emphasis on engagement with industry and commerce should

be a core mission. MCA member firms suggest that where those networks are in place, business school curricula are more responsive to workplace needs.

To support this reform, and help identify investment targets for the Industrial Strategy, the Government could encourage the business schools to pool their resources to conduct a baseline Industrial Modernisation Study. (This could build on Jurgen Maier's review of industrial digitalisation.)⁷⁸ It could then develop, if successful, into a standing inter-institutional structure, the Industrial Modernisation Academy. This would be source of ongoing insight into best practice and innovation, as well as, potentially, a funding body for R&D in its own right. Its work could prove extremely useful for the nascent Productivity Council.

A rounded examination of the UK's skills and capacity needs

The second area concerns the need for an integrated and rounded examination of the UK's skills base and needs. As mentioned, the Government's own figures in the Brexit White Paper show very substantial long-term increases in migration to the UK from non-EU countries.⁷⁹ As we have argued, departure from the EU is not the migration 'silver bullet', and in any case it is simply misleading to say that the UK will reduce net migration without economic consequences, in the short term at least, and probably far beyond. The reality is that immigration is flattering. People want to move to work in successful economies. They do not want to work in Zimbabwe. It is also a concomitant of growth. As nations become wealthier, they demand more service outputs. They need human capacity.

Throughout this document, we have taken account of the degree to which migrant labour, from the EU and beyond, might be replaced by better-trained homegrown talent or through technological change. However, it is idle to suggest that all immigration will be replaced immediately.⁸⁰ Indeed, it is entirely possible that ever-

⁷⁶There is also scope for Government, education and business institutions to build on the current expansion of online learning resources, such as Coursera and FutureLearn.

⁷⁷Relevant to this spend uplift - and one area Government can place its research bets - is funding of new institutions. The proposed Institutes of Technology are timely and welcome.

⁷⁸See Industrial Strategy Green Paper p.102

⁷⁹Brexit White Paper, p. 26

⁸⁰The Industrial Strategy Green Paper comes close to suggesting this in positing a near binary relationship between the use of migrant labour and the neglect of the domestic workforce. This is simply misleading. (See p. 37)

increasing migration is simply a fact of life in the UK, given the health needs of an ageing population and the unfavourable working/non-working age ratios produced by longevity.

A sensible debate about skills is thus required. In it, themes of migrant labour, homegrown talent, and productivity increases should be linked. The Government can scarcely have an Industrial Strategy if it ducks the issue of skills needs. While we understand that BEIS itself might not want to set figures here, Government can convene the interests and expertise needed to derive sensible estimates. In the post-Brexit context, this probably means something more wide-ranging than simply heeding the advice of the Migration Advisory Committee. Having set out a clearer vision for the sort of economy it is trying to foster, Government can then work with academia and industrial sectors to chart the outputs needed for growth, challenging the latter to draw distinctions between current models and potential innovative future approaches. The skills and capacity mix required to deliver this would then be a composite of homegrown workforce – including those of the UK's economically inactive population that can be re-equipped – innovation and migrant labour. Being explicit about this linkage promotes honest debate. Not all economically inactive people will be redeployed to work in health. Home monitoring of conditions may reduce some capacity demands. But we will still need migrant doctors and nurses to a significant degree. In a free society, not everyone will want to become an engineer. So we will continue to need overseas engineering talent.

Linking the internationalisation of regional growth centres to significant investment and local opportunity can 'take the curse off' the attendant migration. Similarly, connecting the issue of foreign labour with substantially up-skilling the domestic workforce will reduce fear, and marginalise those who are inherently opposed to immigration for reasons of irrationality and bigotry.

The management consulting industry is well placed to examine the interdependency of these elements. It has

the analytical ability to understand the correlation of skills needs with the overall shape of the economy, as well as a direct interest in the welfare of all sectors, whose growth it both supports and relies on. Both independently and together with relevant partners, such as other members of the Professional and Business Services Council, it is ready to assist Government with a genuinely rounded appraisal of skills needs.



SUMMARY

1. To thrive and survive after Brexit, the UK needs a radical and transformational approach to education.
2. Policy emphases on STEM and non-graduate attainment are welcome, but need to be set within a more rounded approach.
3. Creativity and adaptability are key ingredients for the contemporary workforce. They are likely to prove even more important as AI and automation become more significant.
4. These skills are not exclusive to STEM graduates. Technical training also risks obsolescence if it teaches narrow capabilities, which might be superseded by innovations, rather than adaptability.
5. Early specialisation is damaging. It inhibits later, mature specialisation. It should be challenged through baccalaureate models and the use of subsidiary courses in degrees.
6. Shadbolt's emphasis on the cultivation of soft skills to combat STEM graduate unemployment is the correct one.
7. Soft skills, adaptability, and learning environments that encourage teamwork and problem-solving should also characterise the next generation of non-graduate technical courses.
8. Lifelong learning will be just as important as pre-work education for our future competitiveness. Government should accordingly consider converting the Apprenticeship Levy into an Industrial Learning Fund.
9. Government and business should accept that world-class theoretical research underpins world-class practical output. They are not mutually exclusive. Partnerships between business and the tertiary sector should be informed by mutual respect, understanding, and facilitated by digital.
10. Government should target a major increase in public and private spending on education and research, possibly setting a goal of a 50% uplift in education spend by the midpoint of the next decade.
11. Business school curricula should be reviewed. The schools should be encouraged to collaborate on an Industrial Modernisation Study, of potential interest to the Productivity Council. The Study could be the forerunner of a new Industrial Modernisation Academy.
12. Government should facilitate a rounded examination of the UK's forward skills and capacity needs. Having set out a clear industrial vision, it should examine the implications of that vision and how they could be met from domestic up-skilling, productivity gains, and from migrant labour. Business leaders and associations, including management consultants, independently and through the Professional and Business Services Council, should assist this analysis.



