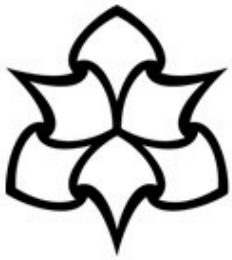
WHAT WE REALLY MEAN WHEN WE TALK ABOUT INDUSTRIAL STRATEGY



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NOVEMBER 2018

Dedicated to David Coates

A model scholar

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Introduction: what (is) industrial strategy?

Craig Berry

The UK has an industrial strategy. It sort-of had an industrial strategy under the Cameron-Clegg coalition government – there was a 'plan' for growth and an enthusiastic Secretary of State for Business (Liberal Democrat Vince Cable). It definitely did not have an industrial strategy under the Cameron majority government, although there was briefly another 'plan', for productivity. But whereas the coalition merely had the aftermath of a financial crisis and deep recession to contend with, the May government is preparing for the UK's withdrawal from the European Union (as well as ongoing concerns around the stilted nature of the post-crisis recovery).

Albeit with a Prime Minister whose status seems, at best, rather fragile, we now have an industrial strategy – summarised in the white paper *Building a Britain Fit for the Future* – which is, apparently, built to last. The industrial strategy is indelibly linked to Brexit. Although Brexit is barely mentioned in the white paper, its genesis is the EU referendum, and more specifically Theresa May's diagnosis that inequality fuelled support for leave, and view that revisiting Cable's thwarted ambitions should be part of the government's response.

Yet as well as questions around whether the strategy chosen is the right one, there are questions around whether the UK is capable of producing and implementing an industrial strategy worthy of the term. We have an industrial *strategy* in a country that, conventional wisdom suggests, does not really do industrial *policy*, or certainly does not do it well. Does the British state have the institutional and cognitive capacity to operate industrial policy mechanisms in a coherent, impactful and strategic manner? If not, is this likely to change?

This volume – while not uncritical of the current UK government, and recent governments – intends to help. Many of the chapters discuss policy ideas designed to address the UK's economic malaise. However, many focus also on the nature of the economy's problems: we need to get right what is going wrong, before we can put it right. Some offer new perspectives on already-established concerns, such as 'the productivity puzzle', while some seek to redefine the economic terrain in which industrial policy operates. Some identify the behaviour, orientation and structure of policy-making institutions as the key issue. The chapters differ also in terms of the extent to which authors believe industrial strategy ambitions can be achieved via conventional industrial policy interventions. Indeed, one of the main aims of the volume is to demonstrate the vast range of policy areas that would impinge upon a comprehensive industrial strategy.

Readers should not assume that the authors agree with each other (or the editor!). The book's chapters share an interest in improving UK industrial strategy, but do not necessarily share an agenda on how this can be achieved. Above all, the book is simply a collection of some of the most important perspectives on industrial strategy. It is dedicated to Professor David Coates, one of the finest political economists of his, or any, generation, who was due to contribute but sadly died while the book was being produced. David will be greatly missed.

This introductory essay will place each chapter within the landscape of current policy debates, and indeed things we should be debating. It offers broad definitions of industrial policy and industrial strategy – which is far less simple than we might assume – and an account of both

international practice and recent developments in the UK. It also introduces the perspective of the Industrial Strategy Commission (upon which I served in 2017), and outlines some of the key dilemmas facing economic policy-makers.

The international consensus

We should probably begin by acknowledging that the term 'industrial policy' has not aged well. It was once obvious that it denoted measures to support industrial development, chiefly in manufacturing industries, within economies dependent on agriculture. Although manufacturing rightly remains central to most industrial policy agendas, in advanced capitalist economies it clearly makes no sense for public sector support for the economy to be focused exclusively on manufacturing. Industrial policy has accordingly become all-encompassing – including even agricultural industries – yet, at the same time, almost meaningless.

In recent years a more muscular reimagining of industrial policy has emerged, notably via the World Bank. An influential World Bank paper by Dani Rodrik (2009) states that industrial policy 'denote[s] policies that stimulate economic activities and promote structural change'. The reference to 'structural change' suggests that industrial policy should be concerned with more than 'any old growth'. It must be the right kind of economic growth; or, more precisely, industrial policy should ensure that the economy is able to keep growing over the very long term by guiding industry towards new opportunities for capital accumulation.

But how do we know what kind of structural change is necessary? Who decides? While it might seem obvious in hindsight that the public sector's power and resources should have assisted industrialisation, is it conceivable that we might at some point deem structural change unnecessary, and industrial policy therefore redundant? Capitalism clearly cannot survive without myriad forms of state intervention. Do we need to think of industrial policy not as a discrete attempt to upgrade industry, but rather a permanent (but not unproblematic) feature of economic governance? Doing industrial policy can seem a near-impossible task – but it is an indispensable one too (especially in the UK, and especially now).

One particular area of contention – or confusion – we should acknowledge is that there is less consensus on what the ultimate *goal* of industrial policy (or structural change) should be: protecting the scale and distribution of domestic employment, or enhancing the international competitiveness of the economy? Should it be focused on, for instance, the balance of payments, or national security? All of the above? The balance among scholars seems to have shifted in recent years from a concern with international competitiveness, towards a concern with employment, although the opposite trend was identifiable before the 2008 crisis. Yet is this reflected in actual policy practice? At the same time, the revival of interest in industrial *strategy* goes hand-in-hand with an interest in mission-based industrial policy, that is, targeting intermediate goals, such as decarbonisation, which help the economy to address its underlying challenges.

The comparative context

Conventional wisdom suggests that the UK has a very weak or limited industrial policy tradition. Although there have been periods of history in which this orientation has been challenged, it has been reinforced by the dominant neoliberal perspective in recent decades, which ostensibly eschews interference by the state in market dynamics (see James Silverwood and Richard Woodward's chapter for an historical overview). Some policy-makers would contend that the UK does practice industrial policy, albeit a horizontal rather than vertical approach. Either way, the effect is the same. The UK economy has failed to adapt sufficiently to deindustrialisation, exacerbating vast inequalities between industrialised regions and London and the South East, which has longstanding strengths in high-value service industries, principally finance. It has seen a related 'hollowing out' of the labour market (with

a decline in intermediate-skill and median-earning occupations), developed an ever more precarious trade deficit, and become acutely vulnerable to short-term financial shocks. Relatedly, the UK has failed (or is failing) to establish itself at the front of the so-called 'fourth industrial revolution' (encompassing digitalisation, artificial intelligence, etc.), which may ultimately call into question its own status as a first-rank industrial power.

What role does industrial policy play in other, comparable countries (see Coates, 2015)? The highly activist nature of traditional industrial policy practice in the United States often tends to be overlooked, not least because it has rarely been trumpeted by those doing industrial policy. But the US economy has benefited from enormous programmes of federal support for major transport infrastructures – notably road and air – as well as key industries such as oil, pharmaceuticals and food. The driving force of industrial policy has, however, primarily been military rather than economic considerations, especially since the Second World War. The Pentagon's support for high-tech R&D is the ultimate source of the United States' current strength in computing and ICT (Mazzucato, 2013). Industrial policy is also highly developed at state level, although generally this signifies the competitive, zero-sum dynamics between states.

The reticence around direct state involvement in the American economy is of course part of the reason for the reticence around industrial policy among policy-makers. This is also reflected in a strong aversion, in most circumstances, to support declining industries. In fact, American governments have generally encouraged capital to move overseas, insofar as this supported national security objectives, and underpinned – as well as being enabled by – the dollar's status in the global monetary system, which itself was vital to sustaining defence spending irrespective of short-term fiscal circumstances.

Postwar industrial policy practice in the United States was of course challenged by the New Right from the 1980s onwards. With the (hugely important) exception of defence-related industries, the favourable treatment of many industries was partially unwound, financial controls were significantly relaxed, and governments came to see increasing investment *into* the United States by overseas firms as a key policy objective.

Industrial policy and economic planning was pursued much more vociferously by Japanese governments in the postwar era. State-directed financial institutions oversaw a rapid industrialisation of the economy, with a focus eventually on consumer goods with high levels of demand in the world economy. Japan did not necessarily spend more than the United States on industrial R&D, but the explicit focus on expanding the export base made its approach more targeted and effective in conventional industrial policy terms. Attempts to be at the forefront of the next wave of innovation have seen industrial policy support reoriented to R&D among small- and medium-sized enterprises in recent decades, amid very sluggish growth – albeit to little avail so far. Arguably, as the Japanese economy's second successive 'lost decade' draws to a close, its problems can arguably be seen as a result of the extent to which neighbouring countries such as South Korea and China have imitated elements of its postwar approach.

The new West German state inherited a highly industrialised economy, and an organised or coordinated approach to capitalist development. But it was also an economic model shorn of its central mission around military expansion. An array of subsidies, tax reliefs and cheap finance was available to German industries, underpinned by corporatist arrangements and a closeness between key employers and policy and financial institutions at various levels. Eventually, a more focused industrial policy agenda was crafted, characterised by support for German engineering and high-value manufacturing in particular.

Perhaps the main distinguishing feature of the German approach was, and is, the high level of public investment in skills development for workers. In general, this approach remains in place, although new winners have been picked in recent decades, particularly in energy

industries. There are questions, however, around whether the unified Germany's export-led growth would have been quite as lucrative were it not for the highly favourable orientation of Eurozone monetary policy since the creation of the European single currency.

France's industrial policy tradition is characterised by a highly interventionist central state, including extensive public ownership within key resource, manufacturing and finance industries, as well as a highly-regulated private sector incentivised to both invest in R&D and maintain high levels of employment. The 'experiment' of François Mitterand is frequently misremembered. While nationalisation, for instance, reached its peak soon after the Mitterand government took office in 1981, this was in part a reaction to the failed *laissez-faire* interlude under Giscard d'Estaing. Mitterand sought essentially to upgrade France's export base in the aftermath of the crisis of the 1970s. But it was this openness to the international economy which proved to be Mitterand's undoing, and, when a currency crisis presented Mitterand with the choice of scaling back public expenditure or embarking on an even more radical path, decoupling from the European and global economies, the former course was chosen.

As US President, Barack Obama pursued a largely horizontal industrial policy framework (save for his bailout of car manufacturers), accompanied by a new zeal for trade liberalisation. Of course, President Trump promises a radical *volte-face* in support of commodity industries such as coal and steel, but substantive change has been limited. Political leaders in both France and Germany have recently produced industrial strategies (in all but name), but these strategies appear actually to *narrow* the scope of conventional industrial policies (moving away from, respectively, public ownership and industrial subsidies) – perhaps meeting the UK, as its industrial policy ambitions seemingly expand, somewhere near the middle.

An alternative reading, however, suggests that the UK has long pursued a highly interventionist (and horizontal) industrial policy agenda, albeit one which has focused on finance and related industries, rather than manufacturing (see Simon Lee's chapter). This is the argument that the financialisation of the UK economy has been a deliberate strategy rather than something that has happened by default in the absence of more traditional industrial policies. Even if we accept this interpretation, it does not substantively alter the nature of the dilemma facing the UK economy – although it does perhaps underline the danger of assuming that it will be easy for a new government to reorient the institutions of the British state towards a more radical industrial policy framework.

The May-Corbyn consensus

The creation of the Department for Business, Energy and Industrial Strategy (BEIS), and therefore the invocation and institutionalisation of an industrial *strategy* for the first time in UK economic governance, could of course prove to be a pivotal moment. Theresa May and BEIS advocate a coherent, long-term plan for economic change. As well as attempting, ostensibly, to inch UK industrial policy towards German-style support for high-value manufacturing, the industrial strategy also defines four 'grand challenges', and seeks to focus additional support for R&D on industries related to these challenges.

There are of course questions about whether the strategy is sufficiently resourced to meet its objectives, but also thornier issues around the institutional vehicles through which the strategy will be delivered. A lack of genuine institutional change – and even the further privatisation of economic governance, through business-led sector deals – may dampen the radical potential of the May government's industrial strategy. 'Place' has a very prominent discursive role within the new industrial strategy, but the May government has offered few additional powers and resources to local government, or indeed demonstrated an appetite for thinking about how the centre and localities might relate to each other within a *national* strategy (and what kind of trade-offs this might involve). Furthermore, the white paper concentrates on supporting high-

value economic activities, rather than the low-value industries in which most people are employed.

Strangely, the Labour Party's (2017) industrial strategy offers largely more of the same. As with May's strategy, there is a significant emphasis on increasing R&D within high-value industries. Labour is particularly committed to decarbonisation, which approximates to one of the government's grand challenges. (Three of this volume's chapters offer an account of green(ing) industrial policy: Dustin Benton offers a general account, while Martin Craig focuses on river basin planning, and Dan Coffey and Carole Thornley focus on the car industry.)

Labour's industrial strategy – and indeed its entire programme for government – also offers little new thinking on 'place' and the relationship between central and local government. While Labour pledges support for some low-value industries such as care, this does not appear to form part of its industrial strategy. However, it has recently established a campaign to 'Build It In Britain', suggesting an appetite for 'reshoring' low-value manufacturing. The most novel element of Labour's industrial policy agenda is its support for a national investment bank (an idea discussed further in Laurie Macfarlane's chapter). This institution, presumably, would support higher-risk investments into innovative R&D which might struggle to attract private finance. We might also point to its support for alternative forms of company ownership (an issue addressed in Matthew Lawrence's chapter). The May government's reviews of corporate governance and 'patient capital' offered few, if any, recommendations for substantive change, and indeed functioned quite separately from the development of the industrial strategy.

While both of their positions seem to change on an almost daily basis, Theresa May and Labour leader Jeremy Corbyn are also in agreement around the need for the UK to leave the European Union, whether because they are substantively convinced of the benefits of Brexit, or influenced by political considerations. There is no reason, at all, to believe that EU 'state aid' rules represent a barrier to industrial policy, or even radical initiatives such as public investment banks (as Andy Tarrant's chapter demonstrates). Worse, Brexit is likely to decimate what is left of the UK's manufacturing capacity by severing links to transnational production networks (Los *et al.*, 2017; see also Tom Brown's chapter on Brexit and the UK engineering industry).

The complacency, especially on some parts of the left, about free trade arrangements is misguided and anachronistic (as Matthew L. Bishop's chapter argues). The hope, on some parts of the right, about the prospect of new trade deals beyond EU membership, is fantastical and duplicitous. While, in my view, concerns about the EU's own trade agenda in relation to deals with the United States, Canada and Japan are justified, economic activity *within* the single market is highly integrated, on the basis of regulatory harmonisation. Many of the UK's industries may not currently occupy the most lucrative positions within Europe-centred value chains, but this is due far more to domestic economic governance, rather than single market membership *per se*.

Managing the (layered) economy

To assume that even a souped-up version of the May government's approach to industrial strategy will be sufficient to address the malaise and chronic inequalities which characterise the UK economy would be unwise. As outlined above, there are serious question marks about whether it is already too late for the UK to catch up to similar economies in terms of benefiting from the next generation of productive innovation. Even if the UK could develop high-value manufacturing on a larger scale, there is little reason to believe this would lead to higher-quality jobs or higher earnings for *most people* in *most places*. We will need to have a much better approach to how to support the low-value sectors where the majority of people are employed (and upon which high-value industries depend), and an answer to the question of how we decentralise economic policy powers.

The Industrial Strategy Commission, which operated in parallel to the development of the industrial strategy white paper, set itself the task of addressing these challenges. The Commission consisted of Dame Kate Barker (our independent chair) Professor Diane Coyle, Professor Andy Westwood, Professor Richard Jones and myself. Richard Jones has a chapter in this volume (on science and innovation), as do Tom Hunt (on infrastructure) and Marianne Sensier (with Fiona Devine, on local resilience), who formed the Commission's secretariat.

I will not rehearse all of the Commission's analysis and arguments here. But it is worth noting the understanding of industrial strategy we developed. We argued that industrial strategy was ultimately about 'strategic economic management'. This would inevitably encompass conventional industrial policies, but also a great deal more. Strategic economic management entails:

- Understanding the capitalist economy as a set of institutions that can be shaped over time in myriad directions.
- Utilising the state's unique powers of coordination and convening, and its ability to pool risk, create markets and provide public goods, across multiple policy areas and layers of authority.
- A very long-term approach to economic development, focused on transforming our ability to deliver public goods and addressing chronic failings – but acknowledging also how the UK economy relates (or could relate) to the rest of the global economy.

One of the Commission's key arguments was that how and where we intervene in the economy cannot focus only, however, in the seemingly high-value activities such as those within advanced manufacturing industries (see Maria Savona's chapter on the importance of ensuring support for R&D and innovation does not further disadvantage regions, sectors and workers outside the high-value areas). What is often called the 'everyday' or 'foundational' economy, spanning the public and private sectors, is where the basic needs of society are met: providing care, producing food, maintaining the lived environment (both personal and public spaces), enabling mobility, etc. (discussed in depth by Julie Froud, Sukhdev Johal and Karel Williams' chapter). Such activities are not the source of major productivity improvements – but nor should they be. We certainly need to consider how to disseminate innovation into these areas, but for the purpose of improving resilience rather than profitability *per se*.

Beyond the specific foundational framing, chapters in this volume by Özlem Onaran, Ed Pemberton, and John Forth, Dave Innes and Ana Rincon-Aznar demonstrate, in different but complementary ways, the importance of lower-value sectors to UK industrial strategy. Each chapter emphasises the economy-wide benefits that would result from improving pay and productivity in traditionally low-productivity industries. Kate Bell's chapter argues, among other things, that trade unions are essential to realising this.

With credit due to Diane Coyle, the Commission outlined the concept of 'universal basic infrastructure' as a way of emphasising the importance of supporting lower-value industries, especially in disadvantaged areas (Coyle, 2017; see also Tom Hunt's chapter on this topic). Others have similarly suggested 'universal basic services' (UCL Institute for Global Prosperity, 2017). There is clearly a conceptual overlap with the foundational economy here. Beyond individual measures that might be adopted to support basic infrastructure or services, the epistemological implication is to conceive of the subject of industrial policy as an intricately layered economy, in which the needs of workers, families, and communities are as important as – or intertwined with – supporting basic science, the energy supply, distributional infrastructure, knowledge-based services, technological development and manufacturing output.

Conventional industrial policy cannot be operated solely by central government in a technocratic manner – and this more expansive approach to the strategic management of the layered economy certainly cannot. Even if key central departments had not been 'captured' by certain firms and industries, they simply lack the informational capacity to successfully manage such a diverse (and troubled) economy – most foundational activities, in particular, are highly localised, and should be governed as such. The Commission duly called for further and faster devolution as part of the localisation of industrial policy (local industrial strategy is discussed in the chapters by John Tomaney and Andy Pike, Marianne Sensier and Fiona Devine, and Christian Spence). Yet the other side of this coin is that local and regional authorities also need to be better represented within central government's industrial policy-making processes.

Developmental dilemmas

Let us not assume, however, that we have it all figured out. There remain a series of dilemmas around industrial strategy which policy-makers will invariably confront, such as the horizontal versus vertical debate, the issue of whether productivity trumps employment as a policy ambition, the value of industrial policy 'missions', and the relationship between central and local government. These dilemmas are summarised below, but will also recur throughout this volume in various way.

The most obvious fault line in the scholarly understanding of industrial policy is the question, firstly, of whether interventions must be vertical (focused on particular industries or firms) or merely horizontal (supporting the general business environment). In a World Bank paper, Ha-Joon Chang (2009) states that industrial policy must involve 'targeting', that is, 'a policy that deliberately favours particular industries over others, against market signals'. As noted above, however, UK industrial policy practice has traditionally eschewed this understanding and focused instead on horizontal interventions.

Industrial policy should shape as well as frame markets. This is now an uncontroversial position among most economists, and is clearly faithful to industrial policy's origin story in terms of supporting manufacturing (Chang has consistently and convincingly proselytised the importance of manufacturing industries to economy-wide productivity growth; see Chang, 2014). But the translation of theory into practice is not at all straightforward. It is entirely possible for vertical interventions to be rather conservative, benefiting powerful incumbents rather than genuinely promoting structural change. Equally, despite the UK's experience, a radical horizontal agenda is certainly possible, especially if industrial policy was associated, for instance, with finance sector reform to improve the supply of investable capital throughout the economy (although the supply routes could also involve targeting particularly important industries) (as discussed further in Loren King's chapter).

The dichotomy between horizontal and vertical industrial policy is probably a false one. We need horizontal interventions that genuinely upgrade the whole economy's productive capacity, and vertical interventions that do more than support powerful incumbents. Whether or not industrial strategy needs both horizontal and vertical interventions should be beyond debate; the key issue is whether it can do both well. Yet policy-makers' concerns – operating in the real world with resource constraints and political considerations – around picking the wrong industries for intensive support, or indeed failing to support the most important industries while supporting the economy as a whole, are perfectly understandable.

Secondly, should we prioritise productivity or jobs growth (this is addressed at length by Tera Allas' chapter)? The UK has a major productivity problem, but the notion that economic policy should be focused predominantly on productivity appears always to be associated with a narrow, horizontal industrial policy agenda prioritising only firm-level or individual-level improvements. For instance, in the hands of the Cameron majority government, a 'productivity

plan' meant eschewing interventionism in favour of deregulation and welfare retrenchment, and even now the Treasury's Productivity Leadership Group focuses mainly on improvements in human resource management – and even this, as Tera Allas' chapter shows, could be done much more ambitiously.

Policy elites therefore obsess over 'the long tail' of small, unproductive firms, but such distributions are normal in service-based capitalist economies. In the UK, the productivity *slowdown* is actually situated within the largest firms, who are normally more productive than they have been in recent years (as argued in Patrick Schneider's chapter). The role of the financialisation of corporate practice in disincentivising investment in innovation among the largest firms is an important part of this story (as argued in Ciaran Driver's chapter; see also the chapters by Adam Leaver and William Lazonick).

Many would argue, moreover, that the UK's recent productivity stagnation has been a price worth paying for jobs growth. Higher productivity resulting, for instance, from manufacturing automation would reduce the volume of jobs in the economy, and therefore well-being. This narrative has been used to justify, or indeed obscure, the hollowing out of the labour market and proliferation of 'crap jobs'. Of course, enabling employees in such jobs to access opportunities for career development in higher-value jobs and industries will be central to improving aggregate productivity. Decent skills and training provision is critical (as argued by John R. Bryson's chapter, in relation to the impact of artificial intelligence, and Alison Fuller and Lorna Unwin's chapter more generally). While, other things being equal, this may result in fewer jobs overall, it would also increase demand in the economy, which would, from a broadly Keynesian perspective, increase levels of employment.

The desire to increase the number of median-paying jobs lies behind efforts, noted above, to reshore some manufacturing processes. Ironically, however, such jobs are likely to be those at greatest risk of automation (as discussed in the chapter by John R. Bryson, Vida Vanchan and Rachel Mulhall). The most effective way of increasing median-paying job opportunities would be to support locally-rooted and foundational industries, such as social care, which cannot be offshored or automated to the same extent (the benefits of supporting the care industry are discussed in Susan Himmelweit's chapter). And if the foundational economy perspective is correct, this would ultimately boost the economy's productivity level.

Yet we must not assume that there is a simple answer to the tension between productivity and jobs growth. Creating good jobs which also genuinely enhance the UK's productive capacity will involve innumerable trade-offs by policy-makers. This is why it is vital that decisions are guided by the correct principles and strategic objectives, and determined by democratic processes so that such trade-offs are made transparently. Furthermore, such decisions must be based on the best possible data – too often decisions about industrial policy interventions, particularly at the local level, are made based on only a rudimentary understanding of the industries likely to be affected.

Thirdly, should industrial policy be framed by 'missions'? Mission-oriented industrial policy potentially offers one way out of the first two dilemmas. The right intervention will be the one that best advances the established mission, irrespective of the nature of the intervention (although generally speaking a mission-based approach is associated with vertical industrial policy), or the short-run consequences for employment. On the other hand, since missions are almost always related to technological development, insofar as they seek to position the economy to benefit, in time, from very early-stage innovative R&D, a mission-oriented approach perhaps simply ducks the need to consider the real-world implications of industrial policy (non)interventions for people and communities. They favour instead abstract, technology-related ambitions on the assumption that technological development will improve living standard for most people over the long-run (the chapter by Lisa De Propris and David

Bailey explores the potential benefits, and threats, associated with the latest wave of technological development).

Admittedly, this is too crude a depiction of a mission-based approach. It is perfectly possible, as exemplified by the May government's grand challenges, for missions to focus on, for instance, clean growth and improving mobility, rather than simply the technologies that might produce these outcomes. Yet it is certainly the case that the delivery of the grand challenges, especially via the new Industrial Strategy Challenge Fund, leans towards technological fetishism.

The Industrial Strategy Commission adopted a variation on a mission-based approach by outlining a series of 'strategic economic goals', which included social as well as economic goods – reducing regional inequalities (further discussed in Ron Martin's chapter) and upgrading infrastructure, for instance, alongside decarbonisation and unlocking long-term investment. Admittedly, these goals do not offer a clear guide to policy-makers around which industries and technologies should be the focus of industrial policy interventions. As such, there will always be a strong case for technology-based missions, especially if such an approach acts to disrupt the established institutional (and industrial) silos which might be hindering progress. But missions should, in general, be framed by the desired outcomes rather than the technology itself.

Finally, will the devolution of economic policy powers make a *national* industrial strategy undeliverable? In a way, yes; but that is not necessarily a bad thing. If the foundational as well as high-value economy is to become a focus for industrial policy, more robust forms of local economic governance are paramount, since foundational activities intertwine with the public sector at the local level.

In terms of conventional (or indeed mission-based) industrial policy, there will always be a case for strong powers at the centre so that economy-wide objectives might be pursued: the decentralised American system is arguably just a recipe for zero-sum competition between localities. At the same time, the traditional German approach, which the UK is seeking to emulate to some extent, is highly decentralised too. This does not prevent national strategic objectives being pursued, but it does appear to mean that partnership between central, regional and local authorities is paramount. The challenge is to make this partnership a productive one – a way of working through the trade-offs discussed above.

And now…

Over to the experts!

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Section 1: Productivity and employment

2

Productivity and job creation

Tera Allas

Traditional industrial policies, while often beneficial, are insufficient in scope and scale to address the UK's broad-based productivity problem. Widespread diffusion of good management practices and new technologies is required. However, this chapter argues that rapid technology-led productivity growth could have a negative impact on the quality and quantity of employment. To square the circle, we need a step-change improvement in the UK's human capital, across all aptitude levels, age groups and geographies. This would raise productivity in its own right, accelerate technology adoption, and insure workers against the downsides of fast-paced productivity growth.

Industrial strategy needs to better address the UK's broad-based productivity malaise

The UK's current industrial strategy is focused on high-performing sectors and companies

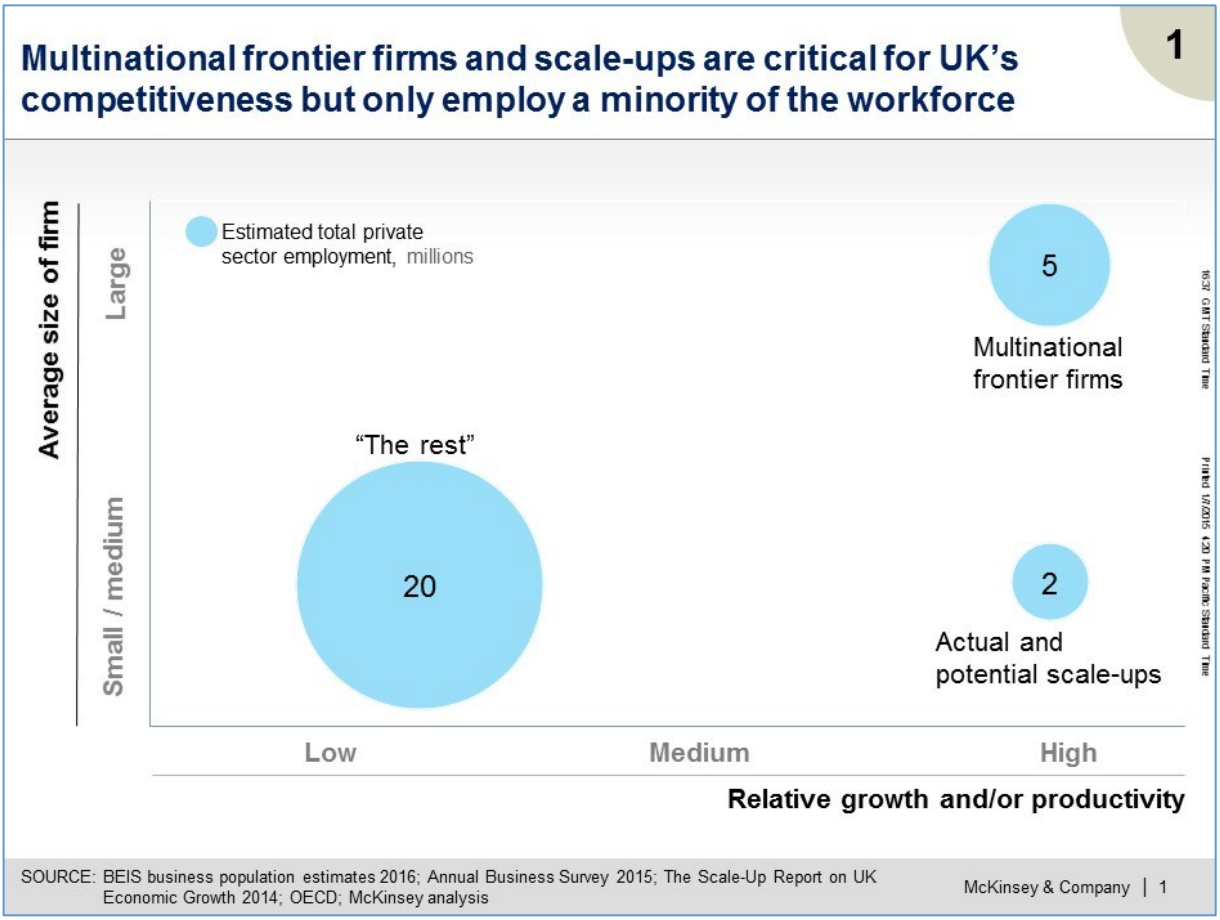
The UK government's industrial strategy, outlined in the white paper *Building a Britain Fit for the Future* (HM Government, 2017), has a clear central aim: to boost the productivity and earning power of people throughout the UK. Yet, of the fifteen key policies listed on page 11 of the document, at least eight are focused on R&D intensive or innovative companies, some in specific sectors – arguably benefitting mostly people, places or businesses that are already better-performing. Indeed, only around 7 million of the 27 million private sector employees in the UK work for the target business segments (see figure 1).

In many ways, a focus on leading businesses makes sense. Effective implementation of industrial strategy relies on a strong partnership between government and business, which is easiest to cultivate with high-performing companies. The UK's competitiveness in world markets depends disproportionately on the 10 per cent or so of businesses that engage in trade.[1] And certain sectors – such as financial services and advanced manufacturing – are amenable to traditional industrial policy instruments such as progressive regulation, R&D tax credits and innovation grants (BIS, 2012).

However, such policies are not enough to meet the government's stated aim of an economy that works for everyone. Take, for example, the R&D tax credit; a policy that costs tax payers more than £3 billion a year (HMRC, 2017). In 2015-16, a total of 25,300 companies submitted R&D tax credit claims, representing 0.5 per cent of the UK's total business population (BEIS, 2016). Almost three quarters (73 per cent) of the claims were from high value-added industries (manufacturing, professional, scientific and technical, and information and communication) – sectors which employ around 20 per cent of the UK's workforce.[2]

Such industrial strategy interventions to improve 'the best' are needed, given recently lost productivity momentum in this business segment

Any country's living standards, as measured by GDP per capita (an imperfect but reasonable metric[3]), are a function of employment rates and output per employee. Therefore, the fact that



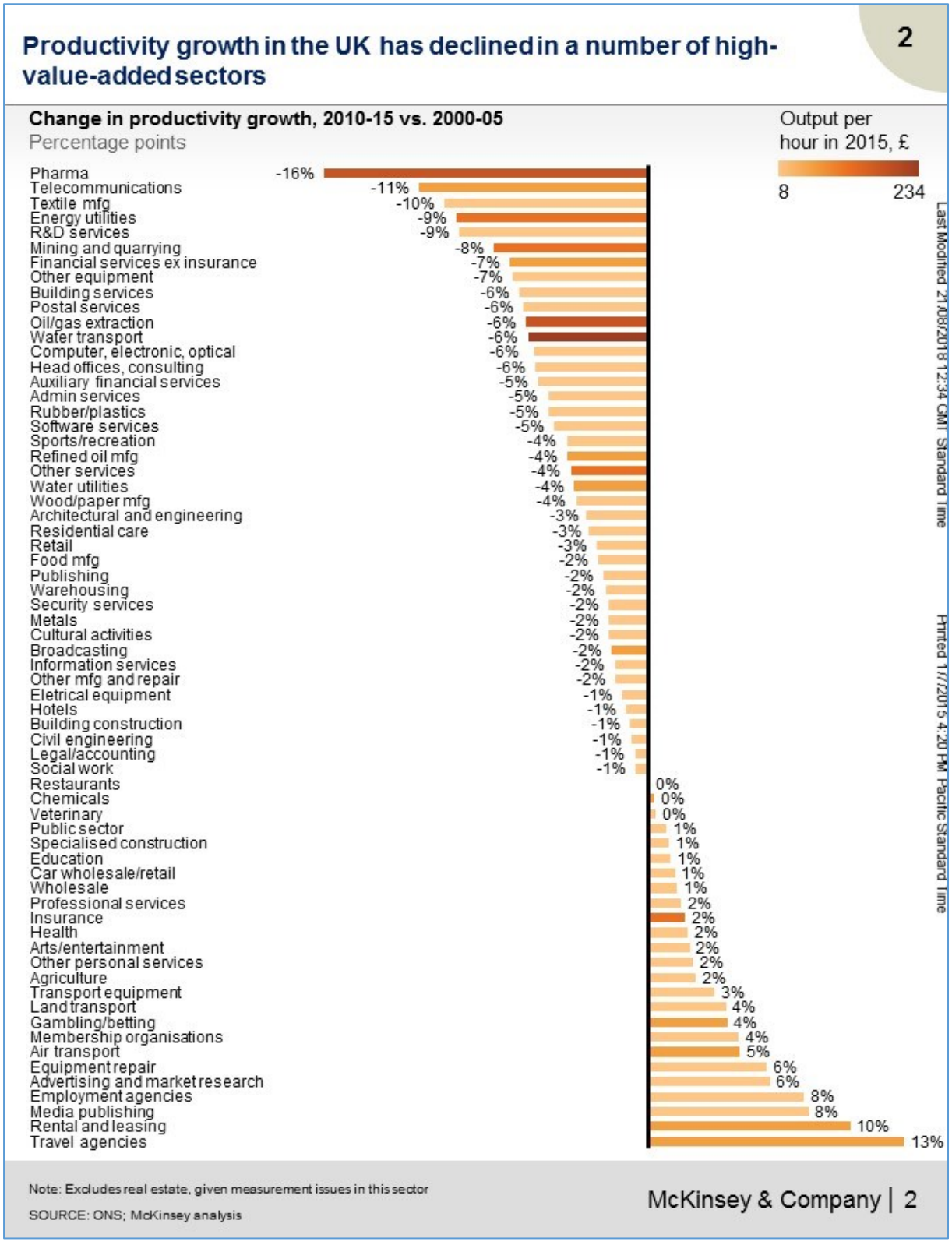
the UK has experienced an unprecedented slow-down in its productivity growth is a major cause for concern. Among seven advanced economies studied by the McKinsey Global Institute (2018a), the UK experienced the largest decline in productivity growth between 2000-04 and 2010-14.

Some of the biggest drops in productivity growth were seen in some of the most productive sectors: financial services, manufacturing, and information and communication (McKinsey Global Institute, 2018b). This pattern is equally striking at the next level of granularity, with dramatic declines in productivity growth rates in high-value added sectors such as pharmaceuticals, telecommunications, R&D services, mining and quarrying, oil and gas extraction, banking and water transport (see figure 2). Moreover, according to firm-level analysis, aggregate productivity between 2002 and 2014 was disproportionately influenced by the highest-productivity firms, and the slowdown in growth was driven almost entirely by the 'top tail' of the productivity distribution (Schneider, 2018).

There are several potential explanations for why productivity growth might have stagnated in the most productive sectors and firms (see Riley *et al*., 2018 for a more detailed discussion). For example, there is some evidence that innovation, broadly defined, has slowed down recently (BEIS, 2018b; CBI, 2017). Whatever the root causes, it is clearly important that policy in the future diagnoses and addresses these issues thoroughly. However, to improve living standards for all, broad-based productivity improvements are even more critical.

The importance to living standards of broad-based productivity improvements

Pioneering businesses are key to productivity growth over time (Andrews *et al.*, 2015). The positive spill-overs from 'the best' also benefit 'the rest'. Yet, to raise living standards for more



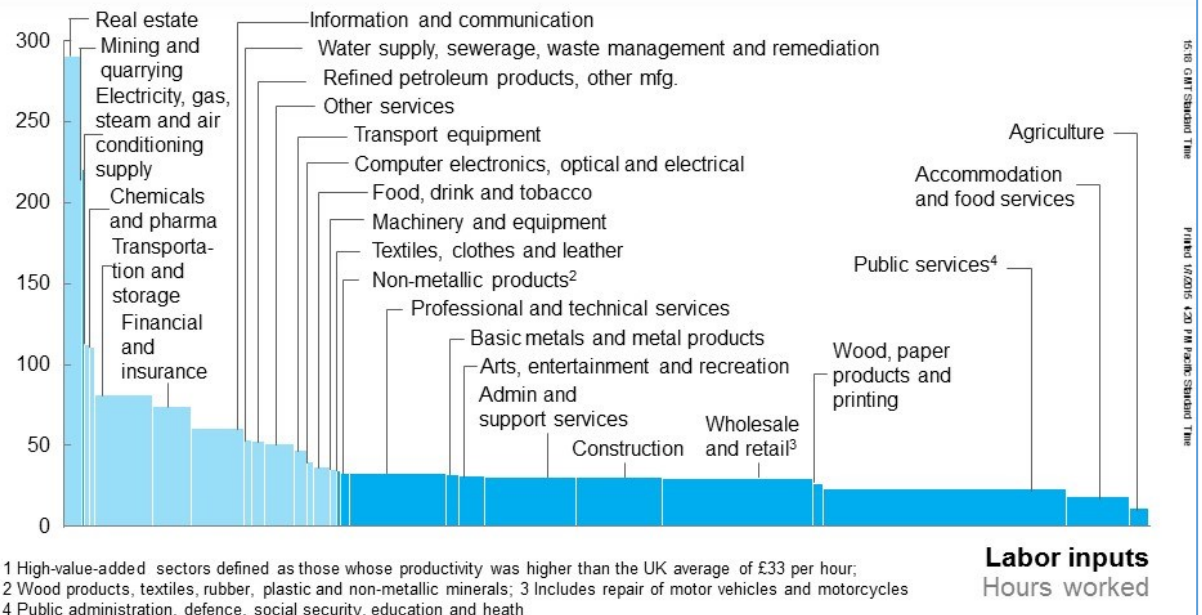
than a few people, the UK needs to address its broad-based productivity malaise (Allas, 2018b). As figure 3 shows, only around 25 per cent of UK workers are employed in higher-than-average productivity sectors. What's more, work by Be the Business, the business-led movement dedicated to improving British productivity, shows that within each sector, more than two-thirds of employees work for low-productivity firms (CBI, 2017).

Only around 25 percent of the UK's employment (jobs and hours) are in high-value-added sectors[1]

3

Labour productivity by sector in the UK, 2017

GVA per hour, £



1 High-value-added sectors defined as those whose productivity was higher than the UK average of £33 per hour;
2 Wood products, textiles, rubber, plastic and non-metallic minerals; 3 Includes repair of motor vehicles and motorcycles
4 Public administration, defence, social security, education and heath

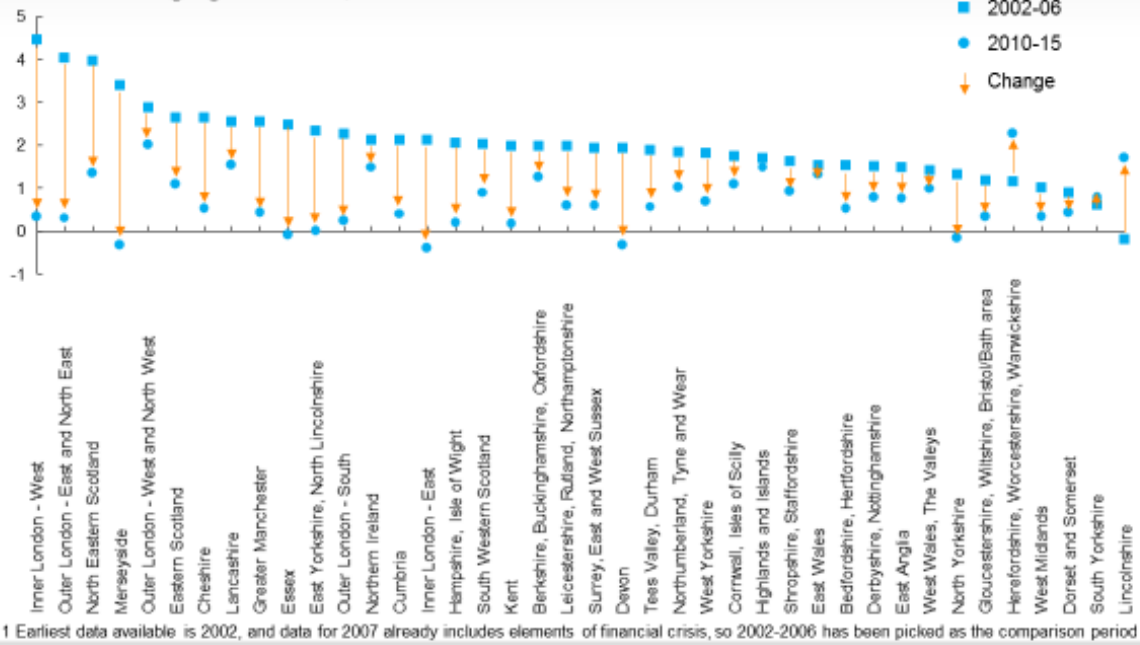
SOURCE: ONS, McKinsey analysis

Productivity growth has slowed down in the vast majority (37 of 40) of NUTS2 regions in the UK

4

UK labour productivity growth by NUTS4 region, 2010-15 vs. 2002-2006[1]

Annual average growth rate, %



1 Earliest data available is 2002, and data for 2007 already includes elements of financial crisis, so 2002-2006 has been picked as the comparison period

SOURCE: ONS, McKinsey analysis

Compared to other European countries, the UK's productivity problem appears to be more endemic. More than 80 per cent (24 of 29) of UK sectors experienced a productivity slowdown between 2000-05 and 2010-15. The corresponding figure for France was 69 per cent, Germany 62 per cent and Spain 36 per cent (McKinsey Global Institute, 2018b). The breadth of the decline can also be seen in granular regional data. Out of the 40 NUTS2 regions in the UK, the slump affected 37 (see figure 4). Therefore, to create an economy that works for all, productivity growth needs to pick up across the country, not just in a few sectors or regions.

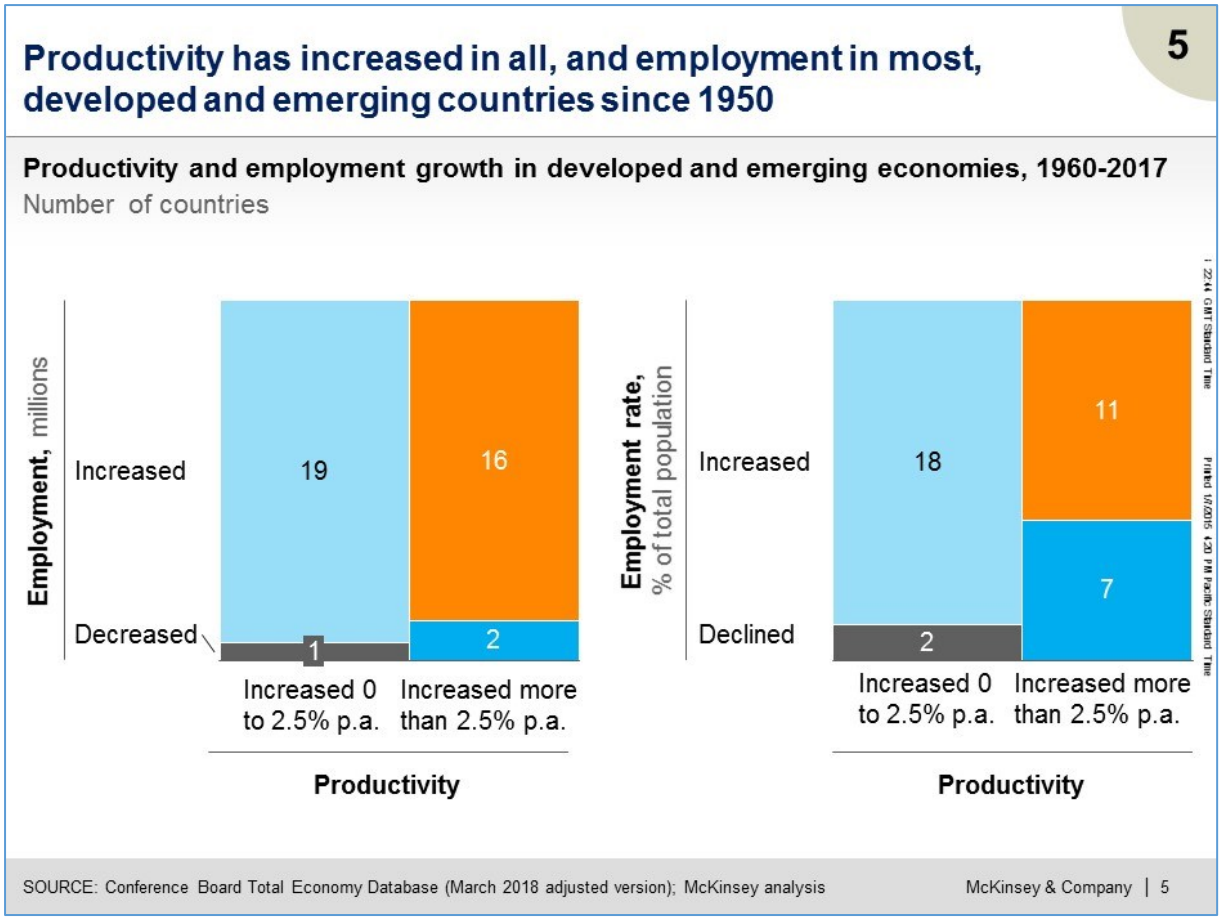
Creating good jobs while driving productivity growth is not a trivial challenge

The argument so far presents a challenge for industrial policy: targeted interventions tend to be more effective, but they also have limited impact, touching only a handful of firms and individuals. How can policy makers create a rising tide that lifts all boats? Before we turn to that question, we first need to explore an important related challenge: how to ensure that faster productivity growth does not undermine another central policy goal, to create good jobs.