DIGITAL FOR OUTCOMES, CONSUMERS AND CITIZENS

Digital: a complex challenge

As indicated earlier, for the UK to succeed economically, it must commit to digital. The Industrial Strategy Green Paper's recognition of this is welcome. However, once again, it lacks transformational intent and prioritised sharpness, not least in distinguishing the supportive interventions – in skills and investment – needed to help the digital industries on the one hand and the digitisation of the wider economy on the other. As implied in the last chapter, and further explored in this one, this distinction drives the need for a variety of skills. Certain technical accomplishments are inevitably required to write software or build quantum computers. For other business challenges, a mix of technical and creative skills is necessary (ideally in some cases in the same person). Some digital experts may have technical skills limited to knowing what is in the market, but great creative facility in deploying open source and emerging applications. Likewise in the wider business community, a good enough understanding of digital at a technical level to recognise its potential may be important, but plainly what many decision-makers and operational people alike need is the kind of digital 'savvy' to know how to commission and use digital transformatively.

The Government's Digital Strategy is impressive in its examination of some of these matters. It links strong ambitions to granular detail. It draws a reasonably clear distinction between the needs of the digital sector and the digitisation of industry.⁸¹ However, to be optimally effective it needs to be set within a more visionary and sharply delineated ambition for the wider economy.

Of course, digital is a tricky matter. It is an apparently amorphous and ungovernable concept. It is daunting for policymakers to consider which aspects to support.

Nevertheless, there are a few principles that could guide Government's interventions and help business understand the sort of digital and creative business environment that is being encouraged and fostered.

Currently, the UK nurtures a great deal of digital activity but comparatively few home-grown world-leaders. We have many start-ups. But relatively few of these achieve scale. We also have some substantially undigitised sectors and industrial pockets. There are a variety of reasons for this.

Towards a shared digital culture

The first concerns the quality of the digital culture in business generally. Many start-ups are attempting to provide capabilities other businesses can use. Digital's potential, and also its pitfalls, remain comparatively poorly understood by business in the UK. This undermines how the technical outputs of the specialist digital industries sector are managed, deployed, tasked and driven to create value. Despite advances in retail, aspects of entertainment, and automotive, latterly within financial services and tentatively within domestic energy, many areas of the economy (and public services) lack digital modernisation. The divide between traditional businesses and digital must be bridged. This is partly to do with mutual demystification. It is also one of the reasons why though we need technical digital specialists, there is a substantial role for digital generalists and digital business creatives. At present, there is an unhelpfully binary presumption that there are old-fashioned, pre-digital ways of doing things and there is the digital way. The former are well understood but clunky, the latter is modern, innovative, but the arcane preserve of experts. But as many MCA member firms remind us, businesses and institutions should not adopt digital simply for the sake of it. They need a strategy for the Digital Age, not a Digital Strategy.

⁸¹Chapter 4 of the Digital Strategy is good on this theme and sets out clearly some of the barriers to digital's adoption by traditional businesses: <https://www.gov.uk/government/publications/uk-digital-strategy/4-the-wider-economy-helping-every-british-business-become-a-digital-business>

They should accent digital prominently within their planning. They should certainly move beyond seeing digital as merely an enabler. It is transformative, allowing for the complete reinvention of business models to deliver increased customer-centricity, efficiency and speed. *But it is those outcomes that matter.*

Digital is changing the way we understand economic value. Pre-digital technology was monolithic, scarce, expensive. True digital technology is modular, abundant, affordable. Digital can provide great customer and employee benefits and unprecedented adaptability. To deploy it effectively requires a major cultural change in business. This is quite different from bolting digital onto the side of an enterprise, compartmentalised under a heading like 'digital strategy'. It means getting the right mix of skills and digital understanding, from Board-level commissioners and creative business visionaries right through to the technical deep domain digital experts. But what matters are the outcomes. So, what an enterprise needs today is not a digital strategy. It is a business strategy for the Digital Age.

Carlo Gagliardi, Strategy Partner, PwC

The divide between analogue and digital approaches needs to be bridged. Recently the author has witnessed the digitisation of carparking by a major charity. These arrangements have introduced new delays for the management of extremely small risks, producing scarcely discernible business benefit. This is wasteful, inefficient digitisation for the sake of digitisation. And it is not uncommon. Things like this would happen less, if business leaders and administrators had a higher level of digital understanding and if digital specialists also spoke the language of business needs. This partly relates to potential improvements in business school courses and other educational innovations we have suggested. Indeed, it is worth stressing here that in seeking to produce more digitally specialised people, Government must not worsen the cultural divide. Business leaders who have a good general

understanding of digital; creatives who can do some coding; digital specialists who speak business; business designers who can deploy 3D visualisation and virtual reality techniques they do not necessarily need to build themselves to challenge existing business models: these will be as important as increasingly deep pools of domain specialists on whom they can draw.⁸²

Digital Strategic Primacy Principle

We contend that there are many areas of business that remain significantly under-digitised. We strongly advocate that Government should promote and business should adopt a Digital Strategic Primacy Principle, building on *Digital First* in public services, and applying to all sectors. Here, across the public sector, and working with business leaders in the private sector, Government should conduct deep exploration of the options available for deeper and more concerted digitisation. It should sponsor, potentially via the Maier Review, concerted cross-business investigation of leading edge international practice and options for thoroughgoing domestic digitisation in all sectors. The extent of this innovation could be a focus of the business schools' Industrial Modernisation Study. Innovations in the health sector, for example, in wearable technology or digitally facilitated genetic profiling and identification of associated health risks, should receive more focused attention as major spending priorities. In the private sector, everything from the micro issues of old-fashioned and creaky locally delivered essential services, such as all aspects of homebuying, undertaking and the booking and management of domestic building contractors, right through to the comprehensive digitisation of the UK's physical assets, could be explored.

But applying the Digital Strategic Primacy Principle is not the same as blind digitisation. Digital is the first recourse for transformation (hence its primacy). *But it is the transformation that counts*, not the digitisation (hence digital's deployment needs to be strategic). In public services

⁸²There are numerous references to the potential of digital in the creative industries within the Digital Strategy, especially in <https://www.gov.uk/government/publications/uk-digital-strategy/3-the-digital-sectors-making-the-uk-the-best-place-to-start-and-grow-a-digital-business>. What is now needed is a collective recognition by policymakers of the importance of digital creatives in other industries. (These may have quite different skill sets from those some current programmes to improve digital attainment might produce.) The work of the Digital Catapult will be critical here. But Government must ensure adequate connections between its work as a resource for digital start-ups and its awareness of and access to the insights and business needs of larger enterprises.

and business, the focus is outcomes. So the Principle should support a creative, digitally informed culture, with the public sector and business working with digital harmoniously to reinvent service models. Indeed, for some businesses, partial digitisation, the establishment of new digitised business units, or better (albeit temporary) use of legacy systems, including their adaptation for modern conditions, may prove profitable solutions, pending (or perhaps in parallel with) more thoroughgoing digitisation of the whole enterprise. For if a new system is not genuinely growth creating for the purchaser, then the economic activity associated with the purchase is a short-term gain offset by neutral or even poorer business performance. Digital should always be the most important part of the efficiency answer, but only if those who purchase it are at least as savvy and imaginative (and ideally more so) than those who sell them the kit.

As we have outlined in the previous chapter, securing the mix of skills needed here is about more than simply training more computer science and STEM graduates. The measures to embed digital skills in schools set out in the Digital Strategy are laudable. Steps should also be taken to ensure that as well as acquiring technical skills, applicable particularly in the digital sector and to some initiatives to digitise other sectors, schoolchildren are also engaged in digital creativity and problem-solving activities. The digital apprenticeship initiatives set out in the same section are also important. They will provide many of the technical skills the digital industries and digitisation need. But again the importance of problem-solving and adaptability should be built into curricula.⁸³

Public service digitisation: what matters are the outcomes

In public services, the Government Transformation Strategy says much that

is laudable about the need to up-skill the civil service and improve its digital culture. But it is comparatively limited in what it says about the nature of the service models it intends to promote using digital, and the benefits they will derive for end-users.⁸⁴ We have noted a similar limitation in the public service Annex to the Digital Strategy. Despite this, it is noticeable that the UK Government repeatedly draws attention to its global ranking as the leader in digital government.⁸⁵ There is a danger here. The UK's pioneering position is commendable, a credit to the work of the work of the Government Digital Service. However, the connection between that work and outcomes for citizens remains suboptimal. Clearer linkages between citizen-centric service philosophies of departments, agencies and local government, and the deployment of digital are needed. This is certainly about extending digital understanding across Whitehall and beyond. But it is also about ensuring that all Government statements about digital are clearly linked to improving citizen experiences and/or delivering more efficient services. Otherwise the digitisation of Government may simply be its own industry with its own jargon, disconnected from what should animate it, the aspirations and service needs of end-users.⁸⁶ (As we shall see, the articulation of a more radical citizen-facing philosophy for data could also make a real difference here.)

Consulting: a digital industry, examining its own productivity challenges

As the MCA's various digital initiatives amply illustrate, management consulting has a key role in bridging digital and 'traditional' business.⁸⁷ Indeed, digital is critical to realising efficiencies in consulting itself. In recent years, MCA member firms have seen an ostensible fall in their own productive output. The usual measure for this is fee income per employee. That fall needs to be heavily caveated however, and not just because service productivity

⁸³See Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/2-digital-skills-and-inclusion-giving-everyone-access-to-the-digital-skills-they-need>

⁸⁴Government Transformation Strategy, February 2017, <https://www.gov.uk/government/publications/government-transformation-strategy-2017-to-2020/government-transformation-strategy>.

⁸⁵See for example Digital Strategy <https://www.gov.uk/government/publications/uk-digital-strategy/6-digital-government-maintaining-the-uk-government-as-a-world-leader-in-serving-its-citizens-online>

⁸⁶A particularly egregious instance of jargon can be found in the bulletpoints on p. 69 of the Government Transformation Strategy. Even the concept of Government as Platform, though widely understood among digital professionals, will only resonate for citizens if clear links are made between it and the benefits they will see.