At the aggregate level, productivity and employment growth go hand-in-hand

The good news is that, at the national and international level, and over a long period of time, improved productivity is associated with increased employment (Allas, 2017). Over the last 50 years across G19 countries plus Nigeria, productivity rose by 137 per cent, employment by 132 per cent and output by 450 per cent. More than 1.2 billion new jobs were created (McKinsey Global Institute, 2015). The same pattern holds at a country level (see figure 5).

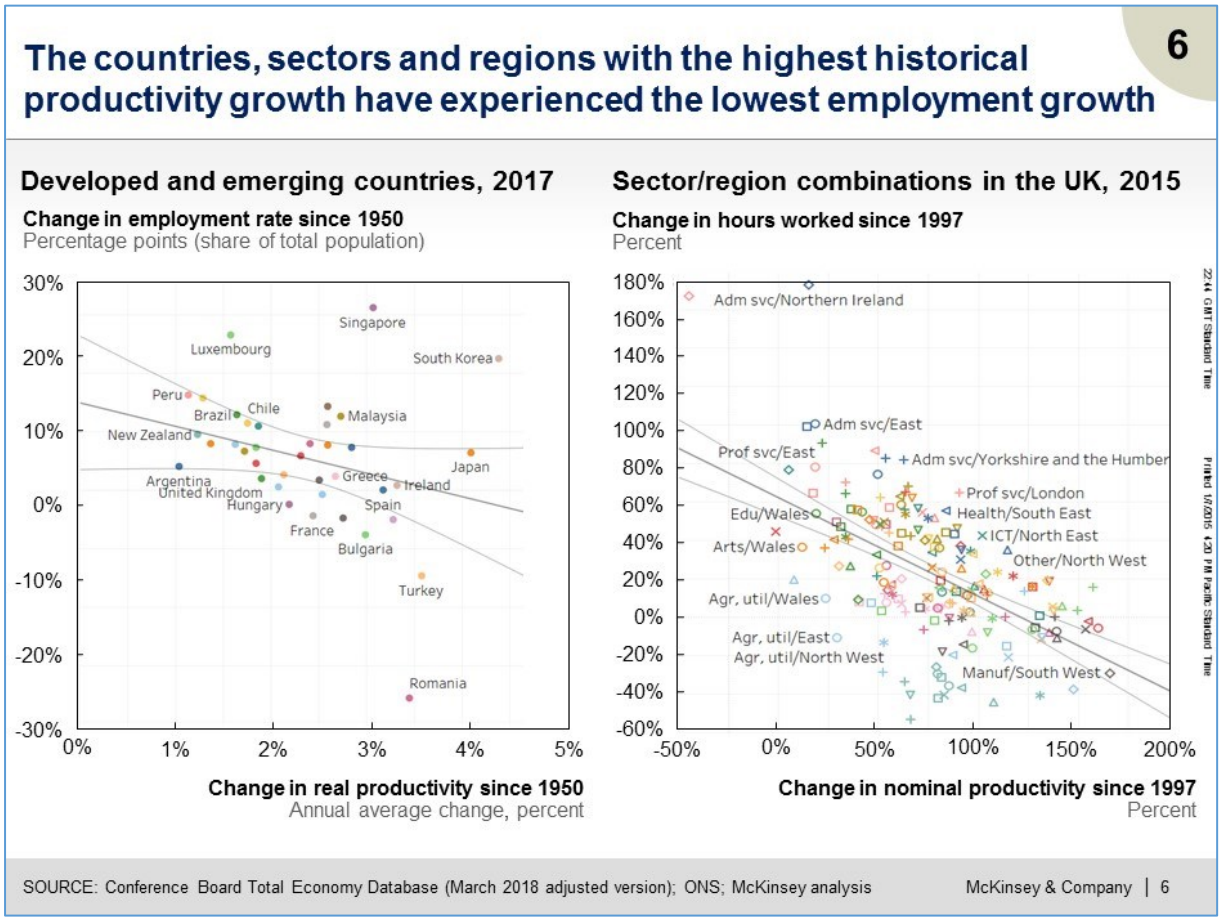
Sectoral productivity growth raises incomes, consumption, and hence aggregate employment (Autor and Salomons, 2017). For example, the adoption of personal computers in the US has



generated significant employment since 1970: while an estimated 3.5 million jobs (such as typists, secretaries and bookkeepers) were lost, at least 19.3 million were created in a wide range of occupations (such as customer service) and sectors (such as computer software and service industries) (McKinsey Global Institute, 2017b). Arguably, this is an excellent demonstration of how new technology can create good jobs. However, a more granular analysis reveals a trade-off between employment and productivity growth.

There is a trade-off between employment and productivity growth

Despite the observations above, large-scale technological transitions can cause sustained periods of worker displacement and stagnant wages, as happened during the 19th century industrial revolution – the so-called 'Engels' pause' (Manyika and Sneader, 2018). Moreover, averages can mask important patterns. When we look at the data at a more disaggregated level, a trade-off between productivity and employment growth emerges (Allas, 2018a): the countries, sectors and regions that saw the highest productivity growth also saw the lowest employment growth (see figure 6).



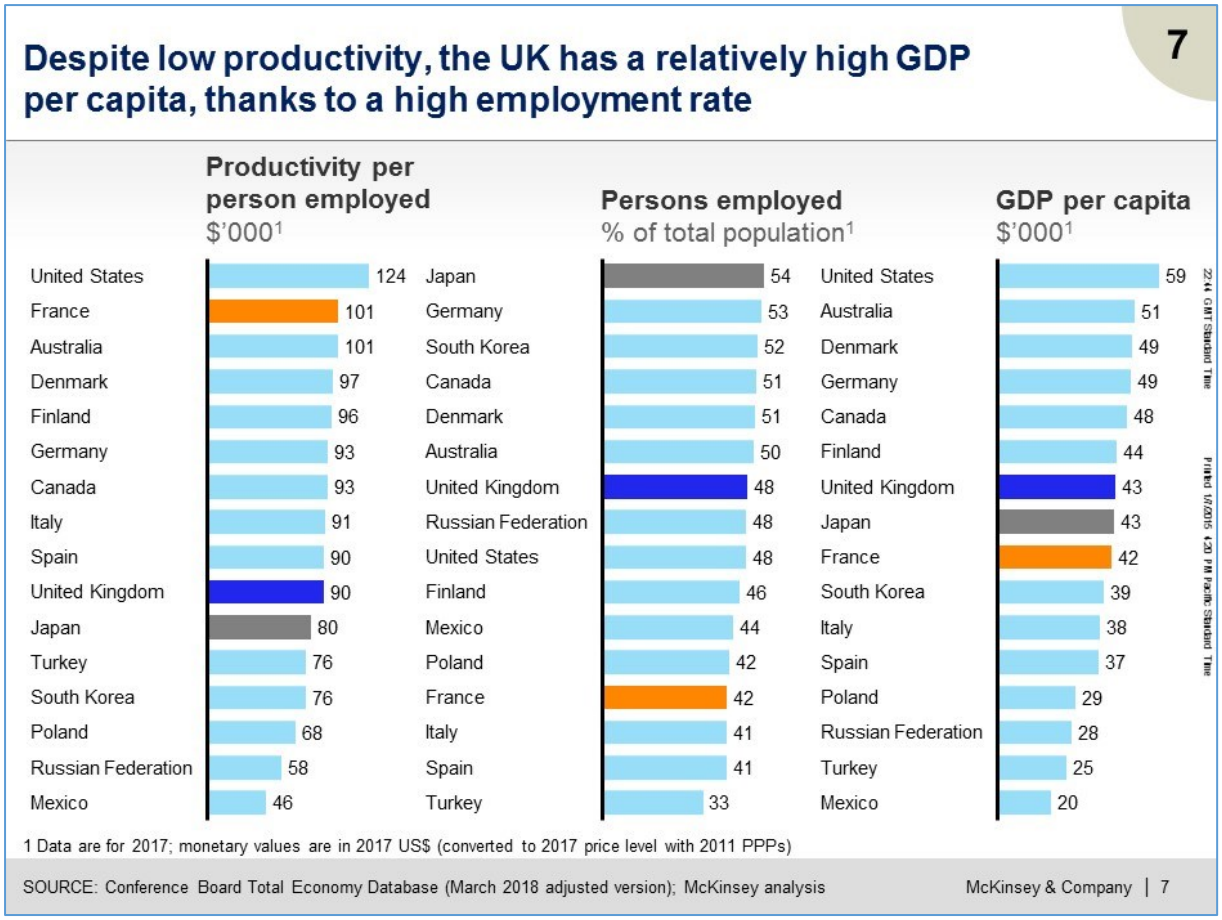
Now, one might argue that slow employment growth (as opposed to an actual fall in employment) is not a major issue, especially if it does not directly contribute to slow wage growth.[4] Indeed, there are two striking features of figure 6: first, no country or sector/region combination included in the sample experienced negative productivity growth; and second, the countries or sector/region combinations that saw employment actually fall were in the clear minority.

Yet, this is not grounds for complacency. A study across 19 countries over more than 35 years showed that, at an industry sector level, absolute employment fell as productivity rose (Autor and Salomons, 2017). While the within-sector falls were outweighed by job creation elsewhere in the economy, the impacts on individuals were not neutral. For older or less skilled workers, moving sectors or occupations is often not feasible, causing them to drop out of the job market (Chapain and Murie, 2008). Moreover, workers are much less geographically mobile than often assumed. In the UK, less than 0.4 per cent of the working age population moved region in 2016 (Clarke, 2017).

The productivity transformation promised by automation, digitization and artificial intelligence could sharpen the trade-off further

McKinsey Global Institute (2018a) estimates that by promoting demand and digitalization, advanced economies could boost productivity growth to at least 2 per cent per annum. On the flipside, between 75 million to 375 million workers (3-14 per cent of the global workforce) will likely need to switch occupational categories by 2030 (McKinsey Global Institute, 2017b). Simply transforming the education system will not be enough: three quarters of the people who will make up UK's 2030 workforce have already entered the labour market (McKinsey Global Institute, 2018b).

Even though projections about the future of work are highly uncertain, most commentators agree on three things: maintaining high employment will require large-scale reskilling; people with a higher level of education are likely to fare better; and automation is likely to put downward pressure on wages. In other words, without significant mitigations, the trade-off between productivity growth and good jobs is likely to sharpen further.



This raises an important question: if there is a trade-off, is low productivity growth a price worth paying for high employment? Most economists, including the Bank of England[5], would say 'yes' (mostly due to the negative well-being and scarring effects of unemployment), in the short term. In this context, the UK's labour markets have arguably worked rather well: the combination of low productivity but high employment produces a higher GDP per capita for the UK than a combination of high productivity but low employment does for France (see figure 7).

However, we would no doubt like to see both high productivity and high levels of employment. The critical policy question therefore becomes this: how to square the circle and avoid, or at least diminish, the trade-off?

Putting human capital and purposeful implementation at the heart of industrial strategy

The good news is that there is no shortage of ideas on what could simultaneously raise productivity and employment growth across the nation. The bad news is that, despite a good list of potential remedies, we have not managed to implement them successfully. The political economy issues and behavioural biases that underlie these failures are discussed elsewhere (Allas, 2014a; 2014b). This chapter proposes a practical solution based on recent McKinsey Center for Government research: *prioritization* (Allas *et al*., 2018). Instead of dozens of policy areas and hundreds of initiatives, what if we focused on the most important asset for the UK economy, that is, its human capital?

The UK is failing to cultivate its human capital, even though this would boost both productivity and employment

In many ways, the gap between the weight of evidence in favour of investing in human capital, and the reality on the ground, is quite staggering. Nearly 20 per cent of school leavers in the UK do not have the reading skills that would enable them to participate productively in life.[6] Among 24 countries surveyed by the OECD, England is the only place where 16-24 year-olds have lower skills than 55-65 year-olds[7]. School leavers' attainment is the single most important explanatory variable for regional productivity differences (CBI, 2016). Individuals with below upper secondary education are around twice as likely to be unemployed than those with upper secondary or tertiary education.[8]

In 2015, 40 per cent of UK workers were employed in an occupation for which they did not have the correct qualifications, representing the fifth worst skills mismatch among 30 countries (OECD, 2015). Poor management, cited by 49 per cent of people, is the biggest reason for unhappiness at work (Investors in People, 2018). The UK lags behind the European and Middle Eastern average in 12 out of 19 good workplace practices that have been shown to be linked to company performance.[9] When a recent survey of employers asked why their company was not providing training to support individuals' skills for their role, the most frequently chosen responses were 'We have more important things to worry about' (41 per cent of respondents picked this this as one of the top 3 reasons) and 'It is too expensive to implement' (39 per cent of respondents picked this as one of the top 3 reasons).[10] Total public spending on worker training in 2011 in the UK was 0.01% of GDP – a joint-lowest with Australia and Japan among 10 developed economies, including the United States (McKinsey Global Institute, 2017b).

Not only are these education and management shortcomings worrying in their own right, indicating a critical failure to nurture our nation's human capital. They are also likely to limit the UK's capacity to reap the benefits of new technologies going forward. The effective adoption of technology requires the co-evolution of business processes, significantly hindered if the necessary management skills are lacking (McKinsey Global Institute, 2017a). It is a well-accepted research finding that skills and technology are complementary (OECD, 2016b); and

a company's ability to commercialize innovations depends on its absorptive capacity – the education and experience of its workforce (see Allas and Hunt, 2018; Griffith *et* al. 2004; Zou *et al.*, 2018). In countries where adults have poor skills, introducing productivity-enhancing technologies and new ways of working is more difficult (OECD, 2016a). And the skills-biased nature of technology-driven productivity improvements are likely to put most pressure on the least-well-educated (Autor and Salomons, 2017). In an economy where success is increasingly dependent on intangible assets (Haskel and Westlake), a focus on human capital is surely paramount.

Enough is known about 'what works' in education, management and technology adoption to get started now

Summarising the vast literature on how to augment human capital is outside the scope of this chapter. Suffice it to say that there are plenty of good reports already out there that should be a place to start. Just to illustrate, in a very small way, what we already know:

- On education: Student mindsets (e.g. motivation calibration[11], test anxiety) have more influence on outcomes than socioeconomic background. Students who receive a blend of inquiry-based and teacher-directed instruction have the best outcomes. Technology is most useful when placed in the hands of teachers (Denoël *et al*., 2017). The most successful education-to-employment reforms globally involve intense collaboration between students, education providers and employers; and benefit from a system-integrator that steers and provides a high-level view of the entire system. This includes, for example, employers actively contributing to the design of school curricula (Barton *et al*., 2013).
- On management and workplace practices: The most proven methods for enhancing managerial skills and practices tend to involve relatively intense, often face-to-face and on-the-job support, such as a 'field and forum' approach that combines classroom based instruction with experiential learning (Dumitrescu *et al*., 2017; George, 2013; McKenzie and Woodruff, 2017). Benchmarking management's performance – to avoid over-confidence, to prioritise areas for improvement and to identify the best peers to learn from – is often at the heart of such learning journeys.[12] Coaching and mentoring by 'the best' for 'the rest' has also been shown to be effective (BEIS, 2018a). Finally, given the potential trade-offs between productivity and employment, a boost in businesses' commercial excellence (growing sales rather than simply focusing on efficiency) is particularly important (Bughin, 2018).
- On technology adoption: Apart from boosting absorptive capacity through education (as discussed above) and R&D (which tends to only benefit a small number of frontier firms), governments have many other tools to encourage wide-spread technology adoption. These include: improved access to finance, better information and hands-on guidance, increased business/university collaboration, leading by example, leveraging public procurement, providing the necessary hard and soft infrastructure (including on cybersecurity), promoting standardization, and clarifying regulations (McKinsey Global Institute, 2018a). Supporting IT skills training for managers is also likely to deliver significant benefits (Barrett *et al*., 2018).

The challenge is not really knowing the 'what', but designing the 'how exactly' and making headway on implementation

So why has policy implementation failed in the past? The real issues are around ambition (to avoid sub-scale initiatives that simply add to the existing complex landscape), smart design (which includes a deep understanding of the context and ecosystem within which the interventions are supposed to work), and persistent implementation (rather than constant new announcements and reforms).

Ultimately, for any of these three to be present, we need a significant change in policy makers' and public servants' mindsets. We need sustained action, not words. And we need patience. Based on McKinsey's experience with large, complex organizations, it takes a minimum of 3-5 years for systemic change to become established. In this context, it may well be necessary to consider institutional solutions that 'hard-wire' patience into the process (Industrial Strategy Commission, 2017).

Conclusion

Enhancing the UK's human capital is a win-win-win: it will improve productivity in its own right, accelerate productivity-boosting investment and technology adoption and insure workers against the downsides of fast-paced productivity growth. Enough is known about 'what works' to devise a plan for a broad-based step-change in our nation's skills and capabilities. What is required for effective implementation is focus, ambition, and the patience to see it through.

Notes

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2. ONS EMP13: employment by industry data, available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13.
3. See the Foundation for Science and Technology's debate record note on 'Is the rate of change of GDP the best way to measure economic growth?', available at: http://www.foundation.org.uk/Events/pdf/20180523_Summary.pdf.
4. The causal relationship between productivity and earnings is far less clear than usually thought (see for example Tuckett, 2017).
5. See the Bank of England Governor's letter to the Chancellor of the Exchequer in February 2018, available at: https://www.bankofengland.co.uk/-/media/boe/files/letter/2018/governor-cpi-letter-080218.
6. See the OECD Programme for International Student Assessment country note for the UK, available at: https://www.oecd.org/pisa/PISA-2015-United-Kingdom.pdf.
7. See the OECD Survey of Adult Skills First Results country note for England and Northern Ireland, available at: http://www.oecd.org/skills/piaac/Country%20note%20-%20United%20Kingdom.pdf.
8. OECD data on unemployment rates by education, available at: https://data.oecd.org/unemp/unemployment-rates-by-education-level.htm.
9. Based on analysis of McKinsey's Organizational Health Index database.
10. Survey results reported in McKinsey & Company and CBI's forthcoming publication, *Good Workplace Practices* (working title).
11. Motivation calibration refers to a student's ability to identify what high motivation looks like in day-to-day life (including doing more than expected and working on tasks until everything is perfect).
12. See research by Be the Business, available at: https://www.bethebusiness.com/2018/05/productivity-overconfidence-hampering-british-performance/.

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3

The UK's productivity puzzle is in the top tail of the distribution

Patrick Schneider[1]

UK productivity growth has been puzzlingly slow since the crisis (Ramsden, 2018; Tenreyro, 2018). After averaging 2 per cent in the pre-crisis decade, growth in labour productivity[2], measured as output per hour worked, has slowed to an average of only 0.5 per cent. An extensive literature has suggested myriad causes for the malaise – including 'zombie' firms hoarding resources, sluggish investment in the face of uncertainty, and mismeasurement – and has dismissed others that no longer seem plausible, such as temporary labour hoarding (OBR, 2017).

Productivity across the distribution

This chapter contributes to these debates by showing, using firm-level data, that slower aggregate growth has been entirely driven by workers at the more productive firms in the economy.

In apparent contrast to the results presented here, recent analysis has focused on the role that the weakest firms play in keeping down aggregate productivity. For example, Andy Haldane highlighted in a 2017 speech the 'long tail of low-productivity companies', which drags on the aggregate (Haldane 2017). Similarly, the OECD has published several papers (see for example Andrews *et al*, 2015; 2016) analysing the divergence of the top end of the productivity distribution ('frontier' firms) from the rest ('laggards').

These ideas have been very influential. But unproductive firms are not responsible for *all* of the UK's issues. Using a new method that links aggregate productivity to its distribution across workers, this chapter shows that the slowdown in productivity growth is isolated in the *top tail* of the distribution of productivity across workers. Workers at the most productive firms are failing to improve on each other at the same rate as their predecessors did.

This is clearly demonstrated in chart 1. The two lines depict the average, annual change in productivity at different parts of the distribution across workers, before and after the crisis. The post-crisis line is well below the pre-crisis one, but only toward the right; that is, the top tail of the distribution. Surprisingly, the bottom end of the distribution appears to have been growing faster in recent years than it was leading up to the crisis.

Because the average height of each line in this chart is roughly equal to the change in the aggregate, we can see which part of the distribution is moving (or not) to cause the aggregate to move. And, again, it is clearly the top end of the distribution that is doing the work. This does not itself explain the productivity puzzle; as with any statistical decomposition, we are no closer yet to the *why* of the issue, but the *where* is a little clearer.