⁸⁷See for example the work of the MCA's Year of Digital, <https://www.mca.org.uk/reports/year-of-digital/insight-opinion/>. The Digital Strategy announces that DCMS has asked the Migration Advisory Committee to consider whether the Tier 1 (Entrepreneur) route is appropriate in securing the skilled migrant workers needed in digital. We will follow this closely. There may be a case for favourable treatment of certain digital consultants and advisors.

measures like this are inherently creaky. Following the UK's return to consistent growth in the first quarter of 2013, MCA member firms started to recruit substantially to support their clients in making the most of new opportunities. This recruitment has tended to be at the junior end of the scale, where fees commanded by new consultants are lower, thus reducing the income to employee ratio. Nevertheless, there are real productivity challenges at play. One is the relentless rise in client expectations and demands. A typical contemporary client has much more complex needs than ever before. This is driving a number of initiatives, including loose associations across the advisory ecosystem, allowing multiple firms to collaborate to meet client requirements.

But it is also galvanising reassessments of what constitutes value for clients and how that value is delivered. Some MCA firms now speak of consulting outputs being derived from prudent blending of their people and their proprietary digital assets. In a historically people-based business, this change will be far-reaching. We will monitor it. But it is important to note that we anticipate an informed and creative digital deployment, with potentially surprising outcomes for the role of people. If digital assets can run payments, do analytics, monitor projects, and automate a variety of historically manpower-heavy processes, this will not necessarily mean the end of the human consultant. Far from it. Rather, an industry that may have become analyst-heavy and commoditised may see a reduction in numbers of staff poring over spreadsheets. Instead it might make increased use of digitally able, developmental, coding, creative (especially visually creative) and strategic consultants. Deployment models would in some instances be paradigms of shared autonomy. Since this revolution is underway now and is critical to our *Consulting Excellence* work, we will share our observations and findings with policymakers.

New measures of productive output

Moreover, to underpin our understanding of digital value we should modernise how the UK calculates productive output. Some commentators have suggested that the UK and US productivity crises misalign

with apparent strong GDP performance, because we no longer measure the right industrial outputs. We do not necessarily agree wholeheartedly with that analysis. But there is a case however for new assessments of digital value across a whole range of measures, including productivity and even GDP itself. Certain important digital benefits, less tangible than aggregate sales or ratios of outputs to inputs, may currently be omitted from our calculations.

A new regulatory settlement for digital entrepreneurs

The regulatory environment also inhibits digital's scalability. We have mentioned those EU regulations relating to data protection in which the UK must, for the sake of its international business interests, continue to participate and have welcomed the Digital Strategy's announcement about GDPR. There are wider regulatory dimensions for digital, however. Whatever the challenges and demands of that least popular element of EU membership, the Common Agricultural Policy, the removal of subsidies, funding for conversion of farm-land to tourism, or to introduce new sustainability practices, will not just provoke an extraordinary rural transformation. It will also have technological implications. Many EU rural initiatives have been accompanied by comprehensive digitisation. Systems at least as comprehensive, if differently purposed, will be needed in the future.

However, departure from the EU offers the opportunity to examine the regulations to which digital entrepreneurs are subject.

It is worth restating that while this is about reviewing the body of EU law, it also concerns, perhaps more fundamentally, overhauling the domestic regulatory culture. Much of this regulatory settlement was actually in place as part of a corporatist consensus, built for a more *heavy* industrial age, before the UK joined the European Union. It has been strengthened through the creation of a number of domestic agencies thereafter. The tripartite grip of the HSE, the Food Standards Agency and the Environment Agency, together with a range of employment protections and financial regulations, has a legitimate hold over

substantial going concerns. But what these corporatist assumptions mean for a bedroom-based digital entrepreneur, who is able to create extraordinary value quickly, but employs few (if any) people, owns few (if any) assets, is questionable. A more agile regulatory pathway to success should be built for entrepreneurs seeking to scale their ideas. Commitments in the Digital Strategy related to regulation and tax conditions are promising.⁸⁸ However, to secure real gains, a genuinely fundamental examination of the relevance of the very assumptions of the regulatory system to digital entrepreneurs by BEIS and DCMS is needed.

Give citizens and consumers their data

Another significant impediment to securing digital scale – or rather an insufficiently tapped opportunity – is openness, especially around data. A key driver of innovation in retail and in entertainment has been consumer empowerment. The distance between producers and consumers has diminished. Consumers have more information than ever before on products, sourcing, cost. This power drives innovation, creates transparency in the price mechanism, and increases competition. It also fosters conditions in which digital innovators can offer new solutions to other businesses and consumers.

The Government could help dynamise these tendencies across a range of sectors. Prior to the last General Election, political parties committed with varying intensity to transfer data ownership to citizens. This was in response to concerns about privacy and the perception of overweening power in both the state and big business. But it also had an economic dimension. Digital businesses, from aggregators and integrators, to deployers of open source software, depend on data. So do consumers. Transparency about pricing, policies, options could empower consumers and drive the transformation of actuarial services or conveyancing, and deepen the transformation of utilities. In the public sector, the ability of digital entrepreneurs

to complement public services and allow the state to ‘retreat’ and prioritise the areas where it is the best provider – such as has happened in the provision of easily accessible digital commodities like online transport timetables – depends in part on providing data entrepreneurs can use. Self-help, community engagement and the management of complaints can be hugely advanced by data transparency. If a local authority publishes its street cleaning beats through a public app, then citizens who can see that a sweep of their street is due imminently will refrain from reporting a build up of debris – until after the scheduled clean. Openness about what public bodies do reduces information asymmetry and empowers citizens. It can aid better discussion of policy priorities and support citizen engagement and evidence gathering.

Frankly, the Industrial Strategy’s section on data infrastructure looks like a weak afterthought tagged onto the physical infrastructure section.⁸⁹ But this issue is not a bolt-on. It has the potential to be fundamental to service delivery. The Government’s Transformation Strategy grapples with the issue of data openness, but in ways that are too caveated with ministerial exemptions to constitute an ownership shift or an articulation of a new service culture and its assumptions.⁹⁰ The Digital Strategy is more positive here, and we await the findings of the Royal Society and British Academy Reviews of data governance with interest.⁹¹ But notwithstanding their findings, the Government should take a lead. It must build on its own existing open data initiatives. It should commit to a Citizens Data Programme, as far as possible giving citizens ownership of their data. It will then be for citizens to commission what they are entitled to by virtue of their data characteristics from the state, rather than for the state to manage both information and provision, a uniquely extreme asymmetry in favour of the provider. This should drive innovation. The resulting data exchanges and ‘data lakes’ will help innovators, researchers and business in general.

⁸⁸Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/3-the-digital-sectors-making-the-uk-the-best-place-to-start-and-grow-a-digital-business>

⁸⁹Industrial Strategy Green Paper, p. 56

⁹⁰Government Transformation Strategy. See especially pp. 51-52. Expressions such as ‘where appropriate’ characterise its cautious intent.

⁹¹Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/7-data-unlocking-the-power-of-data-in-the-uk-economy-and-improving-public-confidence-in-its-use>

Better networks and more digitised regions

The UK's physical digital infrastructure is itself a further impediment to our digital growth potential. All digital business depends on the accessibility, resilience and bandwidth of networks. We have welcomed the Universal Service Obligation for Broadband and look forward to similar initiatives for 5G.⁹² One MCA firm has suggested that the terms of the obligation should be extended, through an accord between the National Infrastructure Commission, the utilities regulators and Government, to cover all utilities. This could ensure that roadworks are coordinated to ease Broadband roll out and minimise disruption.⁹³

As well as network infrastructure, institutional infrastructure needs enhancing. This can improve access to insight and ideas. London's tech dominance needs significant regional counterparts. Tech City has started to address this through Tech City North.⁹⁴ The relocation incentives described in the devolution chapter should be deployed to help scale such initiatives.

Targeting investment

But a principal reason for the lack of digital scale is inadequate funding for start-ups, R&D and business support. This especially afflicts the cutting edge tech industries, the hardware and software suppliers, where we have a dearth of household brands and major successes.⁹⁵ Some of this funding will need to come through R&D and tertiary education routes. MCA member firms at the cutting edge of digital suggest there is potential to launch new UK hardware revolutions by exploiting the research capacity of Oxford, Cambridge and Imperial in particular.

There is also the prospect opened up by departure from the EU of direct state aid. However, this is more likely to take the form of indirect support, sponsorship, the targeting of existing research funds, tax

breaks and micro-decisions, rather than a step change in direct funding, at least in the short term, given fiscal constraints.⁹⁶ Indeed prioritised thematic signals that help channel private R&D and start-up support make particular sense for digital. Major target categories within the digital industries should be identified and championed. MCA experts believe that despite the internationalised nature of digital and its fluidity, global centres will continue to rise, at least for a time, where digital production will be concentrated. While the market will determine much of this, signals from Government of the sort described earlier can be hugely beneficial.

As a subset of its priority sector signals to corral funding and support, Government could signal a general interest in supporting the most cutting edge new technological developments. It may be argued that in setting out priorities for the Industrial Strategy Challenge Fund, most of which focus on new technologies, BEIS has already done this.⁹⁷ But setting aside our reservations about Challenge Fund approaches in general, compared with the identification and promulgation of clear priorities as signals to a wider investor base, or a significant rise in direct funding for research institutions, the list itself has two limitations. First it is very general. That is not by itself a problem, but it becomes so when linked to the second defect. This is of course the abiding weakness of the Industrial Strategy Green Paper, its lack of clear vision. In the absence of a compelling vision for industry, it is not always obvious on what grounds these technological headings have been selected, other than that they sound exciting.

More granularity is needed here. One sort of detail concerns outcomes, linking the target technologies with genuine Industrial Strategy objectives. This might promote another granularity, namely an occasionally narrow and specific focus. Obviously, for the UK to become one of the leading global centres for digital

⁹²As we go to press, the Chancellor has used the 2017 Budget to announce £16m investment in a 5G tech hub.

⁹³See 'Project Heineken' for an example of how this could work: <http://www.constructionenquirer.com/2015/12/07/ameys-project-heineken-to-co-ordinate-hole-digging/>

⁹⁴See Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/3-the-digital-sectors-making-the-uk-the-best-place-to-start-and-grow-a-digital-business>. The outreach work of the Digital Catapult is also important here. An interesting related theme is the Digital Strategy's emphasis on the role of FinTech in delivering improved financial inclusion.

⁹⁵It is also in respect of these major digital brands and their skills and capacity where the Green Paper's call for more technical capabilities most resonates, though creative and entrepreneurial mindsets would still prove valuable.

⁹⁶The Chancellor's Budget announcement, as we go to press, of £270m funding for disruptive technologies, is hardly insignificant. However, it is as nothing compared with the level of public research spending needed to move us up the international rankings. In a fiscally tight context, Government will accordingly also need the impact of private sector funding consolidations driven by its own signals and 'nudges'.