The next section outlines the method used to come to this conclusion, and the final section applies it to the UK data. This analysis confirms the headline results in Haldane's speech and the OECD papers: we can see the long tail of low productivity firms, and the divergence

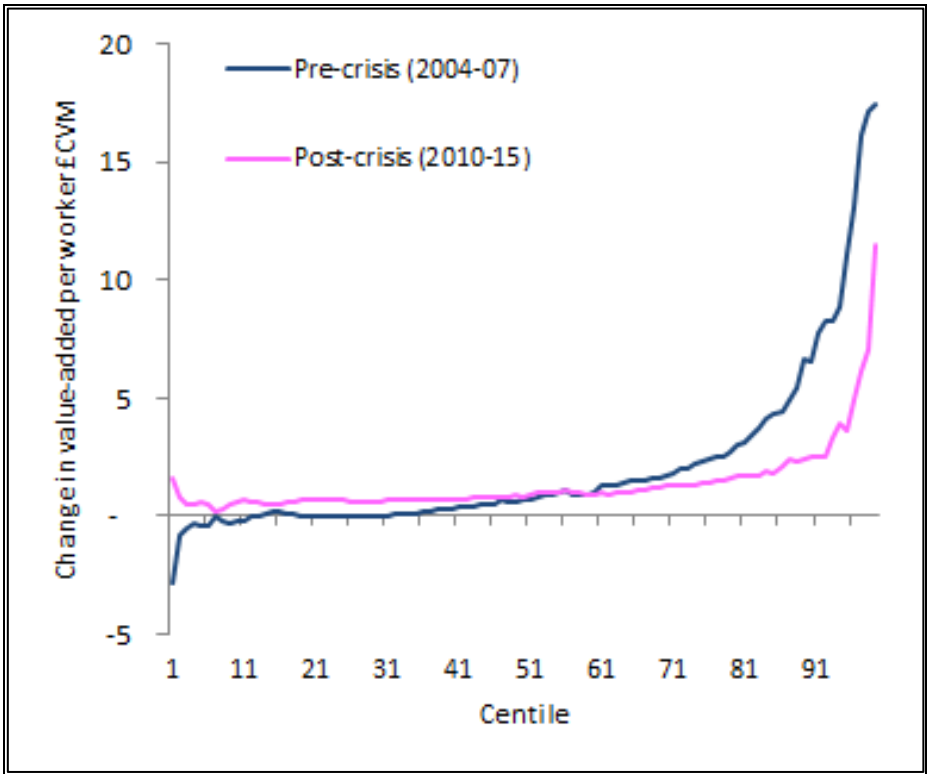

Chart 1: Av. annual change in productivity by centile of the productivity level distribution

of the top end of the distribution from the rest (see also chart 4 below). However, in the data we have, these features are always there, and so they cannot be to blame for the more recent slowdown in growth. Indeed, the increasing dispersion in the productivity distribution appears to be the historical source of most aggregate growth. In this light, the UK growth puzzle is there because the divergence between the top and bottom of the distribution has slowed down since the crisis.

Method and data

These results are based on a method explored further in a recent working paper (see Schneider, 2018). Aggregate labour-productivity (value-added per worker) is usually measured by taking a labour-weighted[3] average of firm-level productivity. But it can also be approximated by the average of a number (Q) of equally spaced quantiles. So, for example, we could measure aggregate productivity by taking the average of the 1st through 99th centiles of the distribution. More explicitly:

$$\Pi = \frac{VA}{L} = \sum_i \frac{l_i}{L}\pi_i \approx \frac{1}{Q}\sum_j q^{\pi}(j)$$

In this equation, i and j represent firms and quantiles, π is productivity, va is value-added, and l is labour. $q^{\pi}(j)$ is the quantile function of productivity across workers; it picks out the productivity of the worker who is more productive than exactly j/Q of the others.

With this approximation, we can measure changes in the aggregate by averaging over changes in the centiles as well. Using the formula below, we can see which part of the distribution is moving (or not) to cause the aggregate to move:

$$\Delta\Pi \approx \frac{1}{Q}\sum_j \Delta q^{\pi}(j)$$

To reiterate, it is growth in the distribution being tracked here – not growth in firms, nor the distribution of firm growth. It could be that parts of the distribution move around, or stay still, but the firms that are located there are shifting around a lot.

This method has been applied to ONS firm-level microdata (combining the Annual Respondents Database X with the Annual Business Survey 2015), with productivity measured by real value-added (using 2-digit sector deflators) per employee.[4]

This dataset does not cover the whole economy. The surveys only try to cover the non-financial business economy (which is a shame given the importance of the finance sector in the growth puzzle (Tenrenyo, 2018)), and some other sectors are only included from 2009, so these have been from the whole dataset for consistency. Because of these survey limitations, the 'aggregate' in the below results is in fact a subset of the overall UK aggregate economy.

Application to UK data

Applying the method to our data, we should first check how close the approximation is. The charts below show actual productivity and its growth as measured from the micro-data, compared with the approximation. As can be seen in chart 2, the approximation has a consistent negative bias, because cutting out the top 1 per cent drops some very large outliers, but the growth path is generally correct (see chart 3).

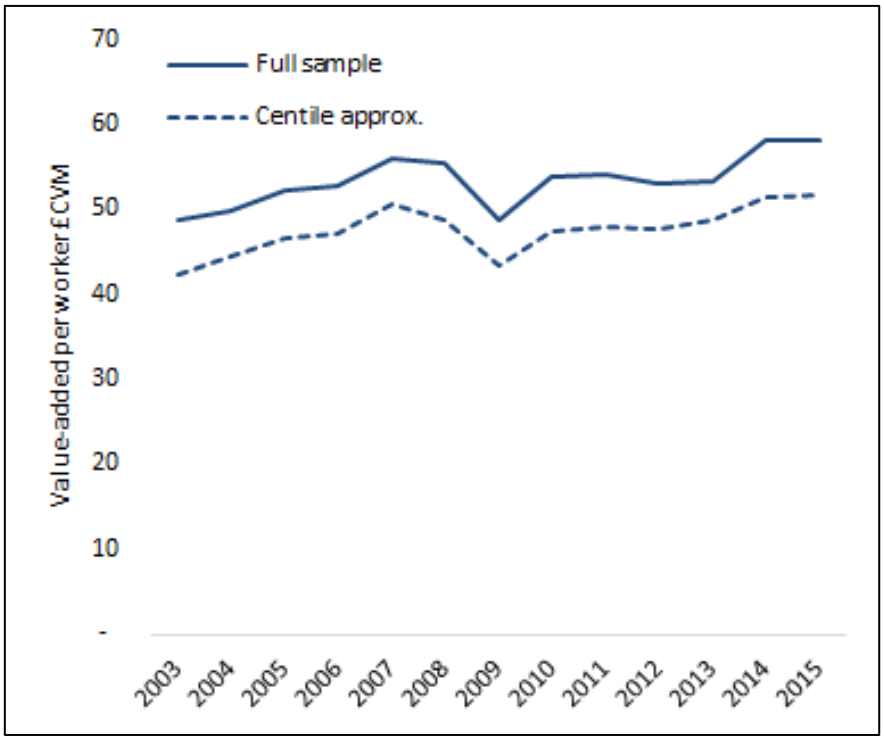

Chart 2: Aggregate productivity and its centile approximation (level)

Given that the approximation largely matches the aggregate patterns, we can assess the distributions underlying the aggregate figures. There are three key findings.

Firstly, **the productivity distribution is highly skewed, so the top tail has a very strong influence on the aggregate**. As chart 4 shows, the distribution has a long tail of workers in unproductive firms at the bottom, and workers in a collection of the 'happy few' (Ottaviano and Mayer, 2007) extremely productive firms at the top.

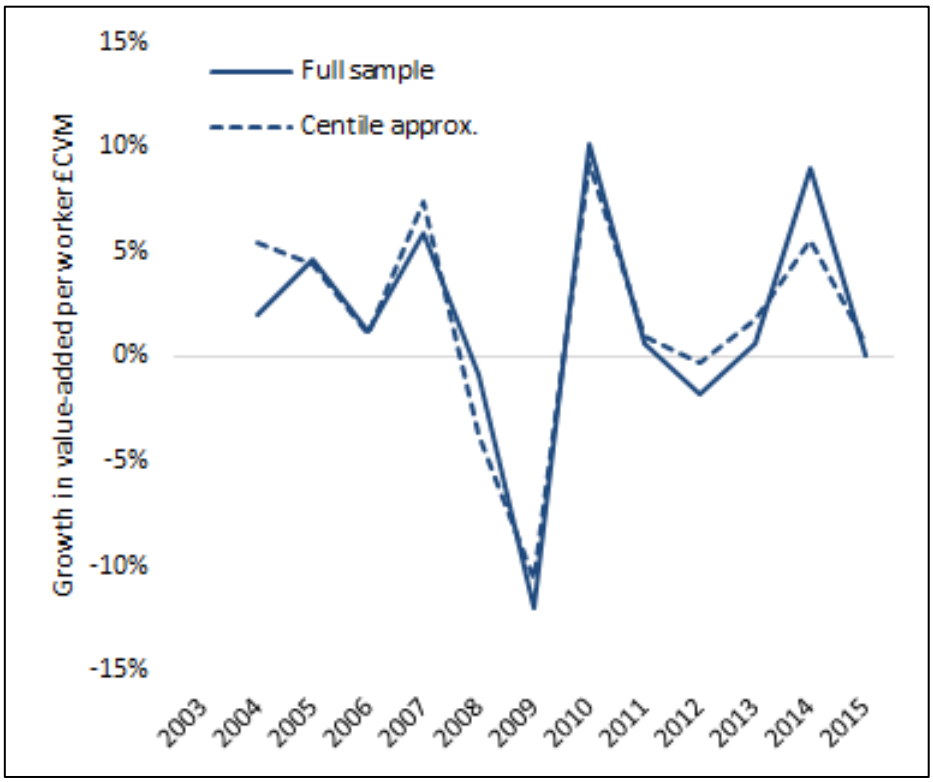

Chart 3: Aggregate productivity and its centile approximation (growth)

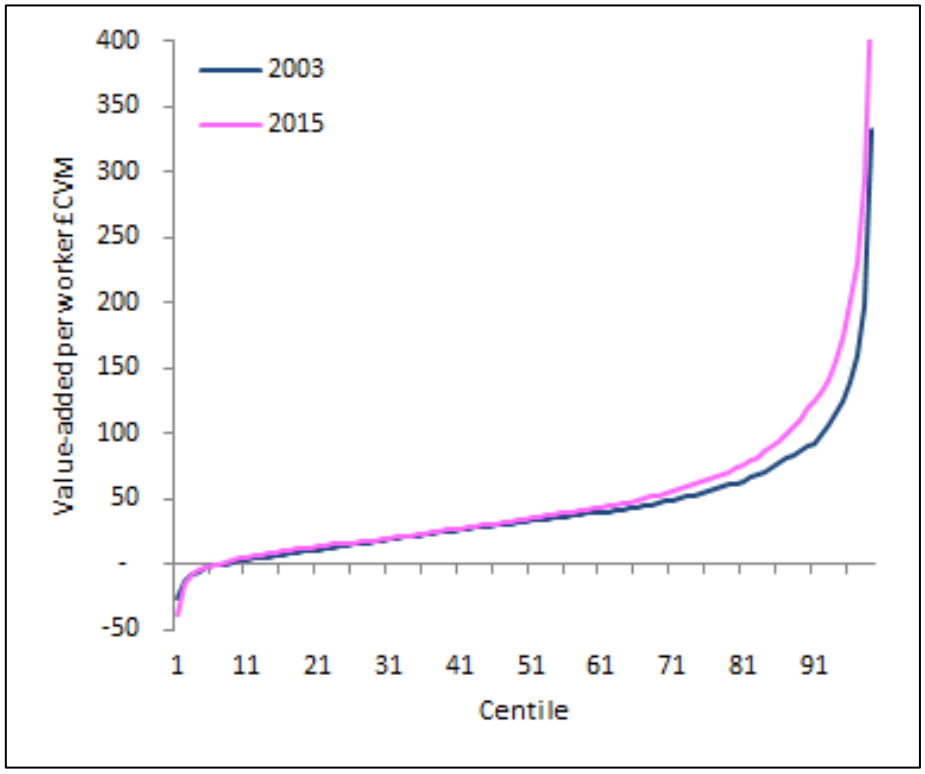

Chart 4: Most of the distribution is stable over time

This is a well-known feature of the productivity distribution, regardless of whether it is weighted by labour. An implication of this shape is that the top tail has a very strong influence on the *level* of aggregate productivity in any given year, just as large outliers will push up on any average.

Secondly, **the top tail has an even greater influence on *changes* in aggregate productivity from year to year**. Over 70 per cent of the growth in aggregate productivity between 2003 and 2015 was driven by the top two deciles. This is because the rest of the distribution does not move around much – at least not in magnitudes that compare to movements in the upper tail.

Incidentally, this supports the observation from the OECD reports that the top tail is diverging from the rest. Note, however, that the OECD's work focuses on the firm distribution, whereas we're looking here at the distribution across workers. Hence, what we're seeing here is the divergence of frontier 'workers' from the rest.

Thirdly, **the productivity puzzle (slower aggregate growth after the crisis than before) is located in the top tail of the distribution**. We can locate the growth puzzle by comparing changes in the pre- and post-crisis periods. Chart 5 below is a reproduction of chart 1, but with an extra line. It shows the average annual change of each centile over three distinct periods: the pre-crisis years (2004-07), the crisis (2008-09), and the post-crisis period (2010-15).

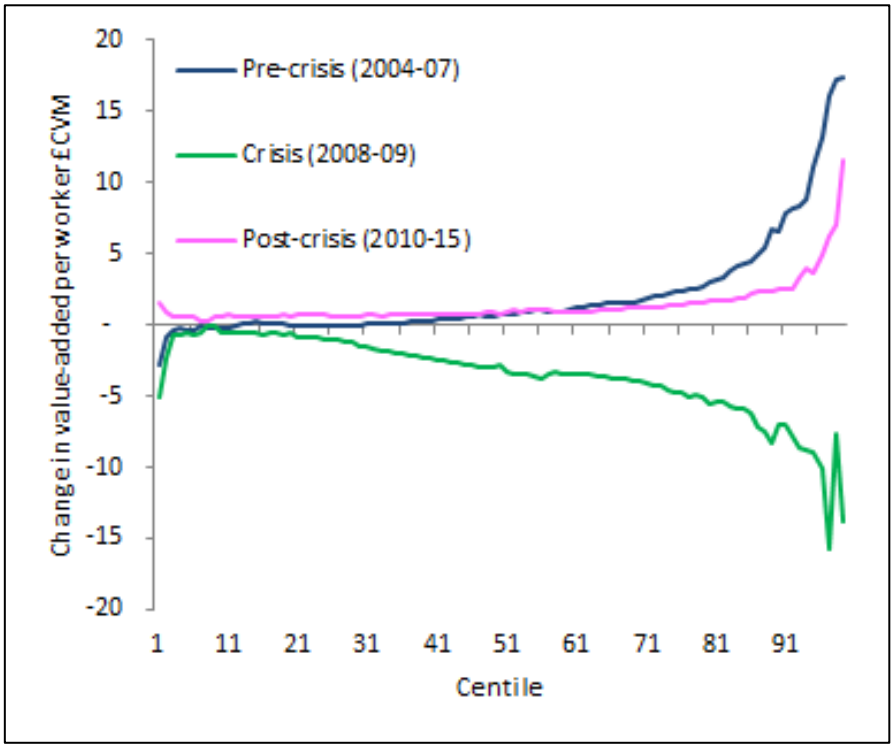

Chart 5: Average annual change in productivity by centile

To read chart 5, pick any centile, and the three lines will show how that part of the distribution changed, on average, over these different periods. For example, the median grew at approximately the same rate in the pre- and post-crisis periods, but dropped significantly during the crisis.

The growth puzzle is the gap between the pre- and post-crisis lines. Crucially, the *lower* sections of the distribution have actually grown faster in the post-crisis period than they did

before it, and so therefore cannot be driving the puzzle. By contrast, the top two deciles grew far more slowly and therefore this is where the growth puzzle is located.

Notes

1. This chapter first appeared on the Bank Underground blog as 'The UK's productivity puzzle is in the top tail of the distribution' on 29 March 2018. See https://bankunderground.co.uk/2018/03/29/the-uks-productivity-puzzle-is-in-the-top-tail-of-the-distribution/.
2. The ONS data available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/timeseries/lzvb/prdy.
3. Note the need to be careful to work with the correct distribution. The key is that aggregate productivity is the mean of the distribution across workers. Because we usually measure productivity at the firm level, we need to use labour weights to adjust the calculation to the right distribution.
4. See, respectively: https://discover.ukdataservice.ac.uk/catalogue/?sn=7989&type=data%20catalogue, https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/annualbusinesssurvey and https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/ukgdpolowlevelaggregates.

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4

Rethinking skills and workplace capacity in an industrial strategy

Alison Fuller and Lorna Unwin

When policy-makers attempt to devise an industrial strategy, there is a tendency to adopt a silo approach. Hence, we get separate sections on productivity, innovation, research capacity, infrastructure, skills and so on. These silos become populated with their own stakeholders and vested interests, and they lack incentives to collaborate. In this chapter, we argue for a more holistic, co-production approach, one that reflects the interconnected and dynamic reality of economic activity at all levels from the local to the global. Strategies for the monitoring, development and utilization of skills and capacity should sit at the heart of this approach. Moreover, a rebalancing is required placing greater focus on building the capacity of workplaces (of all sizes and types) to create skills-rich learning environments. Here the emphasis is on learning as a relational and collective process rather than perceiving skills as the responsibility of individuals and as 'things' that individuals develop on their own through formal training. The UK government's 2017 white paper, *Industrial Strategy: Building a Britain Fit for the Future*, has a lot to say about skills, but only in relation to individual capacity and the need to improve education and training provision.

Skills policy-making is volatile, and yet paradoxically ambivalent, despite the frequent bursts of rhetoric about 'skills revolutions' or 'last chance saloons' (Bailey and Unwin, 2014; Keep, 2006). Taking the matter seriously will require policymakers themselves (nationally and regionally) to address their own levels of knowledge and capacity, and how they can learn to work more effectively with the expertise of social partners and practitioners rather than expecting (yet again) other stakeholders to 'up their game'. The white paper acknowledges that there is plenty of excellent practice to learn from and build on. In this chapter, we discuss two key ways to facilitate a repositioning of skills and capacity building to drive industrial strategy.

Better workplaces, better skills

The UK has a troubled history of organising and investing in quality training at all levels across the economy (see, for example, Finegold and Soskice, 1988; HM Treasury, 2015; Green *et al.*, 2016). A culture of voluntarism has seen successive governments leaving training decisions to employers, with the workplace regarded as a policy 'no go' area. The short-lived experiment in compulsion following the establishment of levy-funded Industrial Boards in 1964 was killed off in 1982, a victim of the Thatcher government's antipathy to state interference in business. Since then, despite some efforts to provide business support for small and medium-sized enterprises (SMEs) and start-ups, governments have treated employers as an homogenous category capable of 'leading' or 'taking ownership' of training policy. This is despite the UK's comparatively weak record in relation to investment in business management and leadership skills (Hayton, 2015). The root of the 'skills problem' is said to lie with the supply-side, with individuals and training providers failing to meet the challenge. This approach sidelines the critical need to improve employer demand for and utilisation of skills (Keep, 2016; Sissons and Jones, 2016). The 2017 Employer Skills Survey reported that just over a third of UK employers (35 per cent) had underutilised their employees' skills (DfE, 2018). Research has tended to focus on the 'underemployment' of higher education

graduates, yet there is evidence that many employees, regardless of prior educational attainment, are 'crafting' their jobs to make them more satisfying (Fuller and Unwin, 2017a) and contributing to 'employee-driven innovation' (Halford *et al.*, 2018).

A more holistic and robust approach to skills development would begin with a strategy for developing workplaces as learning environments, in which there is visible evidence of employees being afforded the discretion to make judgements about how they plan and execute their work, and managers have the time to provide constructive and regular feedback (Felstead and Unwin, 2017; Felstead *et al.*, 2009). Yet, many organisations are locked into a 'steady state' frame of mind. This includes workplaces that demand little beyond basic skills due to the low-value products and services they produce and those where managers are reluctant to challenge or acknowledge barriers to development from within a particularly restrictive productive system. There are examples of excellent practice where training providers, sector bodies, business associations and employers have formed partnerships to benefit from their shared expertise (Fuller and Unwin, 2018). These need to be showcased and replicated.

An industrial strategy that placed skills and capacity at its heart would seek to answer the following questions:

1. Why do some workplaces create better environments for learning than others?
2. In what ways can work (of all types) be organised to stimulate and support learning?
3. How might employers and work-based learning providers co-produce programmes that help improve workplace learning capacity?

Addressing these questions requires employers, training providers and policy-makers to engage in an analytical approach that starts with understanding the demands of the work process rather than selling training as a product. This helps providers align their service offer with what the employer requires for business improvement, and employers to think about how to develop the skills of their existing workforce rather than relying on new recruits to fill skills gaps and shortages. For policy-makers, the process shifts the focus away from a purely front-loaded, supply-driven skill formation approach, to a developmental one that connects supply and demand.

Table 1 below shows how public and private sector organisations can be categorised using what we have termed the *Expansive-Restrictive Framework,* according to their approach to skill formation, improvement and utilisation in relation to their business goals (see Fuller and Unwin, 2004). The level of co-production between employers and providers involved in designing training interventions, and work-based learning programmes more generally, increases when employers understand that increasing the 'expansive' learning potential of their workplaces brings benefits for both their business and workforce. Organisations in the 'gold' column have reached this understanding. Those in the 'silver' category are developing this understanding, but they have further work to do. The 'bronze' organisations are unwilling or struggling to shift their thinking and practices. Of course, there are some workplaces that will never want to shift away from their restrictive comfort zone, but they should not be used for government-funded training programmes.

To facilitate a more collective 'expansive' approach using co-production, the UK needs to grow its capacity with regard to the type of embedded, institutional partnership arrangements found in countries (such as Germany, the Netherlands and Denmark) with stronger and more stable vocational training systems. Group Training Associations (a lasting legacy from the 1964 Industrial Training Act) are one example of where this kind of partnership and collective approach has been shown to be effective in the engineering and construction sectors (Gospel and Foreman 2006). These partnerships engender a sense of investing together in a shared

Expansive (Gold)	Silver	Restrictive (Bronze)
Technological innovation and business improvement generates skill demand. Pedagogical skills developed and distributed across the workforce including coaching and mentoring capacity.	Reviewing scope and appropriateness of business model and associated approach to training and development. Questioning the pedagogical capacity of the workforce and capability to provide coaching and mentoring.	Business model generates limited potential for reorganising work process to utilise and raise level of skills. 'Just-in-Time' approach to training. Pedagogical skills and responsibility limited to designated staff – lack of recognition of informal coaching and mentoring.
Role transformation possibilities across workforce. Opportunities to monitor alignment of changes in work process and skill formation.	Aspiration to develop business strategy and acknowledgement that realising goals will require upskilling across the workforce.	Business strategy dominated by minimising costs – training seen as a 'luxury' for specific employees.
Physical spaces available for employees to interact away from immediate work stations.	Appetite to consider how physical spaces could be reconfigured to provide opportunities for interaction.	Physical space dedicated to production – informal employee interaction regarded as time-wasting.
Employees (at all levels) encouraged to contribute their ideas – discussed in teams and distributed through easily accessible means.	Reviewing employee involvement and employees capacity for workplace innovation.	Employee involvement seen as too time-consuming.