⁹⁷Industrial Strategy Green Paper, pp. 30-31

industries, it will sometimes need to back one thing and not another. A (by no means comprehensive) list of some investible cutting-edge technological themes, as well as certain product examples, derived from our digital experts, follows. These are also connected with possible target outcomes and strategic objectives.

- AI and automation. As discussed throughout the document, these are areas that are ideal for helping to increase productivity. They also link to an emerging narrative of shared autonomy⁹⁸
- 3D printing in manufactures and infrastructure – and even medicines and health appliances (home printed). This capability would be central to the modernisation of the manufacturing sector and helping with capacity shortages in infrastructure
- New modes of transport including connected cars, automated cars, drone delivery and Hyperloop. Some of these would be consistent with an ambition to be the Greenest Economy on Earth
- Technologically supported infrastructure, including investment in Smart Cities. This would promote holistic, efficient approaches to urban management. (Government should consider supporting cities that plan to become smarter by giving them greater fiscal autonomy.)
- IoT infrastructure. See above
- Wearable technology (especially related to health). These innovations would help manage NHS capacity challenges through encouraging self-monitoring, prevention and remote management of conditions.
- Home service technologies (such as Nest). These could be promoted to support the Green Economy objective.
- Accelerated website technologies such as PageCloud. These would be potentially immensely useful to start-ups, digital or otherwise.
- Intelligent materials. These would support a next-generation UK digital hardware industry
- Technologies associated with solar

power, such as Tesla Solar. These would plainly link to the Industrial Strategy Green Paper's ambition to do more on storage, and our suggestion of a stretching headline Green objective more generally

- Block chain and citizen identification systems (retina, facial, fingerprint). The clear focus of the Digital Strategy on security and cyber security would be served by this emphasis⁹⁹
- 3D scanning as well as virtual/augmented reality (eg Microsoft Hololens). These technologies could have applications to architecture, planning and other infrastructure management, as well as creative arts, gaming, archaeology, and relevance to education and health¹⁰⁰
- Satellite enabled data tracking, such as Spire. This would support smart infrastructure and logistics
- Optical wireless communications, such as LiFi. This could help improve connectivity and has IoT potential
- Biotech, including digitally assisted mapping of genetic information. The preventative healthcare applications of this are far-reaching.
- Quantum computing. As well as the wider AI, security and research science benefits, investment in these technologies could be linked to a general ambition to ensure that the UK is at the cutting edge of digital developments in *hardware*.

If private finance, working with the UK research and academic centres for digital, chose to target step changes in two or three of these areas, the results could be transformational. As with manufacturing, the global sale of hardware, apps, services, and licensed software from these innovations will be aided by a competitive exchange rate.

Our final point restates an observation from previous sections. The UK must retain its global outlook if it is to maintain its standing and improve its position on digital. There is an opportunity here. The continuing commitment of Google

⁹⁸This will also be consistent with the Digital Strategy's announcement of the Hall/Pesenti Review of the conditions for AI in the UK: <https://www.gov.uk/government/publications/uk-digital-strategy/3-the-digital-sectors-making-the-uk-the-best-place-to-start-and-grow-a-digital-business#supporting-digital-businesses>

⁹⁹Digital Strategy, <https://www.gov.uk/government/publications/uk-digital-strategy/5-a-safe-and-secure-cyberspace-making-the-uk-the-safest-place-in-the-world-to-live-and-work-online>

¹⁰⁰The Bazalgette Review and the support for VR and AR contemplated in the Digital Strategy (<https://www.gov.uk/government/publications/uk-digital-strategy/3-the-digital-sectors-making-the-uk-the-best-place-to-start-and-grow-a-digital-business#supporting-digital-businesses>) may between them provide the basis for a suitable strategic emphasis here.

and Amazon to the UK is heartening. But it is worth remarking that some of the Trump Administration's early actions have made the US tech sector nervous. To date, the UK Government has chosen to cultivate President Trump. As events suggest, that cultivation is not cost free. Nor is it necessarily as good a long term bet as cultivating Tesla and similar US world-beaters. To affirm publicly that we are, despite Brexit, a centre of digital innovation, open for business, respectful of international law and mindful of our global responsibilities, including humanitarian obligations, may play well with and attract the leaders of a sector who seem, for whatever reason, to wear their wider societal obligations anything but lightly.



SUMMARY

1. To exploit digital effectively, the UK needs a common digital culture, embracing the tech sector and the digital ambitions of other sectors.
2. This is in part about promoting a mix of skills.
3. It is also about focusing on business outcomes.
4. A Digital Strategic Primacy Principle across all sectors would encapsulate the importance of digital as the main driver of transformation, while ensuring that the transformation itself is what counts.
5. Government should link its own digitisation more clearly with citizen outcomes and an explicit service philosophy.
6. There may be a case for new measures of economic output associated with digital.
7. Government should examine the fundamentals of the UK regulatory system in pursuit of a new settlement for digital entrepreneurs.
8. Government should consider radical measures on data ownership. These should be used to help drive innovation by empowering consumers. In terms of its own data, Government should instigate a Citizens Data programme, transferring significant power and responsibility to citizens.
9. Incentives described in the devolution chapter should be used to promote the relocation and clustering of digital business outside London and the South East.
10. To help channel investment, Government should identify a set of target digital themes linked to the realisation of a more clearly articulated vision for industry and the economy.



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ANNEX B: SUMMARY OF MAIN CONCLUSIONS AND RECOMMENDATIONS

Article 50: negotiation Priorities

The MCA believes that the Brexit negotiations should be underpinned by six key principles:

1. The Article 50 negotiations should be conducted with a clear focus on how they support the delivery of a successful Industrial Strategy. Negotiators must never lose sight of the interdependency between negotiation outcomes and ‘teeing up’ a promising economic future for the UK. The negotiations should be used to reassure business and investors about the ongoing climate for investment. Government should send out positive signals about the advantages of continued innovation to counter the tendency, noticeable among larger corporates, to use Brexit as an excuse to pause. This will also help add positives about the UK to the calculations of any more proactive businesses considering moves elsewhere. Government should also use the negotiation period to progress agendas that are not Brexit dependent. Conversely, it should give clear steers about its preferences in relation to macroeconomic factors impacted by Brexit. It cannot control sterling. But it can comment on this matter and, if necessary, amend the assumptions governing the Bank of England’s conduct of monetary policy. In the interests of getting the tone and business narrative right, senior industrialists should be seconded to the UK negotiating team.
2. The Government should aim to protect priority sectors. These should not just be those currently identified for special measures in the Industrial Strategy, important though those are. Rather, there should also be an emphasis on current successes, some of which may be vulnerable in the Brexit aftermath. Sectors that specifically contribute to the UK’s pre-eminence as a ‘value-add’ economy should be accorded particular standing. These include management consulting and other professional and business services.
3. Building on the Brexit White Paper, Government should ensure that the negotiations are conducted with the utmost clarity. Clear positions need to be taken not just on priorities, but also on the implications of those priorities. Government has prioritised border control. It must make clear how that will be consistent with maintaining the UK’s position as a global hub for talent. It should be clear about how in future arrangements it intends to match the benefits of ease and speed afforded by EU labour market access in securing necessary talent and capacity.
4. Negotiators must recognise that much of the UK’s current success, and doubtless much of its future, stems from its position as a ‘value-add economy’, embedded in interdependent, global value chains. The protection of these value chains must be a primary objective of the negotiations.
5. The negotiations should be characterised by empathy and the principle of partnership. The enlightened self-interest of both the EU and the UK in a harmonious outcome should be accented. Consistent with that, negotiating positions should be open and subject to the scrutiny of UK stakeholders and EU partners alike. Triumphalism, the language of competition, spurious sporting or card games analogies, or any suggestions of winners and losers should be avoided.
6. The Government should be pragmatic and imaginative about regulatory compliance. The UK, unlike other supplicants to the EU for trade deals, is already manifestly compliant with trading requirements. This should be used to the UK’s advantage. Distinctions between compliance as a member and compliance as a trading partner, where advantageous in terms

of burden reduction, should be found and acted on. Advantage should also be taken of withdrawal to review the ‘domestic’ character of some regulatory burdens. For the purposes of the negotiations, compliance with a regulation should thus be a function of its usefulness as a means of securing trade, within the EU and beyond. The Government’s decision to comply with the General Data Protection Regulation when it comes into force in 2018 is welcome.

Towards a New Economic Vision

1. The Government’s Industrial Strategy Green Paper should pave the way for significantly more transformational intent. Strategies should navigate towards a clear and prioritised vision of the economic future. As yet, the Strategy lacks such a vision.
2. Protecting the UK economy’s strong fundamentals should be a paramount consideration for any future Industrial Strategy. While much of this is Treasury and Bank of England business, it is also imperative that BEIS works to bolster sectors that have historically contributed to the UK’s fundamental strengths and are globally recognised differentiators.
3. Brexit should occasion a fundamental re-examination the UK’s economic model. Successes should be built on. But unreconstructed sectors and practices must be challenged.
4. As part of protecting and enlarging on existing successes, business will need to adapt ‘value-add’ propositions to new markets. Some of these will lack the cultural ‘immediacy’ of existing markets. Value-add propositions should accordingly be prominent in future trade missions to jurisdictions being targeted for post-Brexit trade deals.
5. Business should review its blend of human resources and automation in pursuit of productivity gains.
6. In supporting this new model, the Industrial Strategy could target a high-value, high wage economy. This is the most inclusive approach to the automation and AI revolutions, building on the concept of shared autonomy, in which highly skilled human beings and automated technologies occupy complementary economic roles. To that end, Government should encourage, and business must pursue, the ruthless digitisation of digitally unreconstructed parts of the economy.
7. Both as a principle, and in order to challenge the hidebound nature of some parts of UK corporate culture, Government and business should work together to encourage a diverse business environment.
8. Government should use Brexit to initiate a fundamental review of its regulatory environment under the heading *Best Regulation*. While flexibility and voluntary engagement with the dynamics of the ‘gig economy’ should be encouraged, particular care should nevertheless be exercised where regulations protect workers’ rights.
9. The Industrial Strategy might set an ambition for the UK to become the Greenest Economy in the World. In any case, a step change in the role of nuclear and renewables should be targeted.
10. The Industrial Strategy might set an ambition to create the most modern and digitised transport infrastructure. This could promote investment not just in the existing transport modes, but in new innovations like Hyperloop.
11. In any case, Government should take further steps to meet the longstanding criticism of its approach to infrastructure, namely that it consists of well intentioned projects, rather than a prioritised portfolio, aligned to a clear economic and industrial vision. Infrastructure investment should be strategic and purposive.