Table 1: A developmental model for co-producing more expansive skill formation, improvement and utilisation

collective enterprise. But to maintain trust in the enterprise over time, and to ensure improvements and innovation arise from building on shared expertise, there has to be stability in policymaking.

Towards expansive and (more) stable policy-making

Over the past thirty or so years, the centralised nature of the UK's (ever-changing) policy-making and governance processes for education and training have engendered passive and reactive behaviour at local and regional level, and a rule-dependent approach in government agencies. Centralised funding decisions play a major role in shaping stakeholder engagement and the availability and quality of provision. This is particularly noticeable among education and training institutions, but also applies to many employers who, despite the rhetoric of employer-led skills policies, have acquiesced in the dilution of quality in apprenticeships and retreated from investing in workforce development (Fuller and Unwin, 2017b).

Operating within a highly restrictive framework, skills policies emphasise quantity (e.g. qualifications attained, training days delivered, apprentice 'starts') over quality of training and its impact on business performance and individual progression. This helps to explain why so many apprenticeships are associated with semi-skilled jobs and Level 2 qualifications, why the vast majority of apprentices are in low-paid sectors such as hospitality and health and social care rather than engineering or digital industries, and why most are 'conversions'. This latter term means existing employees have been re-labelled as apprentices and have their current skills accredited rather than substantially improving them. As our research on adult apprentices (age 25 and over) showed, some employers have excellent apprenticeships for existing employees who want to retrain or upskill (see Fuller *et al.*, 2015). But these are in the minority.

Accrediting employees for existing skills is not wrong (it can boost confidence and motivate adults to further develop their skills), but it is not apprenticeship, and it does not contribute to improved skill levels. Furthermore, when assessment becomes a proxy for training, the role and expertise of vocational teachers and trainers is devalued. There is no mechanism within the new Standards-based model or the Apprenticeship Levy to tackle these problems. The levy has exacerbated 'conversions' and deadweight, as levy-paying employers (including universities and government departments providing Degree Apprenticeships) seek ways to recoup their levy spend (Fuller and Unwin, 2017b).

Given the rapid changes in work processes and employment relations, an effective industrial strategy requires a more flexible skills approach, one that is responsive as people adapt (to different work contexts and the changes within them, to age, to aspiration to progress further or change direction, to personal circumstance). Such an approach would prioritise permeability between apprenticeships and further and higher education for both young people and adults to facilitate progression. Currently, the siloed nature of education and training policies mitigate against permeability. The new technical education courses in England for 16-18 year olds, for example, are premised on the view that technical education is for young people who will not go to university and assumes that employers will segregate their recruitment strategies to mirror this distinction. This is a deficit model that runs counter to the 'hybrid' approach being developed in some other European countries, where academic and vocational pathways result in qualifications with common currency understood by both employers and individuals.

Prioritising permeability and progression would foster hybrid 'anchor' institutions/hubs at the heart of local and regional activity. They would host business support initiatives and encourage employers (particularly SMEs) to use them as a source of ideas to help them solve practical problems (e.g. engaging with students to create IT and marketing solutions). To inject more investment into these partnerships, national and local government could use the powerful levers of planning and procurement.

Conclusion

This chapter has argued that a serious industrial strategy would place the co-production of better workplaces and training capacity at its heart and steer away from a segmented and hierarchical approach. The collapse of structured workforce development in many organisations, the under-utilisation of skills, and the continued failure to raise the overall quality and volume (particularly in wealth generating sectors) of apprenticeships should be treated as signs that the foundations for an effective industrial strategy are weak. This will require a fundamental change in the way policy-makers approach the problem. The workplace can no

longer be a 'no go' area. Seeing it as a learning environment – which can be enhanced – is the key to understanding how skills, productivity and innovation are enabled and/or hindered across the economy.

Policy-makers need to develop a much better understanding of how nationally designed and funded initiatives operate on the ground, how their role (nationally and regionally) affects stakeholder behavior, and produces unintended consequences (e.g. deadweight, lack of additionality). Data on outcomes such as apprenticeship registrations, number of training days, and qualification attainment should be used as the starting point for serious questions about the role of skills in industrial strategy and efficacy of policy initiatives, not to close down debate.

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5

Artificial intelligence and the transformation of production and work: towards inclusive prosperity?

John R. Bryson

The key issue explored in this chapter is the relationship between technological innovation and the changing nature of production and work (see Bryson *et al*., 2013 for a longer discussion). Industrial strategy can play an important role in encouraging, facilitating and intermediating between technological innovation, production systems and labour markets.

The balance between horizontal and vertical policy

In this context, an industrial strategy must operate simultaneously on two levels. First, there must be a long-term, overarching or horizontal strategy providing the wider framework conditions to support national economic growth. Such a strategy should be carefully defined, and there must be cross-party agreement to ensure that the strategy works across electoral cycles. The aim might be for long-term growth or inclusive growth – or perhaps more correctly defined, an ambition to reach some form of *inclusive prosperity*. The horizontal element of an industrial strategy includes education, training, research, and infrastructure, but also regulations and standards.

The second level would be a set of more vertical interventions that focus on a sector, a group of firms (start-ups, fast-growth, restructuring) or a particular place. A sector-based strategy may be determined nationally, but place-based strategies must be locally created and implemented. All place-sensitive industrial strategies must be based on an understanding of the complex interdependencies that exist in a city-region supporting economic growth, innovation, competitiveness and productivity (Bryson and Andres, 2018).

One challenge for all industrial strategies comes from the impacts of incremental or rapid technological innovation (Bryson *et al*., 2017). On the one hand, the horizontal elements must provide a strong and resilient foundation for economic activity which is not simply focused on addressing short-term problems. On the other hand, the vertical elements must include initiatives intended to overcome short-term problems, for example the consequences of firm closure or deindustrialisation. The key issue is the balance between horizontal and vertical policy interventions in this regard. Unfortunately, the history of UK industrial strategy is one of limited strategies that have focused on the distractions of the immediate or short-term solutions to current, politically-defined problems. In addition, the strategies have been created by central government with very limited appreciation of the role place or local context plays in shaping economic activity.

Technological transformation

The relationship between innovation and radical economic change can be traced back to the origins of the industrial revolution. In 1620, Francis Bacon, the English philosopher, argued that:

> It is well to observe the force and virtue and consequences of inventions; and these are nowhere to be seen more conspicuously than in those three which were unknown to the ancients . . . namely, printing, gunpowder and the magnet. For these three have changed the whole face and state of things throughout the world.[1]

In combination, these three inventions transformed the world. The invention of printing made it possible for ideas to be preserved and transmitted across time and space. Gunpowder altered warfare, whilst the magnet led to the development of the mariner's compass that laid the foundations for navigation, and ultimately global commodity chains.

Since 1620, engineers and technologists have continued to be ingenious, but with some important alterations. Three are worth highlighting here. Firstly, the escalation in the pace of technological change. Secondly, the rapid pace of technology adoption, combined with the ability to shift ideas around the world in the twinkling of an eye. Thirdly, the extent and variety of technological changes that impact on all aspects of everyday living.

What are the current inventions that will transform the world, which will impact on an industrial strategy? There are two ongoing transformations that are changing 'the whole face and state of things throughout the world', in Bacon's words: artificial intelligence (AI) and robotics, and developments in the application of platforms to economic activity. These are related innovations. The three inventions identified by Bacon created employment with very limited displacement. This reflects the introduction of new inventions that created new markets (Bryson and Ronayne, 2014). In contrast, the application of AI and platforms to production systems is destroying existing processes and business models. These represent disruptive technological innovations that will continue to create new forms of labour/firm displacement.

Division of labour

It is worth considering the core driver behind the application of new technology to production systems and to labour. This represents an application of capital to alter the ways in which labour is involved in the production of both goods and services. It is possible to identify a set of what can be termed *timeless processes* that emerged with the development of capitalism, and which continue to transform space and place (Andres and Bryson, 2018). These timeless processes produce different outcomes depending on context.

One of the challenges facing the development of industrial strategy is to identify and characterise these timeless processes to develop an effective, long-term, horizontal policy. The primary timeless process is perhaps the 'division of labour' (Smith, 1977 [orig. 1776]), and the 'spatial division of labour' (Massey, 1984). This process refers to the disaggregation of complex tasks into several simpler tasks that can be undertaken by different individuals or groups of individuals. This division of tasks can occur on the same site or at the same location, or tasks can be transferred to other places so that a spatial division of labour emerges that is the foundation of global value chains or global production networks.

There are three important points to make about the division of labour. First, a division of labour always precedes mechanisation; tasks are disaggregated, facilitating the identification of which tasks can be mechanised or replaced with artificial intelligence and robotics, and which are more effectively undertaken by people (Bryson *et al*., 2017; Bryson, 2018). Second, the division of labour is the primary driver behind global value chains. At a city-region scale, tasks may be allocated to one place, given the existence of concentrations of specialist labour or other forms of place-based processes or incentives that provides a specific city-region with a competitive advantage in the performance of a task. Third, the division of labour is ongoing. Day-by-day decisions are made to further sub-divide tasks, and to replace people with machines or robots, and also to alter the geographic distribution of tasks. In this process, jobs are restructured or reshaped; some jobs are destroyed, and new jobs emerge (Bryson, 2018).

The future impact of artificial intelligence

The application of AI, including robotics and autonomous systems (RAS), to some types of labour represents the most recent reworking of the relationship between an evolving division of labour and technological innovation (Bryson and Andres, 2018). RAS are combinations of physical and software systems that can perceive their environments, and reason, adapt and control their actions. Developments in RAS are making it possible to automate tasks that previously could only be undertaken by people. There is much media discussion about RAS and its impact on work, but very few studies have assessed the potential impacts RAS will have on labour markets more generally.

One difficulty is that there is no rigorous and robust technique for forecasting such impacts. Nevertheless, RAS can be seen as just another stage in the application of machines to labour, that could potentially increase productivity, destroying some forms and employment, but also creating new forms of work. It might be that RAS increases unemployment, by creating jobs with higher barriers to entry based around capabilities in computer programming and mathematics or highly developed social skills. Any assessment of RAS impacts at the moment is based on speculation.

There have been high-profile predictions regarding the impacts of AI/RAS on economic activity and labour markets. The Frey and Osbourne (2014) study estimated that 35 per cent of jobs that existed in the UK in 2013 had a greater than 66 per cent chance of being automated in the coming decades. In 2016, Arntz *et al* (2016) explored 2012 data and estimated that for 10 per cent of UK jobs, it would be possible to automate 70 per cent of their component tasks over the next decade, and that another 25 per cent of jobs could have at least 50 per cent of their tasks automated. The most recent study by the OECD suggests that 14 per cent of all jobs across 32 countries have a high risk of automation, and a further 32 per cent of jobs may experience significant change (Nedelkoska and Quintini, 2018).

AI places more low-skilled jobs at risk compared to previous rounds of technological displacement. The OECD analysis suggests that the risks related to AI in the labour market decline as educational attainment and skill levels rise (Nedelkoska and Quintini, 2018). The difficulty with these studies is that they say nothing about new tasks and jobs that might be created through the application of RAS. This is the ‘known unknown’ of the implications RAS will have for future labour markets. Another key issue is that AI and RAS are also one of the drivers behind the reshoring of manufacturing tasks back to developed market economies. The application of AI to manufacturing is transforming labour-intensive to capital-intensive tasks (Vanchan *et al*., 2018).

Implications for industrial strategy

It is worth revisiting finally two short essays written by John Maynard Keynes (1930a; 1930b) in the second year of the Great Depression. In these essays, Keynes reflected on the economic impacts of technological change for our grandchildren, introducing the concept of ‘technological unemployment’. His argument was that a ‘temporary period of maladjustment’ occurs in labour markets because of technologically-driven, disruptive change. But he noted that this was a temporary phenomenon, as technology would transform production systems creating new employment opportunities.

What does this mean for the development of an industrial strategy? The answer to this is both straightforward and complex. The response is a simple one insofar as the pathway towards continued inclusive prosperity is founded on the ability of an education system to provide people with the training, skills and experiences that ensures that they avoid ‘technological unemployment’. Experience is an important element of this process, as AI may disrupt or

remove entry-level positions, with the implication that employers will seek to recruit into more senior roles. One of the most important skills is in using and developing digital technologies, including computer programming.

But this is not as simple as it sounds, since it requires a comprehensive educational system, from primary education onwards, designed to ensure that the UK avoids AI-driven technological unemployment. It also needs to include adult education and lifelong learning. Yet the UK seems a long way from establishing this type of wholesale educational infrastructure as a core, horizontal strand of an effective industrial strategy. This is challengeing as it requires a very long-term strategy and cross-party commitment.

Notes

1. From Bacon's *Novum Organum* (book 1, aphorism 129).

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6

A question of value: raising productivity by lowering inequality

Ed Pemberton

Sectors such as retail, hospitality and care are generally low-productivity, but their productivity performance in the UK is dire compared to many similar countries. Workers in these sectors contribute significantly less value per hour worked than the average worker in the UK, and less than their equivalents in countries such as Germany, France and the Netherlands (Forth and Aznar, 2018). Increasing the output of workers in these sectors would go some way towards pushing up wages in low-paid jobs, and forms part of the solution to the 'productivity puzzle' that underlies the UK's economic woes.

Low-value sectors and the cost disease

Grappling with the concept of productivity in these low-paid service sectors is not an easy task. It reflects the broader problem that thinking about productivity presents to the media and policy community. What appears to be a straightforward concept (calculating 'output per worker' is, in theory, a relatively simple arithmetic process) obscures a lot of the complexity of a modern economy. Although the principles underlying it are still nominally the same, we have come a long way from the days of Adam Smith and his pin factory. His observation that specialisation and the division of labour could greatly increase the number of pins a fixed amount of workers made in a day became the founding principle of the study of political economy. British society has experienced an almost constant intensification of productivity that has driven the process of economic growth since the industrial revolution. But ‘value’, and its creation through work, is no longer something that can be easily counted in terms of ‘the number of pins.’

The problems of productivity in service industries was identified by the economist William Baumol in his famous 'cost disease' (Baumol and Bowen, 1966). Whilst advances in manufacturing technology can allow one worker to produce far more output in a given time, this does not apply to every sector evenly. To use Baumol's own example, despite a massive increase in manufacturing productivity, it still took the same number of people the same amount of time to perform a Beethoven string quartet. But the wages of performers must grow to keep pace with the rest of the economy, if the sector is to survive. The process remains unchanged, in terms of its inputs and outputs, even as wages increase and its nominal ‘value’ to society goes up. This problem highlights a puzzle in respect to how productivity, value and wages are linked.

This has posed advanced economies a real problem, with sectors such as health and education become increasingly susceptible to the disease (as explored in a recent investigation into the NHS by James Meek (2018)). As a consequence, they require a growing share of national income to keep pace with rising productivity elsewhere. But alongside these two pillars of the public sector, the productivity service sectors also struggle to keep pace. While this helps to make sense of why productivity lags behind in these sectors, it also illustrates how the solution may not be as simple as investing in skills or technology.

In light of these issues, a report from the Centre for Cities (Swinney, 2018) argued that attempting to improve productivity in these sectors was fighting a losing battle. The

government's approach of targeting the 'long tail' of unproductive firms was bound to fail, as these represented low-productivity service jobs with little power to add in boosting output. Whilst focusing policy on achieving a better distribution high-productivity exporting firms – the report's recommendation – would obviously be no bad thing, the attitude towards local services is illustrative of a wider problem in thinking about productivity. After all, if services are a lost cause, why are we so badly lagging behind our European neighbours in these sectors? Answering this question requires a re-examination of what we mean when we talk about productivity in the context of intangible services.

The problem of inequality

The cost disease shows us that thinking about low-productivity sectors must be done in the context of the whole economy. The value of services provided in sectors like retail and hospitality is ultimately bounded by the ability of others within the economy to pay for them. This cannot be addressed solely by transforming the nature of the jobs themselves, through capital investment and training. If the UK wants to match its European neighbours in terms of productivity, it should perhaps look to emulate them in ways that lie beyond the scope of traditional industrial policy – and instead attempt to match their lower levels of inequality.

The link between inequality and productivity has been the focus of a lot of academic work, but most economic studies tend to look at the relationship from one direction only (see Faggio *et al.*, 2007). In neoclassical models, wage-setting is driven by the marginal productivity of workers. Low-productivity firms and sectors then pay lower wages, and wage inequality across the economy emerges from a glut of low-productivity work. Leaving aside issues around the decoupling of productivity and wages (Schwellnus *et al.*, 2017), by theorising a particular relationship between productivity and the wage level, economists have failed to study its inverse. But when dealing with the value of subjective, intangible goods rather than the nuts and bolts of a pin factory, it is possible to make an argument that causality flows the other way. When inequality is high, many people are less able to pay for the more abstract things (such as the performance of a string quartet) that add value to their lives. In an economy where many people struggle with the necessities of daily life, it is not surprising that they cannot afford to privilege the more intangible ways that value can be created.

The process can be seen most clearly in the retail and hospitality sectors. Where a broad, well-off middle class exists, they provide an ample market for a range of shops and other services that generate intangible added value within the economy. A traditional view of productivity increases in the retail sector would be seen in terms of firms like Lidl and Aldi squeezing ever-finer margins from low-cost goods by cutting back all but the essentials. The inexorable rise of the self-checkout machine is another productivity-boosting, if widely despised, intervention in the sector. But a high-productivity retail store need not look like the budget supermarkets or poorly staffed convenience stores now so familiar in the UK's towns and cities. In countries where more people have more disposable income, shops can afford to improve the retail experience in qualitative terms, offering a more pleasant experience at a slightly higher price.

As an example, it is hard to argue that a typical high-street bakery in the UK and its cabinet of lukewarm pasties does not lack a certain *je ne sais quoi* when compared to a French boulangerie. The ultimate impact on the bottom line is the same – more 'value' is created for an equivalent amount of work, and productivity goes up. But such intangible improvements in subjective quality rely on there being people willing and able to pay for them.

How inequality effects the distribution of productivity can also be thought about in terms of positional goods. This reflects the portion of the value of a good or service that arises through its scarcity and what the consumption signals to other people. The concept develops on Thorsten Veblen's notion of 'conspicuous consumption', a way of thinking about value creation

that takes account of the broader social context. These sorts of goods are also likely to cluster in the stubbornly low productivity sectors like retail and hospitality under discussion here. Where a restaurant is so popular that you cannot get a table for weeks, some of that exclusivity is reflected in the high prices it is able to charge, and so the chef and waiting staff appear to be more productive. But the value that is adding to the economy is accruing to the individuals able to trade-off the social and cultural capital of being seen at all the right places.

As wealth concentrates in certain areas, the gains to productivity that come from satisfying desires for positional status goods do as well. Arguably, this is the kind of productivity we should not concern ourselves with, representing as it does something of a zero-sum game. To the extent that value is created in service of such commodities, Thorstein Veblen argued that they failed to 'satisfy the economic conscience' (Veblen, 1899: 98), creating no net welfare for the economy. While it therefore might not be worth viewing these sectors as potential growth markets for the economy, we can still concern ourselves with matters of their distribution. Currently, well-off areas will contain many more retailers and services offering positional goods, equipping their clientele in the arms race for status and cachet. But if wealth and income became more equitably distributed across the country, some of these services might follow in its wake.

This is not to say that flattening out inequality will put an end to conspicuous consumption – the desire to 'keep up with the Joneses' appears to hold at any level of income and may even increase as inequality is reduced (Ordabayeva and Chandon, 2017). But if we are worried about regions beset by stubbornly low productivity in these sectors, then these are some of the questions that should be asked.

Looking at productivity data from 2015, it is possible to compare output per hour with the level of income across different regions. The manufacturing sector traditionally provides relatively highly paid jobs in some of the poorer areas of the country. The graph below shows that some of the highest productivity is in areas such as the North West, which otherwise have relatively low incomes. Manufacturing, with its high levels of capital investment and quantifiable end products, fits the traditional narrative of technological improvements leading to greater output. As long as the goods made can find a market, it is in the interest of firms in this sector to make productivity boosting investments wherever possible.

The picture in the retail sector, meanwhile, is quite different. Productivity is lower across the board. But here, an obvious trend exists between the overall level of income in a region, and the output per hour of a worker in this sector. An average shop worker in the South East or London 'produces' almost £10 per hour more than one in the poorest parts of the UK. Some of this could possibly be explained by beneficial network effects associated with more densely populated areas. But the level of technology or skills in a shop in London is not so different from those in Wales that it can explain a 50 per cent increase in the amount of value created per hour worked.

When it comes to productivity, confusion can arise if insufficient thought is given to how value is created in the economy, and how that can be measured. Taken at the aggregate, it is too easy to reduce the whole of the economy to a giant workshop, using machines and labour to churn out widgets which have inherent, stable value. This overlooks how much economic activity is focused on meeting more subjective understandings of value that are contingent on people's ability to pay. In a society where many people struggle to cover the necessities, there is less scope for people to place value on more intangible things like aesthetics, uniqueness or variety. But focusing too much on the material side of value and production restricts potential solutions to the problem of productivity.