12. To realise the Industrial Strategy Green Paper's ambition of Government procurement supporting innovation, there must be a significant increase in the calibre of procurement and project management professionals and structures. In line with recommendations in previous MCA reports, Government procurement functions should comprise smaller cadres of more senior and skilled professionals. Where appropriate, building on London 2012 and other experiences, commissioning and project management functions should be placed within dedicated structures, or even outsourced. Providers to the public sector should be encouraged to adopt commitments to value-creation and ethics, similar to the MCA's *Consulting Excellence* framework.

13. Government should issue sharper messages about its targets for R&D to provide signals to investors and innovators alike.

14. A key priority could be the digitisation of manufacturing, especially through 3D printing, as a means of revitalising an ailing sector and helping rebalance the economy.

15. The UK should look to make venture capital more business-friendly. We welcome initiatives like the Patient Finance Review. Moreover, we should foster an environment in which more venture capitalists are themselves successful start-up veterans, not least by encouraging such investors, including those currently clustered in Silicon Valley, to work in the UK.

16. The Government should encourage further extensions in UK share ownership.

17. Government and business leaders should work together to foster reputation-bolstering ethical commitments across UK economic sectors. Initiatives such as the MCA's *Consulting Excellence* framework should become more widespread.

Radical devolution of power and opportunity

1. The pattern of Brexit voting necessitates a radical localism and economic devolution plan.

2. The UK should face up to and debate the historic consequences of economic modernisation frankly and imaginatively.

3. Policymakers, business leaders and local politicians should develop a common understanding of the link between local economic regeneration and local political devolution.

4. There must be a step-change leading to the devolution of all currently nationally administered local spend to local governance and control. All English local authorities should be unitaries.

5. To enhance local leadership, a Professionalisation Fund should be created through a partnership between Central Government and the leadership of local government.

6. There should be a presumption in favour of relocating all Government functions that do not have to be in London to the regions.

7. Complementary initiatives to support business relocation should be instituted.

8. Government and local leaders should examine what infrastructure is required to encourage skilled people to commute or relocate to new opportunities outside the South East.

9. Regional infrastructure investments should be clearly focused on a core Industrial Strategy objective of improving opportunity, by extending value chains, markets and enlarging labour supply.

10. Policymakers should openly acknowledge the international ambitions of regional growth initiatives, such as the Northern Powerhouse. Local debates about the migration implications should be encouraged. Linking migration to local benefit (and to up-skilling of the domestic workforce) will promote understanding and realism about the UK's need for overseas labour.

11. Representatives from local government should be routinely consulted on and involved in the Article 50 negotiations.

12. Reviving and modernising regional manufacturing (potentially through a 3D printing revolution) should be a deliberate policy goal. As well as according this sector the priority needed to help channel relevant business investment and R&D support, Government should look at the role of incentives in the planning system.

Education: the best system for the smartest people

1. To thrive and survive after Brexit, the UK needs a radical and transformational approach to education.

2. Policy emphases on STEM and non-graduate attainment are welcome, but need to be set within a more rounded approach.

3. Creativity and adaptability are key ingredients for the contemporary workforce. They are likely to prove even more important as AI and automation become more significant.

4. These skills are not exclusive to STEM graduates. Technical training also risks obsolescence if it teaches narrow capabilities, which might be superseded by innovations, rather than adaptability.

5. Early specialisation is damaging. It inhibits later, mature specialisation. It should be challenged through baccalaureate models and the use of subsidiary courses in degrees.

6. Shadbolt's emphasis on the cultivation of soft skills to combat STEM graduate unemployment is the correct one.

7. Soft skills, adaptability, and learning environments that encourage teamwork and problem-solving should also characterise the next generation of non-graduate technical courses.

8. Lifelong learning will be just as important as pre-work education for our future competitiveness. Government should accordingly consider converting the Apprenticeship Levy into an Industrial Learning Fund.

9. Government and business should accept that world-class theoretical research underpins world-class practical output. They are not mutually exclusive. Partnerships between business and the tertiary sector should be informed by mutual respect, understanding, and facilitated by digital.

10. Government should target a major increase in public and private spending on education and research, possibly setting a goal of a 50% uplift in education spend by the midpoint of the next decade.

11. Business school curricula should be reviewed. The schools should be encouraged to collaborate on an Industrial Modernisation Study, of potential interest to the Productivity Council. The Study could be the forerunner of a new Industrial Modernisation Academy.

12. Government should facilitate a rounded examination of the UK's forward skills and capacity needs. Having set out a clear industrial vision, it should examine the implications

of that vision and how they could be met from domestic up-skilling, productivity gains, and from migrant labour. Business leaders and associations, including management consultants, independently and through the Professional and Business Services Council, should assist this analysis.

Digital for outcomes, consumers and citizens

1. To exploit digital effectively, the UK needs a common digital culture, embracing the tech sector and the digital ambitions of other sectors.
2. This is in part about promoting a mix of skills.
3. It is also about focusing on business outcomes.
4. A Digital Strategic Primacy Principle across all sectors would encapsulate the importance of digital as the main driver of transformation, while ensuring that the transformation itself is what counts.
5. Government should link its own digitisation more clearly with citizen outcomes and an explicit service philosophy.
6. There may be a case for new measures of economic output associated with digital.
7. Government should examine the fundamentals of the UK regulatory system in pursuit of a new settlement for digital entrepreneurs.
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10. To help channel investment, Government should identify a set of target digital themes linked to the realisation of a more clearly articulated vision for industry and the economy.



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