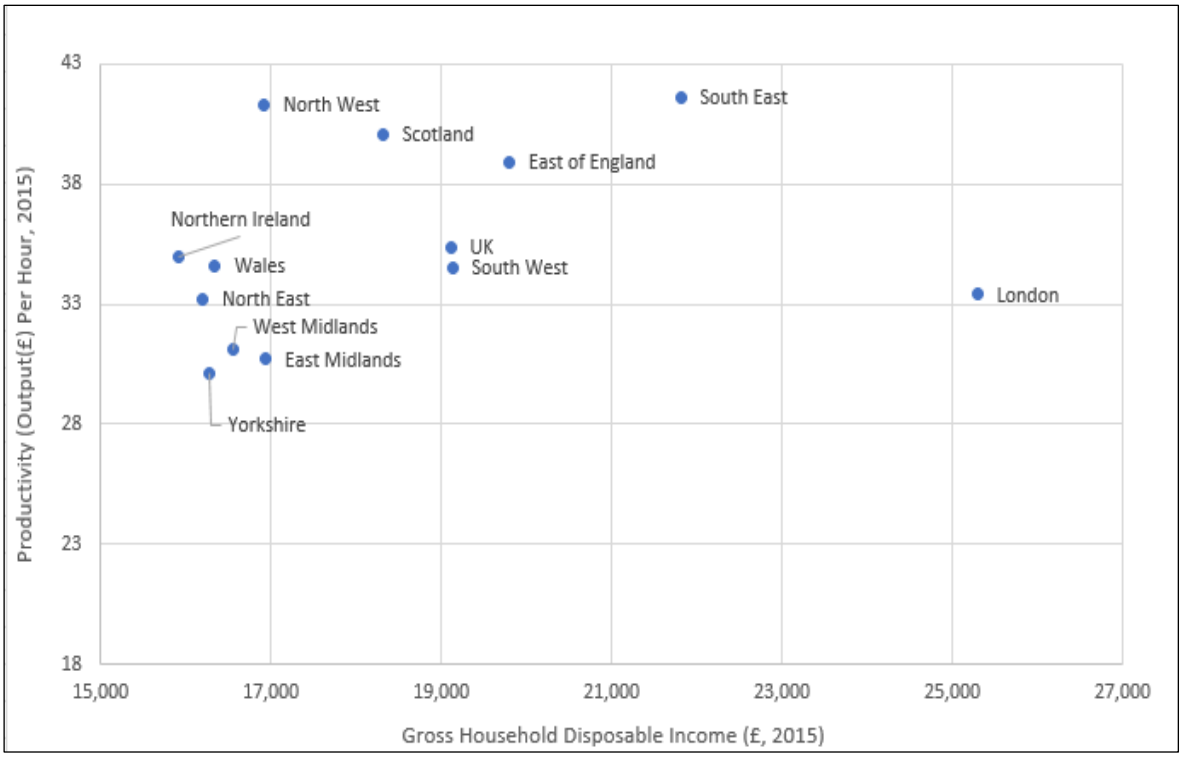

Chart 1: Manufacturing productivity versus household income in UK regions, 2015
Sources: ONS (2017; 2018)

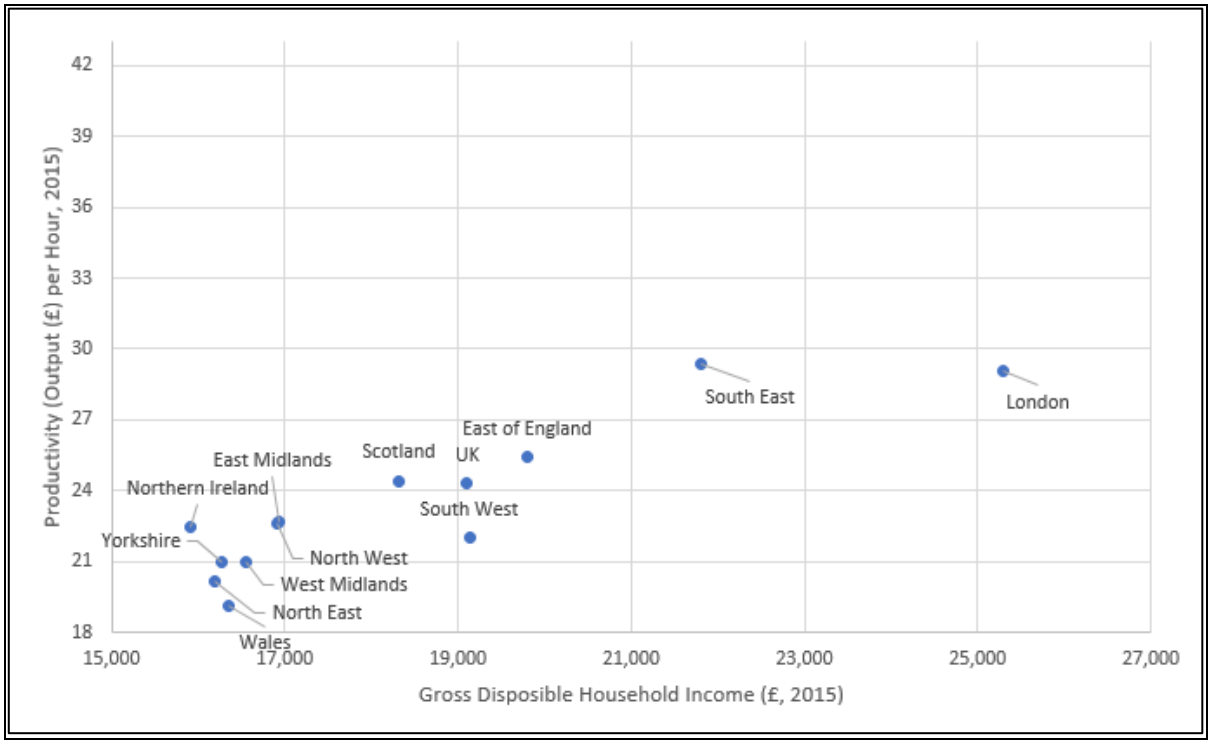

Chart 2: Retail productivity versus household income in UK regions, 2015
Sources: ONS (2017; 2018)

Conclusion

When thinking about productivity, the answer to the question of 'how can we be more like France and Germany?' tends to be answered with reference to things like R&D spending and capital investment. But the complex ways that value can be created in a contemporary economy are poorly served by a fixation with the material nuts and bolts of production. If the UK wants to be more like France and Germany, at least part of the answer lies not just in emulating particular productive or management techniques. Copying their approaches towards taxing and redistributing wealth, or developing ownership structures that better share the profits of production with the workers who create them, might provide a crucial missing piece to the productivity puzzle.

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Section 2: Innovation and industrial change

7

Industry 4.0, new industrial spaces and implications for industrial strategy

Lisa De Propris and David Bailey

A new wave of technological innovations has started to fundamentally alter how we make things, signalling the start of an era of huge change. There is some agreement that these new technologies include: biotech, nanotech, neuro-technologies, green and renewables, ICT and mobile technology, cloud technology, big data, 3D printing, artificial intelligence, internet-of-things, robotics, sensoring, space technology, and drones (Ross, 2016).

Whether one believes that technological change is essentially evolutionary, and therefore any invention leaves behind a trail of breadcrumbs with all sorts of ideas and applications, or instead that it is fundamentally revolutionary, there is evidence that technological change unleashes non-linear and disruptive forces that impact on the economy and society in profound ways, due to the stream of endless incremental innovations and applications that it generates.

To understand the dynamics of the 'fourth technological revolution' that is currently unfolding, one can go back to the work of Kondratiev (1979) on the long waves of economic growth (see also Baur and Wee, 2015; Deloitte, 2015; EU Parliament, 2015; EU Commission 2014; 2016; GTAI, 2015; OECD, 2017b; Rifkin, 2013; Roland Berger Strategic Consultants, 2014; Siemens, 2015). He suggested that cycles in the global economy are linked to technological change. The idea is that any technology paradigm at some point exhausts its ability to enhance productivity, and at that point a new wave of new technologies kicks off, unleashing a spate of new applications in new processes and new products (Kondratieff and Stolper, 1935). This explains why technological changes have been associated with 'industrial revolutions', suggesting that the impact on resource utilisation, production and consumption are radical and pervasive.

A large part of the disruptive technologies that are coming are linked to applications of digital technology to production, consumption and also ways of life (Marsh, 2013). A growing literature has started to explore in what ways digital technology is changing the organisation of production inside factories – possibly because this is the most visible of the changes that are starting to be introduced. This is affecting specifically large firms in sectors where efficiency requires large minimum scale and platform productions.

This chapter explores this further. We emphasise that the transformative change of new technologies is also re-shaping the nature and organisation of supply chains, and this means that small- and medium-sized enterprises (SMEs) must be part of this fundamental transformation. This poses both challenges and opportunities on a number of fronts. In the final section we explore the implications for industrial strategy.

Introducing Industry 4.0: seeking efficiency

The term Industry 4.0 was first coined in Germany in the early 2000s by the Federal Government to promote the upgrading of the country's manufacturing industries, in particular through the adoption of digital technologies, the internet-of-things and automation (GTAI,

2015). The main motive for this drive was to sustain productivity in the engineering, machinery, equipment and auto sectors, which were primarily export-oriented, and in which Germany had a strong competitive advantage. These sectors are characterised by scale economies, capital investment and high minimum efficient scale. The new manufacturing model associated with Industry 4.0 suggested a new wave of digital technologies and automation capable of redefining the use and role of a new generation of machinery in the organisation of production, both inside the factory, and across factories along supply chains. Production would be transformed in cyber-physical spaces thanks to cloud computing, internet-of-things and automation (Baur and Wee, 2015; Schmidt *et al.*, 2015). Bosch (2017) also emphasised that technology would be able to globally connect factories across the value chain, to design and produce customised products; with flexible processes relying on versatile connected machinery complementing humans, short modification cycles and no rejects or inventory.

It was argued that these smart and connected factories would deliver efficiency, productivity, responsiveness, flexibility and ultimately seamless integration of the supply chain in manufacturing production (Heng, 2014). Efficiency was mostly understood as cost efficiency, energy efficiency and labour efficiency, often evoking the dystopian idea of 'light out factories' with no lights, no heating and crucially no people (Heng, 2014; WSJ, 2002). Increased productivity would come from automation enabling more flexible processes, shorted lead times, better control of the value chain flow and better control of quality (Baur and Wee, 2015). Responsiveness would be greatly enhanced by the data collected due to sensoring, internet-of-things and cloud computing; data would be collected during production on site, and along the supply chain to enable the smooth integration and sequence of components and functions and to enhance processes and systems (PWC, 2016). Data would also be collected from consumers and users, with information and statistics to be looped back to design, innovation and production for constant updates. Linked to the above, automation and data feed into firms' ability to maximise its flexibility, by producing in smaller batches, this is often referred to as mass customisation (BCG, 2018; KPMG, 2016 and 2017). Digital technology is therefore argued to have the potential to disrupt production processes as well as reorganise supply chains, so almost everything can become 'smart' if digitally connected or enabled.

Bringing small firms along

The new manufacturing model must, however, deliver more than just factory production efficiency in order to be fully disruptive, and to drive the growth it endeavours to achieve. The same technologies indeed have the potential to change firms' business models, to actually scale down production without foregoing efficiency, and to create unique solutions that require co-innovation or co-creation between customer and firm. In fact, the overwhelming narrative on automation, robotics, digitalisation and related technologies, in particular their application to the organisation of production within factories, might distract from the fact that firms are nodes in spatial and sectoral systems. The focus in particular on large firms must note that such firms are often multi-national enterprises, and as such they tend to be the link between the local systems of specialised suppliers and the global value chain (GVC), with a system of factories and suppliers that stretches across continents.

Firms are key actors in deciding on innovation, capital and intangible investment, labour and skills, location of production, organisation of production, and so on. They, however, do not operate in isolation, but are embedded in local production systems that are enmeshed in regional economies ranging from specialised to diversified (Chaminade *et al.*, 2018; Coro' *et al.*, 2018), especially in services (OECD, 2010). In the EU28, the weight of SMEs is important, as they accounted in 2015 for two-thirds of employment and roughly three-fifths of value-added in the non-financial business sector (Muller *et al.*, 2016). These firms are buyers and suppliers of larger firms in local or global value chains, as well as being connected with a multi-tiered system of institutions and research organisations.

The push to economic growth and productivity that the fourth industrial revolution is expected to give cannot be realised if such new technologies are not rolled out across the whole industrial system. Specifically, this is observed with possible adjustments in local systems of production characterised by SMEs (OECD, 2016). Digitalisation, for instance, can empower a 'micro-manufacturing' model (Santini and Bellandi, 2017) where versatility is coupled with industrial efficiency, and producers co-develop with customers personalised and innovative products, according to various social, economic and environmental sustainability needs. A shift towards a more 'distributed manufacturing' model (Veldhuis *et al.*, 2017), encouraged by changes in transport and labour costs, the availability of materials and energy, the need for sustainability, and access to information, is made possible by the application of new technologies; for example developments in ICT, sensoring, and 3D printing. These in turn are seen as driving the development of new business models and value chains, changing dynamics of work and community, and are thought to have implications for industrial policy.

Small firms and local systems of production can be nodes where flexibility, innovation and exploration complement large-scale production (see the makers' movements in the United States and Europe; Marsh, 2013). Decentralised bases of experience-based and artisanal skills must find a way to be combined with synthetic and analytical knowledge, through an intentional process for the exploration and exploitation of opportunities opened by all new technologies. Adjustment in the organisation of local production systems are driven – and increasingly forced – by new forms of asymmetries of information and competences, as well as radical changes in the technological regime.

Therefore, one key issue is whether and how new knowledge can be combined and re-combined with some of the experience-based and cumulative knowledge embedded in specialised local systems of production, such as clusters and industrial districts (Santini and Bellandi, 2018). A detailed and clear understanding of the complexity and the changing forms of local production systems with a specialised and heterogeneous population of SMEs and competences, together with brave and experimental initiatives to explore the applicability of technologies in the different specialised contexts, is necessary to avoid missing out on the opportunities for a transformational shift in manufacturing regions brought about by new technologies. The complementarities between traditional sets of know-how and new bases of competences and knowledge need also to be supported by quadruple helix initiatives able to design long-term strategies, and share short term benefits and costs (Coro' *et al.*, 2018).

Implications for industrial policy?

The scale and speed of the challenge posed by this 'fourth technological revolution' brings into focus both the need and possibilities for a broader canvas on which to draw new industrial and regional policies approaches. Space precludes exploring this in detail, but this could include, for example:

- Fostering industrial policy as a process of discovery so as to identify opportunities and challenges and ways to overcome such challenges (Rodrik, 2004; 2008);
- New forms of technology policy to ensure that the 'general purpose' nature of new technologies reaches different sectors and regions;
- Skills and (re-)training policy.
- Access to finance and support for SMEs;
- Policies to support 'reshoring' as GVCs change.

On training, industry 4.0 will see automation both destroy jobs, and also create new ones (see for example WEF, 2018). This raises the risk of further labour market polarisation, and there will be a need not only to develop the skills required for Industry 4.0 to be applied in different sectors and regions, but also for more of a lifelong approach to training and retraining

throughout workers' careers. On this the UK might learn from successful experiences elsewhere, such as in Singapore with its 'Skills Future' programme.

On technology policy, policy-makers will have to nurture and engage with ecosystems of open, interconnected networks of stakeholders, cooperating to a much greater extent through strategic partnerships (Bachtler *et al.*, 2017). Such ecosystems will be more dependent on their business environments to source knowledge regionally and internationally (Roland Berger Strategic Consultants, 2014).

A number of factors are relevant here for value creation *and* capture in ecosystems (as Bailey *et al.*, 2018b highlight). Firstly, the rapid pace of technological and other changes inherent in the fourth industrial revolution poses considerable uncertainty and risks for firms and governments alike (Andreoni and Chang, 2016). Managing this calls for the pooling of resources and risk-sharing, and requires the use of joint support services and infrastructures. On this, Bachtler *et al.* (2017) highlight, for example, 'living labs' where multinational companies and start-ups can interact and benefit from each other's competencies. Such ecosystem support needs to be regionally provided but positioned within a multi-level governance framework, and be able to integrate with innovation systems internationally. Moreover, as Bailey *et al.* (2018b) stress, these need regular reviewing to ensure consistency with regional needs.

Secondly, disruptive innovation often requires inter-disciplinary approaches and 'open' models of collaboration (Chesbrough, 2003). As the OECD has noted, 'pieces of knowledge required come from various actors and activities are rarely available inside a single organisation… it is important therefore to support the generation, diffusion and use of many sorts of knowledge and types of collaboration' (OECD, 2017b: 68). For this 'mixing' to occur, an open and collaborative environment is needed, built on established relationships and trust. This in turn highlights the need for well-developed institutions capable of nurturing collaboration and networks both regionally and internationally (Amison and Bailey, 2014) and, in industrial policy terms, for bringing actors together in the knowledge discovery process.

As GVCs change and small-scale production possibilities emerge again closer to innovation, there may be scope for industrial policy to help 'repopulate' manufacturing ecosystems in the UK and Europe. Recent research, for example by Bailey *et al.* (2018a) looking at 'home sourcing' in Spanish manufacturing, suggests that policy may well have a role to play, but not in trying to bring back labour-intensive activities (these will anyway be susceptible to wage rate and exchange rate shifts and footloose in nature as relative unit labour costs shift). Instead, recent Spanish experience suggests that activities undertaken by R&D-intensive manufacturing firms producing non-standardised products are more likely to be reshored.

This would suggest that reshoring is unlikely to re-create large numbers of manufacturing jobs (in line with the work of De Backer *et al.* (2016) and Bailey and De Propris (2014)), and certainly not the low-skilled jobs that have been offshored or outsourced abroad. Rather, policy should focus on the value creation content of the functions that are reshored (e.g. technology, competence, innovation) due to a multiplier effect that (a) creates or retains highly skilled jobs in manufacturing functions and (b) creates or anchors high-value services in the home economy. Overall the effect is of re-joining supply chain functions in the home national economy.

While reshoring as GVCs change is indeed a real opportunity, it is not a foregone conclusion, as its actual logistics can be challenging (Bailey and De Propris, 2014). Whether reshoring benefits mature economies will depend, *inter alia*, on the availability of skills, innovation capacity, the supply chain base, support services and the role of institutions. Maintaining an ecosystem of firms and agencies provides firms with a 'deal-breaking' anchor, making home-sourcing a viable option (this correlates to US and British reshoring experience).

It should be stressed, finally, that the fourth technological revolution will play out differently across sectors and regions. Industrial policy in this regards needs to 'join up' technologies, sectors and places. This was meant to be something that the UK government's new industrial strategy would do, but we would argue has been something of a missed opportunity. In particular, and in line with the Regional Studies Association (2017), our key 'calls to action' on place comprise:

1. The UK needs to embrace opportunities offered by Industry 4.0 for manufacturing and services, which is critical for the UK's international competitiveness in the decades ahead.
2. Industrial strategy needs to think beyond sectors alone. It needs to identify, nurture and diffuse the key cross-cutting technologies (e.g. digitalisation, internet-of-things, robotics and artificial intelligence) that have a 'general purpose technology' role across manufacturing and services.
3. Linked to this, industrial strategy needs to recognise and exploit such technologies by making them accessible to businesses in different regions.
4. To do this, industrial strategy needs to be developed regionally in a holistic sense (for example on skills, access to finance, clusters, supply chains and innovation) so as to enable policy to be better suited to the distinctive characteristics and advantages of different places. A key objective of such an approach should be to promote the tradable base of each region in the UK.
5. There needs to be a meso-regional scale to industrial strategy bringing together sectors, technologies and place. In the UK, the current geographical set up of Local Enterprise Partnerships (LEPs) is too limited and fragmented. This meso-regional scale could usefully build on developments in terms of combined authorities and initiatives such as the 'Midlands Engine' (e.g. in connecting elements of a regional industrial strategy such as on supply chains and clusters), but needs to go much further in terms of powers and resources.

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8

Industrial strategy and science and innovation policy

Richard Jones

For many years it seemed that industrial strategy, as a strand of economic management, had been killed forever by the turn to market liberalism in the 1980s. Industrial strategy was regarded as a central part of the post-war consensus that the government of Margaret Thatcher overturned, associated with the preservation of uncompetitive industries producing poor quality products, and economically disastrous state-driven projects like Concorde and the Advanced Gas-cooled Reactor programme.

In the new, post-Thatcher consensus, the state consciously withdrew from the direct sponsorship of technological innovation. As the British economy shifted away from manufacturing and towards services, technological innovation was to be left to the market. Rather than industrial strategy, there was a science policy. This focused on the supply side – if the state supported 'basic science', largely in an academic context, ensured a supply of trained people, and reduced frictions in technology transfer, it was assumed that good science would automatically translate into economic growth.

And yet, this new consensus is itself now cracking – the term 'industrial strategy' has once again become speakable, with a government white paper on the subject, and an opposition pressing the government to go further and faster. The new urgency arises from a growing sense that, after the 2007-08 financial crisis, the UK's economic model is not working, with historically low productivity growth, stagnant wage growth, and no change to profound regional economic inequalities.

A new industrial strategy needs to reflect the profound changes that have taken place in the UK economy since the 1970s, and the new and challenging environment facing the country as it prepares to leave the EU. We must, in particular, understand how the country's innovation system has changed, and how that system now needs to be rebuilt, in order for the country to begin to restore shared prosperity and meet the major challenges it will face in coming decades.

The dismantling of the UK's post-war innovation system

The UK in 1979 was one of the most research-intensive economies in the world. Currently it is, among large developed economies, one of least research intensive, and the fast-developing East Asian economies such as South Korea and China are now also more R&D intensive than the UK. This reversal of position has come about as a result of a combination of deliberate policy and wider changes in political economy (Jones, 2013).

The UK in 1979 combined a substantial industrial R&D base driven by conglomerates such as BAC (in aerospace), ICI (in chemicals and pharmaceuticals), and GEC (in electronics and electrical engineering). An extensive network of state-run research establishments developed new defence technologies, while civil strategic science was driven by nationalised industries such as the Central Electricity Generating Board and the General Post Office (later to become

British Telecommunications). The Atomic Energy Authority carried out both military and civil nuclear research.

This situation reflected a bipartisan consensus on the importance of state-directed strategic science. From the right wing of politics, there was a determination to remain a front-rank military power, including the development and retention of an independent nuclear weapons capability. From the left wing there was a belief – most memorably expressed by the appeal of the 1962 Labour government of Harold Wilson to the 'white heat of technology' – that strategic support of science and technology would be the mechanism by which the UK would be modernised. There was, therefore, sustained support for what David Edgerton has called the UK's 'Warfare State' (Edgerton, 2005).

The ideology that underpinned Margaret Thatcher's remaking of the UK state drew heavily on Friedrich Hayek's critique of central planning and valorisation of the market. These arguments had been adapted in the context of science policy, by Hayek's friend and ally, the chemist Michael Polanyi, who insisted on a strict division between pure science and applied science. In his view, pure science should be considered as an independent 'republic of science' that should remain free of any external direction (Polanyi, 1962).

Thatcher's own training was as a chemist, but her practical experience was in the commercial world. Nothing in her experience, or of those who advised her, would persuade her that there was any special status for science that should exclude it from the market mechanisms to which she believed the whole economy should be subject (Agar, 2011).

A policy of withdrawal of the state from the support of strategic and near-market R&D was part of the broader project of shrinking the state. As industries such as telecommunications and steel were privatized, the appropriate level of supporting R&D for these industries were thought best left to the market. Perhaps the biggest effect was seen in energy; the privatized energy companies aimed to maximize returns from the assets they inherited, and levels of R&D fell dramatically. What had been a large-scale civil nuclear program was wound down. Even in the core area of defence, there was significant retrenchment, given extra impetus by the end of the Cold War. All but the most sensitive R&D capacity was privatised, most notably in the company Qinetiq.

In parallel with these developments, the turn to market liberalism led to changes in private sector support for R&D. A new focus on maximising shareholder value and an enthusiasm for merger and acquisition activity in the corporate sector resulted in the loss of industrial research capacity.

The fate of the chemicals conglomerate ICI provides an example. A hostile takeover bid from the corporate raider James Hanson in 1991 prompted ICI to 'demerge' by separating its bulk chemicals and plastics business from its pharmaceuticals and agrochemicals businesses. The pharmaceutical and agrochemical half of the company (Zeneca) underwent further divestments and mergers to produce the pharmaceutical company AstraZeneca and the agrochemical company Syngenta (now in the process of acquisition by the Chinese state-owned enterprise ChemChina). The residual rump of ICI, attempting to pivot toward higher-value specialty chemicals, made an ill-timed, debt-financed purchase of the Unilever subsidiary National Starch. A series of divestments failed to lift the debt burden, and what was left of the company was sold to the Dutch company Akzo-Nobel in 2007.

The story of the electronics and electrical engineering conglomerate GEC offers some parallels to the ICI story. In the 1990s, GEC sold its less exciting businesses in electrical engineering and electronics in order to make acquisitions in the booming telecom sector. Renamed Marconi, the company had to restructure after the bursting of the dot-com bubble, and finally collapsed in 2005.

These corporate misadventures resulted in a loss of a significant amount of the UK's private-sector R&D capacity across a wide range of areas of technology. The common factor was a belief that the route to corporate success was through corporate reorganisation, mergers, acquisitions, and divestments rather than through researching and developing innovative new products.

The positive case to be made about these stories might be that they illustrate the dynamism of capitalism, with the money locked up in old industrial conglomerates being returned to shareholders, to be reallocated to fast-growing, highly innovative new companies. However, the reality is that no technology intensive companies at scale emerged in the UK (in contrast to the United States, where new entrants such as Google might to some extent compensate for the loss of big corporate laboratories such as Bell Labs and General Electric). Instead, we have seen a series of investment bubbles resulting in the substantial misallocation of capital, together with a pervasive short-termism (Kay, 2012).

It was a combination of this loss of private sector R&D capacity, substantial reductions in R&D in newly privatised industries such as energy, and a policy-driven retreat from direct, government-supported strategic research, which has largely driven the overall reduction in the R&D intensity of the UK economy since 1980.

The limits of supply-side science policy as a substitute for industrial strategy

Although Thatcher and her advisors were determined to withdraw state support from near-market research, 'curiosity-driven' science, largely university-based, ultimately fared rather better (Agar, 2017). A new consensus about the role and purpose of state-supported science emphasised economic growth as its primary goal, but largely assumed that innovation could be driven entirely from the supply side. Given a strong underpinning of basic research and a supply of skilled people, it was believed that commercial innovation and a strong economy would naturally follow, with only small-scale interventions to remove the frictions inhibiting 'knowledge transfer' required.

The 1993 white paper *Realising our Potential* (HM Government, 1993), introduced by Conservative science minister William Waldegrave, articulated this position, arresting a pattern of decline in research funding in the academic sector, using the classical market failure justification to call for the state to fund basic science, but reasserting the responsibility of the private sector for applied research. A continued programme of privatisation of government research establishments ensured a further withdrawal of the government from strategic research.

This broad direction was continued by the 1997 Labour government, which reasserted the principles of supply-side science policy in a major policy document in 2004 under the sponsorship of the Labour science minister, Lord Sainsbury (HM Government, 2004). This document reflected considerable policy continuity, though with some changes reflecting the changing R&D landscape. There was more emphasis on spin-out companies and the attraction of overseas investment, with a recognition that there was too little private sector research. The policy included an explicit target for increasing business R&D over the next 10 years, to 1.7 per cent of gross domestic product (a target that was conspicuously missed, as the figure currently stands at 1.1 per cent). The ten-year investment framework did result in real-term increases in government spending on academic research, but this was largely counteracted by decreases in government department R&D, continuing the run-down of strategic government research.

The mid-2000s did see the beginnings of more direct government support for R&D in industry; in 2007 an innovation agency – the Technology Strategy Board (now called InnovateUK) –

was given free-standing status, empowered to award collaborative R&D grants to industry and to oversee some cross-sector networking activities, mostly between industrial partners.

But it took the global financial crisis of 2007-08 to bring about a change in mood. A new Labour business minister, Peter Mandelson, emphasized the need to rebalance the economy away from the financial sector and toward manufacturing, with the automobile sector singled out for intervention. The 2010-2015 Conservative-Liberal Democrat coalition government continued this shift, implementing a plan to form a new class of translational research centres; that is, Catapult Centres, modelled on the German Fraunhofer centres. After thirty years in which the very words industrial strategy were essentially unspeakable in the British state, there was now an acceptance that support for industry was a proper role for government.

The UK's R&D landscape today

As is by now well recognised, the overall R&D intensity of the UK is low compared not only with traditional competitor economies, such as France, Germany, and the United States, but with the fast-growing economies of the far East, such as South Korea and China (Allas, 2014). Looking in more detail at the R&D landscape, we find an academic science base that is strong when measured by academic metrics such as citations, but a relatively small industrial R&D base (even taking account of the overall service-dominated character of the UK economy), concentrated in a few sectors such as pharmaceuticals, aerospace and computing, and dominated by overseas-owned companies (Hughes and Mina, 2012). The biggest change in recent years has been seen in automobiles, where industrial R&D more than doubled since 2010, perhaps reflecting its status as the test-bed of the new wave of industrial strategy.

State-supported translational research is, with a very few exceptions, weak. The new Catapult Centres are finding their feet. Two of the most successful centres were built around pre-existing initiatives, and they are worth considering in more detail as demonstrations of how new translational research capacity can be created. These are the Warwick Manufacturing Group (WMG) at the University of Warwick and the Advanced Manufacturing Research Centre (AMRC) at the University of Sheffield.

Although both institutions have grown out of conventional research universities and remain associated with them, their success arises from a mode of operation very different from university-based science, even in applied and technical subjects. Much of the research is focused on process optimisation, and it is carried out at industrial scale so that new processes can rapidly be transferred into manufacturing production.

A key feature of such translational research centres is the way that the large companies that form their core partners – Boeing and Rolls-Royce in the case of AMRC, and Jaguar Land Rover for WMG – can bring in smaller companies that are part of, or aspire to be part of, their supply chains, involving them in joint research projects. Another way in which these translational research centres extend the mission of the traditional research university is through a greater involvement in skills development at all levels, including the technical skills typical of an engineering apprenticeship program. One measure of the success of the institutions is the degree to which they have been able to attract new investment in high-value manufacturing into what had, since the 1980s, been underperforming regions that had failed to adapt to successive waves of deindustrialisation.

In effect, these centres have begun to rebuild what Pisano and Shih refer to as the 'manufacturing commons' (Pisano and Shih, 2009) – the collective resources and knowledge that underpin a successful regional cluster. These commons are based on the collective knowledge, much of it tacit, that drives innovations in both products and processes. A successful manufacturing commons is rooted in R&D facilities, networks of supplying companies, informal knowledge networks, and formal institutions for training and skills.

The experience of AMRC and WMG suggests that, to be successful in rebuilding these manufacturing commons, research facilities need to have an avowedly translational focus. They should create strong research partnerships between or among academia, large companies already operating at the technological frontier, and smaller companies wishing to improve their innovation practices, possibly to make them more competitive as suppliers to the large companies. Education institutions need to focus on building skills at all levels. They should be linked with these research centres, creating clear pathways for individuals to progress from intermediate-level technical skills to the highest-level qualifications in technology and management. As these research facilities become successful and recognised, this should lead to a virtuous circle in which further inward investment is attracted and the existing business base grows in capability.

Innovation policy for a new industrial strategy

In the view of the Industrial Strategy Commission, an independent initiative supported by the Universities of Sheffield and Manchester of which I was a member, industrial strategy needs to focus on the key weaknesses of the UK economy, particularly its poor productivity performance and its gross regional economic imbalances (see Industrial Strategy Commission, 2017). The UK's second-tier cities underperform, there are many very poor urban areas that have not recovered from 1980s deindustrialisation, and many places in the rural and coastal peripheries have been left behind by economic success elsewhere.

As the Commission sees it, an industrial strategy should be framed with a view of the whole economy, not just a few high-technology sectors. It needs to recognise the importance of the state as an actor uniquely able to coordinate activities and create new markets. And if it is to have a long life, the strategy needs to be linked to the broader, long-term strategic goals of the state.

Policy-makers across the political spectrum now realise that the R&D intensity of the UK economy needs to increase, and the government has committed to a target of raising the overall R&D intensity to 2.4 per cent of GDP. But this needs to be done in a way that considers the whole landscape: public and private-sector, undirected, use-inspired, translational, and strategic. More emphasis is required on the translational part of the picture than we've seen before, and the links to skills at all levels need to be made more coherent. Currently the geographical distribution of R&D, in public and private sectors alike, is highly imbalanced, with the biggest investments being made in the most prosperous parts of the country: London and the South-East. This too needs to change; if new R&D institutions are to be set up, the role they can have in catalysing regional economic growth needs to be explicitly considered when decisions are made on their location.

Above all, the UK needs to move beyond the supply-side science policy that has dominated innovation thinking for the past three decades. More attention needs to be paid to generating demand for innovation. Here the government can have a central role, buy using its spending power much more purposefully to encourage innovation in the private sector, especially when linked to the strategic goals of the state. In the UK's case, these include a long-term commitment to reducing the carbon intensity of the energy economy while maintaining the security and affordability of energy to domestic consumers and industry. The UK also maintains a wide, cross-party consensus in support of universal healthcare coverage. These goals are unlikely to be deliverable without substantial innovation. Done right, industrial strategy should enable the state to meet its strategic goals while at the same time providing the new business opportunities for the private sector.

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9

Industrial strategy and inclusive structural change

Maria Savona

After several months of consultation with academia and other stakeholders, in November 2017 the industrial strategy was launched (HM Government, 2017). The foundations of the strategy (ideas, infrastructure, business environment, people and places) unveil first and foremost the anxiety around the productivity slowdown (see also Haldane, 2017; 2018) and, perhaps to a lesser extent, the concerns around territorial imbalances in innovation and growth performances and spatial inequalities. The societal challenges to be tackled by the industrial strategy resonate with extant global concerns around how to achieve inclusive, environmentally sustainable and 'smart' growth. Behind the buzzwords, there seems to be a certain degree of awareness of the need to make sure that innovation – for instance, the latest technological paradigm of artificial intelligence and robotization (AI&R) – does not leave people and places behind. On the latter, for instance, the industrial strategy white paper mentions a plan for developing concerted local industrial strategies that tap into 'local comparative advantages'.

It has been argued that the current pleas for local industrial strategy is still very much centred around large city-regions, and risks exacerbating the gap with 'the places that do not matter' and the striking regional inequality in the UK (Rodriguez-Pose, 2017; see also Lee, 2018 and Tomaney and Pike in this volume). Similarly, the preoccupation around the productivity slow down and puzzle have led to a focus on key sectors, rather than privileging more pervasive interventions to ensure technological upgrading of mature sectors. In a context of revamped interest in re-industrialisation, increased R&D spending targets, public support for private R&D to catalyse innovation, and productivity recovery, it is important to be aware of the unintended consequences in terms of 'left-behind' sectors, regions and categories of workers. Here I argue that the unquestionable support to research and development, and innovation at large, should be part of a more articulated industrial policy that ensures inclusive structural change of the economy, that is, a concrete attention not only to left-behind places, but, relatedly, to mature sectors and vulnerable categories of workers.

Starting from a few reflections on the recent, revamped interest in industrial policy in Europe (Savona, 2018), and based on my work with colleagues showing recent evidence of the effects of R&D investments on employment and self-employment in UK local labour markets (see Ciarli *et al.*, 2018a and 2018b), I argue that an innovation policy for inclusive structural change in UK local labour markets is needed. This should not only support R&D spending in firms and sectors, but should also pay attention to the inter-sectoral linkages and ensure inclusive structural change as an outcome of a concerted vision of innovation and industrial policy. This borrows from a framework that has been put forward in the context of industrial development (Ciarli et al., 2018c) and that might well fit the purpose of supporting innovation-led structural changes in local areas in the UK.

The industrial strategy in the EU context of industrial *renaissance*

The industrial strategy has been devised in light of the recently revamped interest in Europe and worldwide (Stiglitz et al., 2013; Warwick, 2013 for a review) in the role of industrial policy.

The need to 'reindustrialise' countries has been advocated by several international programs, such as the Juncker Plan in Europe, the Made in China 2025 programme, and the Indian National Manufacturing Policy. This has come after decades of demonization of any government intervention in the realm of industrial policy.

For instance, the Juncker Plan, launched at the end of 2014, has been welcomed as a substantial fiscal policy intervention to get Europe out of the recession, despite criticism from some that it is 'too little, too late', in terms of a counter-cyclical boost to the economy (Dosi *et al.*, 2017). The plan has also been understood as a concerted vision of public and public-private funding in areas that are considered strategic to ensure a European industrial *renaissance.* The focus on these areas, similar to the industrial strategy's 'grand challenges', is assumed to achieve sustained, inclusive and environmentally sustainable growth, prosperity and economic and social equality.

On a prior occasion (Savona, 2018), when briefly commenting on the Juncker Plan as a platform for industrial policy, I raised a few questions that could be similarly posed to the industrial strategy white paper. First, in the UK context, widely considered as a service-based economy, what type of (further) de-industrialisation would represent a threat? Second, how would a concerted platform of innovation and industrial policy interventions steer a transformation of the sectoral structure that considers the large differences in sectoral specialisation and technological opportunities across UK regions?

The industrial strategy, through the sector deals, focuses on key, strategic sectors such as automotive and artificial intelligence, and plans to invest in large infrastructures, digital and logistics. This logic of an industrial *renaissance* might not be enough, when aiming for a more pervasive and spatially balanced industrial upgrading.

One such missing piece of the puzzle that the sector deals aim to tackle is how to prepare the ground, facilitate and support the maintenance and growth of *backward linked* services (engineering, technical consultancy, etc.) to the more traditional (mature) manufacturing industries. In addition, attention to *forward linked sectors* would also require a vision that identifies new technological opportunities – not only those offered by frontier technologies such as AI&R – but those that would help 'rejuvenating' traditional manufacturing and non-tradable services. The importance of supporting a certain type of sectoral structural change (labour demand) is similar to planning adequate education and training policies for the labour force (labour supply) and directly affects what the future of employment in the UK could be. The next section presents some evidence in support of this view.

R&D and changes in the employment composition: a policy *conundrum*?

The industrial strategy includes plans to increase total R&D investments to 2.4 per cent of GDP by 2027 and to 3 per cent over a longer time span; increase the rate of R&D tax credit to 12 per cent; and invest £725 million in the new Industrial Strategy Challenge Fund programmes to leverage on the value of innovation (HM Government, 2017).

While the positive link between R&D spending and innovation performance has been relatively uncontroversial for many decades (Griliches, 1979), the heterogeneity of this effect across sectors and places, as well as its unintended consequences, are much less so.

Firm R&D spending is a strategic choice that might represent a trade-off with other investments, and certainly requires changes in the organisation, and demand for new types of workers and skills. R&D might have spillover learning effects within the firm and a multiplicative effect in terms of labour demand within the local labour markets in which the firm is located. Much depends on the initial industrial structure and employment composition of local labour markets. Creating incentives (i.e. tax credits) for firms to spend in R&D might have very

different effects on the sectoral composition of employment and on the type of employment created depending on the local characteristics.

Figure 1: Share of routine employment across travel-to-work-areas in Britain, 2001
Reproduced from Ciarli et al., 2018a; each TTWA reports the share of category NS-SEC7 (Routine occupations)

Across the UK's local labour markets, Ciarli *et al.* (2018a) find that firm spending in R&D has, on average, a low multiplicative effect on employment rates, while it has quite a remarkable effect on the changes in the employment composition, depending mainly on the initial (in 2001) industrial structure of the local labour market. In areas highly dense in non-routinised occupations, which represent about 85 per cent of the UK population (see figure 1), R&D spending does increase the share of the highly educated, working in manufacturing paid employment sectors.[1]

In contrast, when R&D spending occurs in areas with a higher share of routinised jobs, the (positive) boost to employment is concentrated in lower educated workers employed in non-tradable services. A notable, and relatively overlooked phenomenon, is that the creation of employment in highly routinised areas is substantially driven by an increase in self-employment, a long-term trend in the UK, and to a lesser extent in the main European countries (see figure 2).

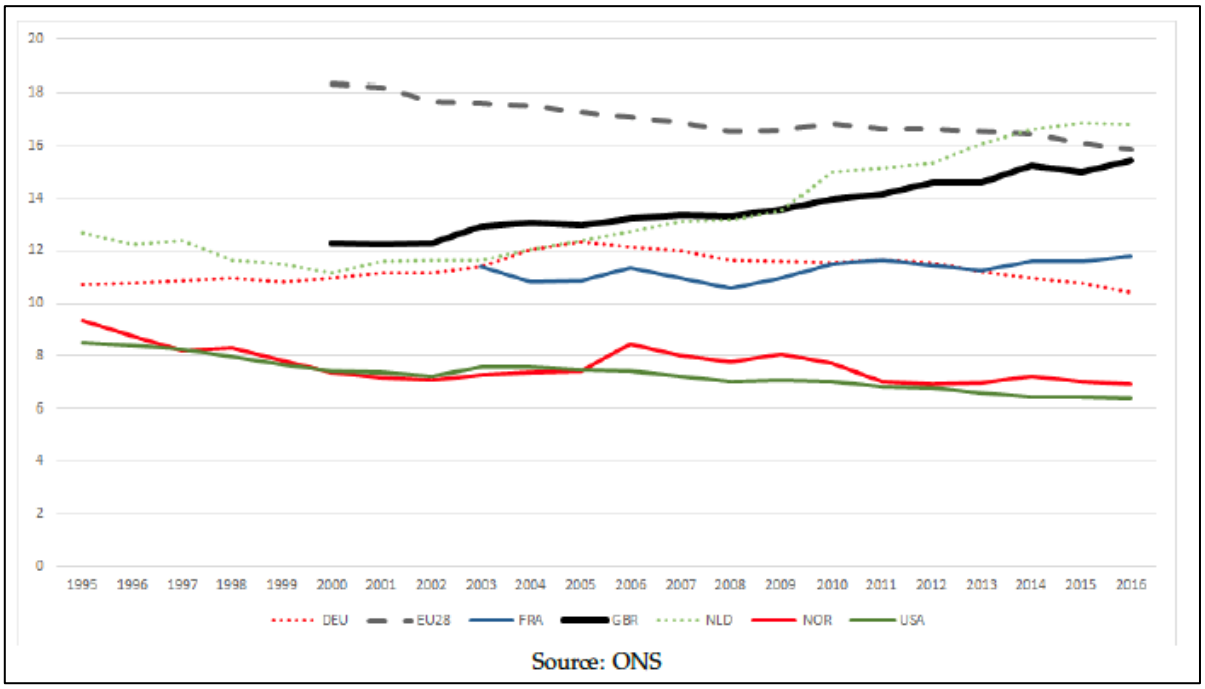

Figure 2: Self-employment as a % of employed labour force (1995-2016)
Reproduced from: Ciarli *et al.*, 2018a

It seems that innovation, in the form of R&D spending, is as a mixed blessing, depending on the initial industrial structure. While rightly supporting the generation of new ideas, the maintenance and improvement of scientific excellence and the competitiveness of firms, innovation might also have side effects of increasing regional polarization in terms of industrial structure, share of routinised employment and self-employment.

There seems therefore to be a two-speed, innovation-led, structural change in different areas: a high-skilled tertiarisation of the areas that are already highly dense in non-routinised jobs and that compensate the loss of manufacturing by moving towards finance and business services; and a low-skilled de-industrialization, that is, the growth of non-tradeable (hotel and restaurants, trade), lower skilled jobs in the already 'left-behind' areas. The increase in self-employment in these areas might have little to do with entrepreneurial jobs (Thurik *et al.*, 2008), and instead represent 'refugee' self-employment, that is, turning to self-employment as a coping strategy, due to skill mismatches (Vona and Consoli, 2015), extreme skills

complementarities (Mazzolari and Ragusa, 2013; Eeckhout *et al.*, 2014) or simply 'hidden unemployment' (Blundell *et al.*, 2014).

Our findings pose a challenging policy conundrum that the industrial strategy should address more substantially. R&D spending and R&D support should be questioned not only for the well-known reasons that the innovation literature has long addressed (and also reprised by Jones in this volume). The potential polarizing effects of innovation on structural changes in the composition of employment and the labour market should be prevented, and actions taken to 'prepare the ground' for local investments in R&D. In this context, ensuring a direction to industrial policy that supports innovation and higher quality jobs in 'lower speed' services is a necessary complementary measure to harness the beneficial effects of R&D.

Innovation policies for inclusive structural change

The UK economy presents specific challenges, and the industrial strategy seems not to have fully come to terms with extant imbalances in terms of sectoral specialisation and, relatedly, territorial polarisation. Promoting ideas and innovation (R&D spending), creating a favourable business environment (supporting entrepreneurship and new firms' creation) in strategic industries (through the sector deals) are all welcome, but might be at odds with ensuring that the benefits of these are inclusive enough and reach most people and places, without exacerbating further employment, sectoral and spatial imbalances. We have presented evidence on the effects of R&D spending on different 'places and people', and have shown how this depends on the initial industrial structure and labour market composition. Re-industrialising the UK in accordance with the industrial strategy foundations noted above, and making sure that this process is inclusive, is certainly a policy conundrum.

The industrial strategy should aim at a more substantial integration between innovation and industrial policy to achieve inclusive structural change (Ciarli et al. 2018c). Inclusive structural change should undoubtedly be starting from the recent proposals around inclusive innovation that aim to enlarge the access of individuals, industries and places to innovation processes (Planes-Satorra and Paunov, 2017). However, it should also go beyond these, based on a comprehensive, evidence-based understanding of how innovation affects industrial and employment structure, including how it shapes inter-sectoral linkages between the frontier sectors and more mature, linked ones. This knowledge is important when aiming for an inclusive innovation policy that does not leave behind places and categories of workers.

The sector deals proposed in the strategy focus on a few strategic sectors. The deals seem to follow a mission-oriented logic of pouring money into specific, potentially frontier areas, but are relatively blind as to what the more pervasive impact on related – or unrelated – sectors will be, depending on the initial industrial structure of specific places. Inclusive structural change implies preparing the ground to maximise the absorptive capacity of linked sectors of the benefits of large, infrastructural and strategic investment. Inclusive innovation policy should be aware of and steer changes in the industrial structure, and complement the mission-oriented objectives.

In line with this view, it has been argued that industrial policy should be characterised by 'ambidexterity' (Frenken, 2017; Frenken et al., 2007), that is, the ability to intervene in both radically unrelated areas – for instance through public procurement, and a clear identification of strategic areas – and in related areas, building upon accumulated technological capabilities. Mission-oriented policies should be complemented with more targeted instruments that ensure structural transformation of economies that are based on extant specializations and related technological capabilities. The industrial strategy seems to be pursuing much of the former, but less of the latter.

Notes

1. Travel-to-work-areas in the UK are sub-district units and are approximated to local labour markets.

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10

UK engineering: a hostage to Brexit?

Tom Brown

This chapter appraises the potential impact of Brexit on UK companies manufacturing engineering products and components, of which there is a wide range, many of them very advanced (for a longer discussion, see Brown, 2017). Other forms of manufacturing will be affected in diverse ways – the biggest segment in the official manufacturing statistics being food and drink, which clearly faces some quite different issues – although many of the problems resulting from Brexit will be similar across manufacturing industries. Given the significance of engineering products and components to the UK industrial strategy, particularly in improving the UK trade balance, the potential consequences of withdrawing from the EU for this strategically important industry must be addressed.

The current situation

UK engineering has undergone massive changes in the last 40 years. Many older companies have been forced into closure, and the UK's larger engineering companies are now very focused on specialist high technology products, which they manufacture and supply globally. There are also many smaller companies which manufacture in the UK, and a large sector which manufactures components. These companies are often more active exporters from the UK than the multi-national firms who manufacture globally.

The EU is the world's largest developed market. It buys nearly half of the UK's current exports of all types, and enables the UK to compete on a level playing field with countries with broadly similar labour costs, and social and environmental practices. The opportunity is even greater because the EU has negotiated trade agreements from which the UK currently benefits with around 60 other countries; including these, EU membership accounts for the majority of UK exports. It is by far the largest export market in the world for UK-manufactured engineering products, and is also the source of many components crucial to making products in the UK; a very sophisticated transnational supply chain currently exists – in both directions.

The extent to which geographic proximity matters in today's global village is often under-estimated, but Europe is the only market UK-based firms can serve with 'just in time' (JIT) logistics, where lead times are literally measured in hours, and which are mandatory in many fields, especially components. Few engineered products can be air-freighted economically. Ready access to Europe has also been a major driver of inward investment, from which the UK has benefited disproportionately, and foreign-owned companies are now estimated to make up around half of the UK engineering industry.

Since the referendum, UK engineering companies have coincidentally experienced good demand, driven by a cyclical upswing in global engineering, with margins aided by the weaker pound. Companies have, however, faced difficulties exploiting this demand due to widespread skills shortages; for many years the UK has simply not developed enough young people with the skills and attitudes needed for engineering, and instead has become reliant on importing them. Brexit may impede this dimension of the engineering business model too.

The impact of tariffs

There may be both advantages and disadvantages from any form of Brexit, and its impact will differ greatly between companies, but there is currently significant disagreement over which will prevail. Any arrangement which impairs the UK's ability to trade with its largest export market, or which worsens skill shortages in engineering, should be resisted. Were World Trade Organisation (WTO) tariffs to be imposed, many engineering products and components would be subject to a 10 per cent charge on entering the EU. But most automotive component suppliers, for example, struggle to make a 10 per cent margin, so the business may become unviable.

A weaker sterling will not offset these tariffs in the longer term, unless the weakness proves chronic – in other words, if Brexit indeed proves economically damaging. In any event, companies' decision-making is much more influenced by hard facts like tariffs rather than daily fluctuating exchange rates.

Should the UK leave the EU's customs union, administrative complexity is likely to increase greatly. To offer just a few examples, certificates of origin would probably be required, which would increase administrative burdens, and the origin rules themselves would potentially be a serious problem for automotive manufacturers. Many currently have less than 50 per cent UK content, and would be extremely reluctant to remedy this post-Brexit through more UK investment. Extra time will probably be added into logistics – a very significant handicap for JIT delivery, and a real blow for component manufacturers. Products tested in the UK are currently marketable anywhere in the EU; potentially UK certification will no longer be recognised.

The effect of tariffs on domestic companies will be magnified by the actions of foreign-owned ones. Japanese car companies, for example, manufacture in the UK as a base for their European sales. Nissan exports 80 per cent of its UK production to the EU. It would not be viable to run a manufacturing plant solely to serve the UK market, and so unless the Brexit deal includes free trade in cars and components, the UK will cease to be a favoured base for manufacturing among such firms. It is not hard to imagine that, over the following decade, the UK might lose the majority of its automotive industry, and the industry's extensive supply chains. Already in 2017, automotive investment was down by 33 per cent (SMMT, 2018), and we can anticipate a precipitate fall in other new manufacturing projects from foreign companies once those in the pipeline have run through.

Benefits of Brexit?

Advocates of Brexit point out that the EU's growth is low compared to some regions, and are certain there will be improved opportunities for new trade relationships for the UK, once outside the EU trading bloc. However, the UK's larger engineering companies are already active globally, and most countries have extremely limited markets for our advanced engineering products. There are very few developing countries, for instance, which would realistically offer a sizable new market for UK-made engineering products if only we had a trade deal (except possibly Iran, which is subject to American sanctions).

In practice, the UK's new trading partners would predominantly be countries with much cheaper costs than the UK, facilitated by lower standards of human welfare and environmental protection. A country such as India has a big market for engineering products, but it has such a cost advantage that a free trade deal would seem certain to result in a substantial net flow of imports *into* the UK, to the detriment of both UK industry and the balance of payments. Many larger engineering companies already grasp the growth opportunities in such markets by manufacturing locally.

These objections would not apply to a deal with the United States, but is it wise to go head to head with a country with such enormous economies of scale (quite apart from issues such as agricultural produce, which are likely to bedevil any deal)? Indeed, trade deals have in practice been very slow to negotiate, and it may be very difficult simply to replace the 60 the UK will renege by leaving the EU. To date, the Brexiters' premise that these will simply be novated has been shown to be fallacious. Inevitably, countries are rather unwilling to offer the same deal for access to the UK market that they have given for access to the whole EU – or at least not in any rush to do so.

Crucially, even if a raft of new trade deals were signed, and even if we could identify unsatisfied demands which UK firms could address competitively, it would not be feasible for modern engineering companies – which need to be exceedingly focused in their skills, technology, and capital equipment – to swiftly make alternative products for new export markets.

One of the promised advantages of Brexit is that UK firms will have less 'red tape'. But it now seems certain that the UK will pragmatically continue to adhere to EU rules on matters such as product specifications, but no longer with influence over their formulation. Some Brexiters would clearly like to see less regulation in areas such as environmental protection and employment rights, but this agenda is unlikely to prevail, even outside the EU. Most of the 'red tape' that many people understandably object to is nothing to do with the EU, but rather is a function of modern societies. It will not cease with Brexit.

The one significant advantage that could arise from leaving the EU – as a consequence of the skills shortage – is tackling the need to educate and train young people to succeed in demanding jobs, rather than importing skilled people. Yet even if the government grasps this challenge effectively, it will take a generation to achieve significant change, and in the meantime restrictions on the flow of workers from the EU will exacerbate skills shortages.

The reckoning

Beyond the romantic imagery painted by its proponents, Brexit promises to be another nail in the coffin for a significant part of UK engineering. It is potentially disastrous for those UK-based engineering companies that have worked hard to build significant exports to the EU. It will be detrimental to very many others, neutral to some, but an advantage to virtually none. It will most probably impede the UK's ability to export to its largest market, exacerbating an already appalling trade deficit, and causing the loss of further high-value jobs. Should the UK suffer a 'hard' Brexit, impairing over half of its export markets without any near-term alternatives could lead to the outright closure of many UK-based engineering companies, whose business models will not be viable without the contribution from EU markets.

For the sake of UK engineering, and the vital role it promises to play in the new industrial strategy, Brexit must be as 'soft' as possible, which means retaining unfettered access to the single market, and remaining in the customs union. It is also essential that there is a proper 'transitionary period' (potentially until December 2020), with clarity from the beginning as to what arrangements will be at the end of the period. Even so, some companies may face situations where it is simply impossible to adapt.

Until now, many engineering companies have concentrated on exploiting short-term demand, partially boosted by the weaker pound, and perhaps ignored Brexit as too uncertain and complex to plan for. However, this complacency is beginning to lift as Brexit looms, and companies are cutting back on UK investment and inventories. We should not expect many companies to make their position clear publicly – they will want to avoid being accused of playing politics, and do not want to scare off their employees, suppliers, customers, bankers, and shareholders. But we must be in no doubt about the impact Brexit will have on UK engineering, and consequently the prospect of devising a successful industrial strategy.

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Section 3: Low-paid and foundational industries

11

Where should low-wage sectors feature in an industrial strategy?

John Forth, Dave Innes and Ana Rincon-Aznar

At a fundamental level, a nation's living standards are determined by three factors: the share of the population in work (*employment*), the value of goods and services produced by these workers (*productivity*) and how the economic rewards from producing these goods and services are shared among the population as a whole (*the income distribution*). Whilst the UK economy fares very well in terms of employment (ONS, 2017a) and has shown some small reductions in income inequality of late (ONS, 2017b), its recent productivity performance has been lamentable.

The government's industrial strategy white paper (HM Government, 2017) aims to address a two-fold challenge in this area. First, it seeks to restore the UK to a path of positive productivity growth, after a decade in which the level of output per worker in the UK has barely improved (ONS, 2017c). Second, it seeks to close the productivity gap between the UK and our major competitors – countries such as France and Germany, where output per hour is around 30 per cent higher than it is in the UK (ONS, 2017d). When seeking to find levers to improve productivity, it is common to consider the relative merits of efforts to improve skills, boost capital investment, intensify market competition or foster innovation (e.g. HM Treasury, 2015). Such considerations reflect an acknowledgement that one cannot do everything all of the time. However, governments and other stakeholders also have choices about *where* they focus their attention. Emerging, high-value sectors are often signalled, including in the white paper itself.

However, the white paper also recognises that some of the biggest opportunities for raising productivity come from low-wage, high-employment sectors, such as retail and hospitality. This echoes another theme of the industrial strategy, which is to improve employees' earning power and to make the economy work for all. In this chapter, we evaluate the case for giving special attention to low-wage sectors and discuss different ways in which that might be done.

Productivity in low-wage sectors

In recent work for the Joseph Rowntree Foundation (Forth and Rincon-Aznar, 2018), we undertook a comprehensive analysis of the productivity performance of the UK's low-wage sectors, with a particular focus on the role that they play in the UK's productivity gap with other countries. We focused on the ten industry sectors where at least one-quarter of the UK workforce are low-paid (defined as having gross hourly earnings below two-thirds of the UK median wage). The largest of these is the retail sector, accounting for 5.6 per cent of UK value-added, 8.4 per cent of all hours worked and 21 per cent of all low-paid employees (see table 1). Other large low-paid sectors include administrative and support services (covering activities such as security and cleaning), hospitality (covering the activities of hotels and restaurants) and residential care and social work (covering the provision of adult and children's social care). Together our ten chosen sectors account for almost one-quarter of all value-added in the UK, around two-fifths of all hours worked and around two-thirds of all low-paid employees.[1]

Sector	Sector share of total UK gross value-added (%)	Sector share of total UK hours worked (%)	Value-added per hour (UK = 100)	% of employees in the sector who are low-paid	Sector share of all UK low-paid employees (%)
Retail (Division 47)	5.6	8.4	75	46	21
Administrative and support services (Section N)	4.8	8.2	68	29	6
Hospitality (Section I)	3.0	5.7	61	59	16
Residential care and social work (Divisions 87-88)	2.0	4.9	46	31	10
Arts, entertainment and recreation (Section R)	1.4	2.4	68	30	3
Other service activities (Section S)	2.1	2.4	104	33	3
Sale and repair of motor vehicles (Division 45)	2.0	2.1	107	25	2
Agriculture, forestry and fishing (Section A)	0.7	1.7	43	38	1
Food processing (Divisions 10-12)	1.6	1.5	121	29	2
Textiles and clothing manufacturing (Divisions 13-15)	0.4	0.4	111	31	1
All 10 low-paid sectors combined	**23**	**38**	**71**	**39**	**65**

Source: Forth and Rincon-Aznar (2018)

Table 1: The UK's low wage sectors (ordered by UK share of gross value added)

As one would expect, most of these sectors have levels of productivity that are either at or below the level of productivity in the UK as a whole (see table 1, column 3). The larger sectors among them also play a key role in determining the trajectory of productivity growth at the national level: retail alone accounts for one-tenth of the national slowdown in productivity since the financial crisis (Riley et al, 2018). However, the primary interest of our research was in the performance of these low-paid sectors relative to the same sectors in other major economies, and their contribution to the UK's overall productivity gap with those countries.

How do levels of productivity in the UK's low-wage sectors compare with other countries?

When the ten sectors are grouped together, aggregate productivity in this low-paid part of the UK economy is 30 per cent below that found in the same sectors in Germany, France and the Netherlands, and 20 per cent below that found in the US. If we look beyond these nations to other major European economies such as Austria, Denmark, Spain, Finland, Italy and Sweden, only Italy among this group has a level of value-added per hour below that of the UK (see chart 1).

As chart 1 clearly shows, the UK's productivity problem is not restricted to low-wage sectors. In fact, we find that the UK's relative position is slightly better, on average, in the low-wage portion of the economy than it is among higher-wage industries. But closing the UK's productivity gap with its competitors in low-wage sectors would make a substantial contribution towards overcoming the national productivity problem, to an extent that is perhaps not often recognised. Our analysis indicates that raising productivity in low-wage sectors to the levels found in the United States would reduce the UK's productivity gap with the United States by around 12 per cent. It would close between a fifth and a quarter (21-23 per cent) of our national productivity gap with France, Germany or the Netherlands.[2]

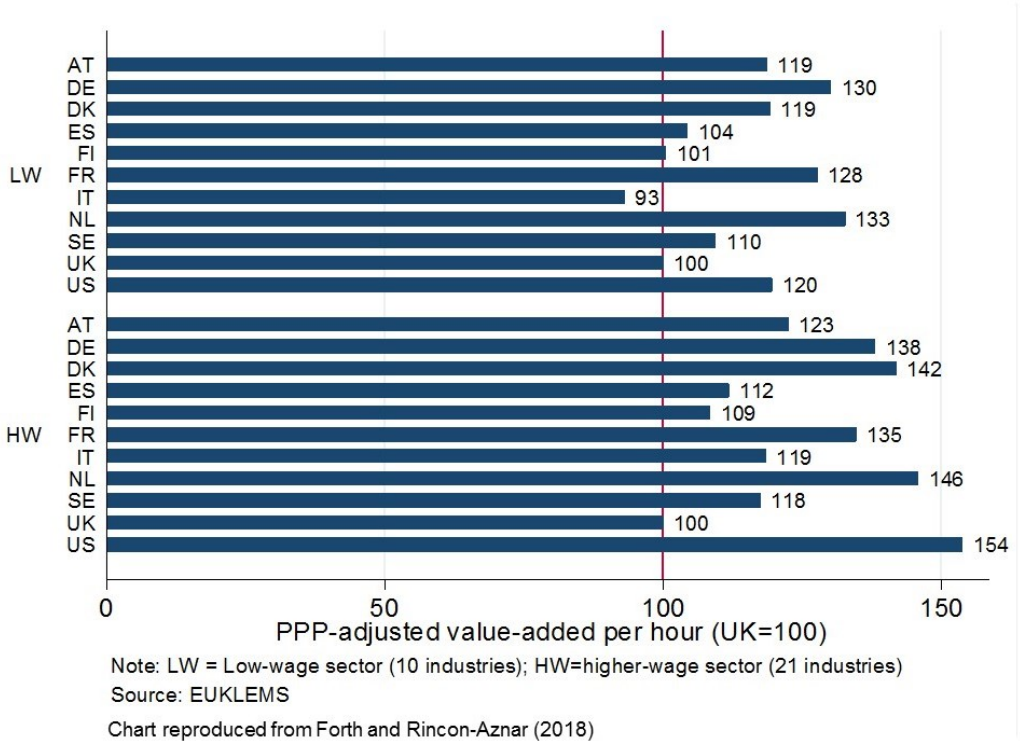


Chart 1: Relative labour productivity in 2015 (UK=100), by broad sector

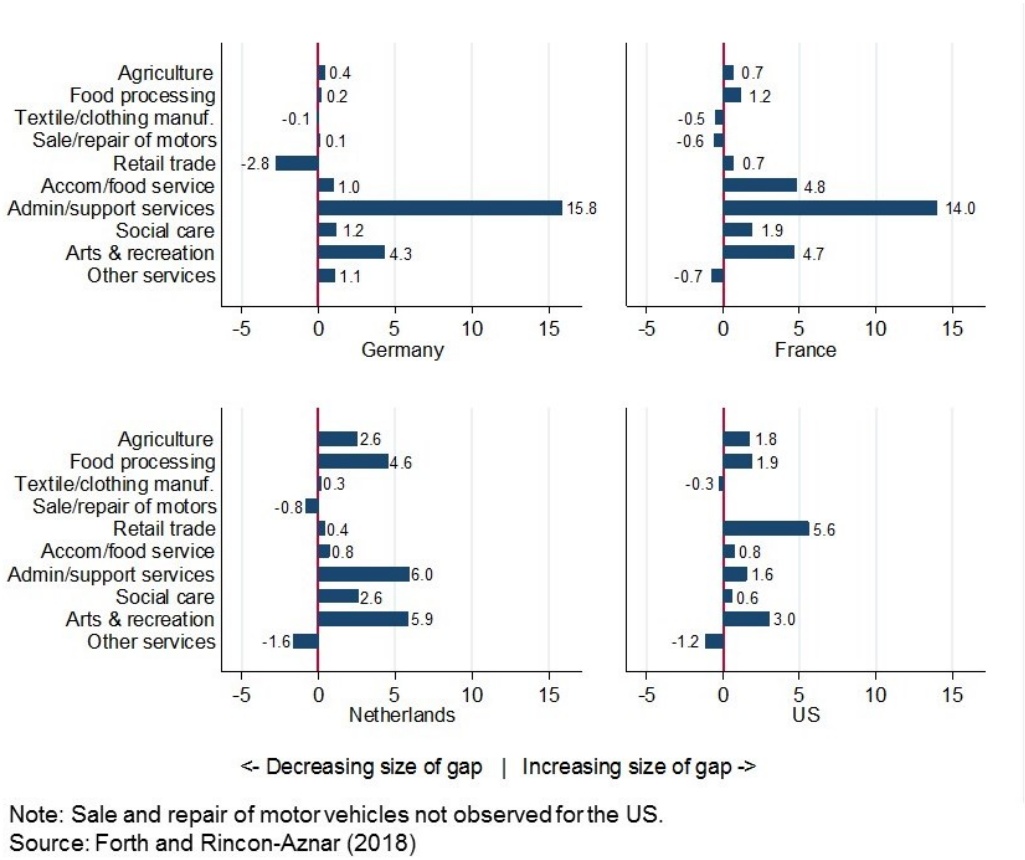
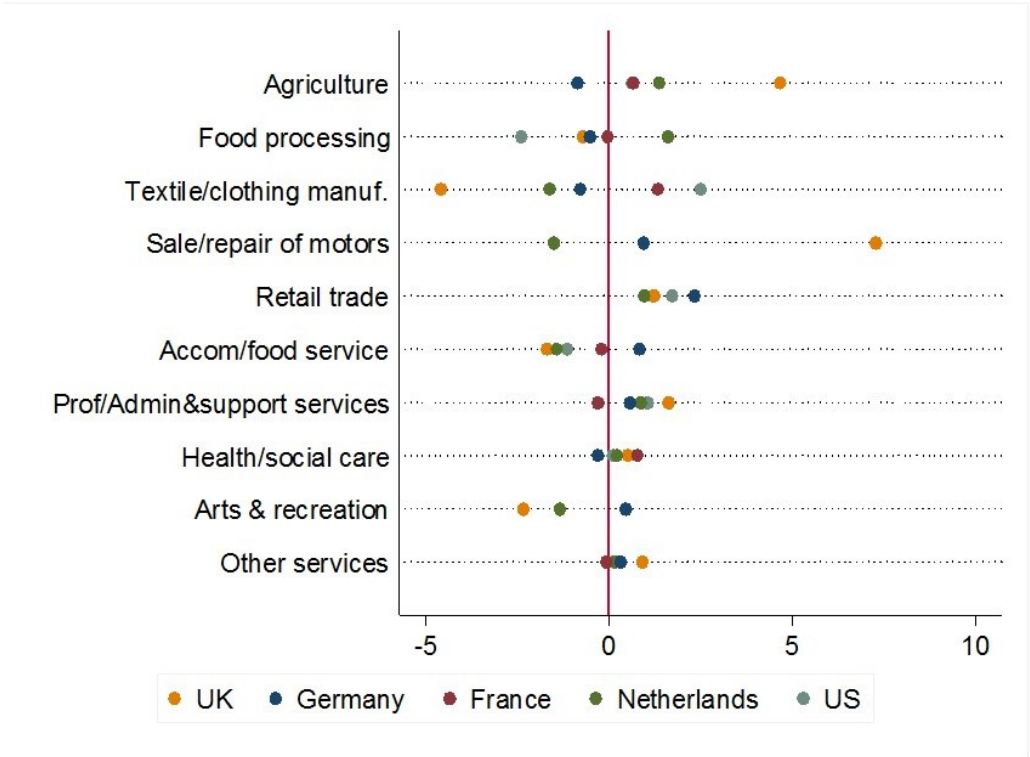


Chart 2: Sectoral contributions to UK productivity gap with selected major economies (2015)

This overall picture hides a considerable degree of sectoral variation. For instance, the level of productivity in the UK retail sector lags the US by around 40 per cent but sits broadly on a par with levels of retail productivity in France and the Netherlands, and above that found in Germany. In the hospitality sector, however, productivity is around 10 per cent higher in the United States and Germany than it is in the UK and around 45 per cent higher in France. Each individual sector's contribution to the UK productivity gap therefore varies, depending on which country the UK is being compared against (see chart 2). In the comparison with Germany, where the overall level of value-added per hour is 39 per cent higher than in the UK, the differential rate of productivity in administrative and support services is key, accounting for around one sixth (16 per cent) of the total gap. Arts and recreation account for a further 4 per cent. In the comparison with France, administrative and support services and arts and recreation are again prominent, along with accommodation and food service. For the Netherlands, food processing plays a fairly prominent role, whilst in the comparison with the United States, retail is the leading contributor.

How do rates of productivity growth in the UK's low-wage sectors compare with other countries?

Of course, the gaps in productivity levels only tell part of the story. Rates of productivity growth provide the other dimension, but are no less encouraging, as they do not tend to indicate any prevailing pattern of catch-up for the UK (see chart 3). While rates of UK productivity growth in sectors such as agriculture and sale or repair of motor vehicles appear to be outstripping those seen in the four countries we have chosen as our main comparators, UK growth rates in sectors such as retail, accommodation and food service, administrative and support services and arts and recreation are either below par or sit within a closely-bunched pack.



Notes: The source data do not separate Admin and support services (Section N) from Professional services (Section M), nor do they separate Social care (Division 88) from Health (Division 87)
Source: Authors' calculations from EUKLEMS.

Chart 3: Annual growth in labour productivity (GVA per hour) 2011-2015, by low-paid sector, in selected major economies

How can the UK close the gap with the productivity leaders?

To understand the reasons for the UK's productivity gap in low-wage sectors more fully, one can use a standard productivity-accounting approach to decompose the gap in each sector into the contributions from cross-country differences in capital intensity, labour quality and total factor productivity (TFP). Whilst the relative contribution of these three components varies by sector and country, the general finding from such an analysis is that any weakness in productivity in the UK's low-wage sectors is primarily due to differences in TFP, followed by differences in labour quality, with differences in capital intensity playing a more minor role. Three industry-by-country comparisons serve to illustrate this general point (see chart 4).

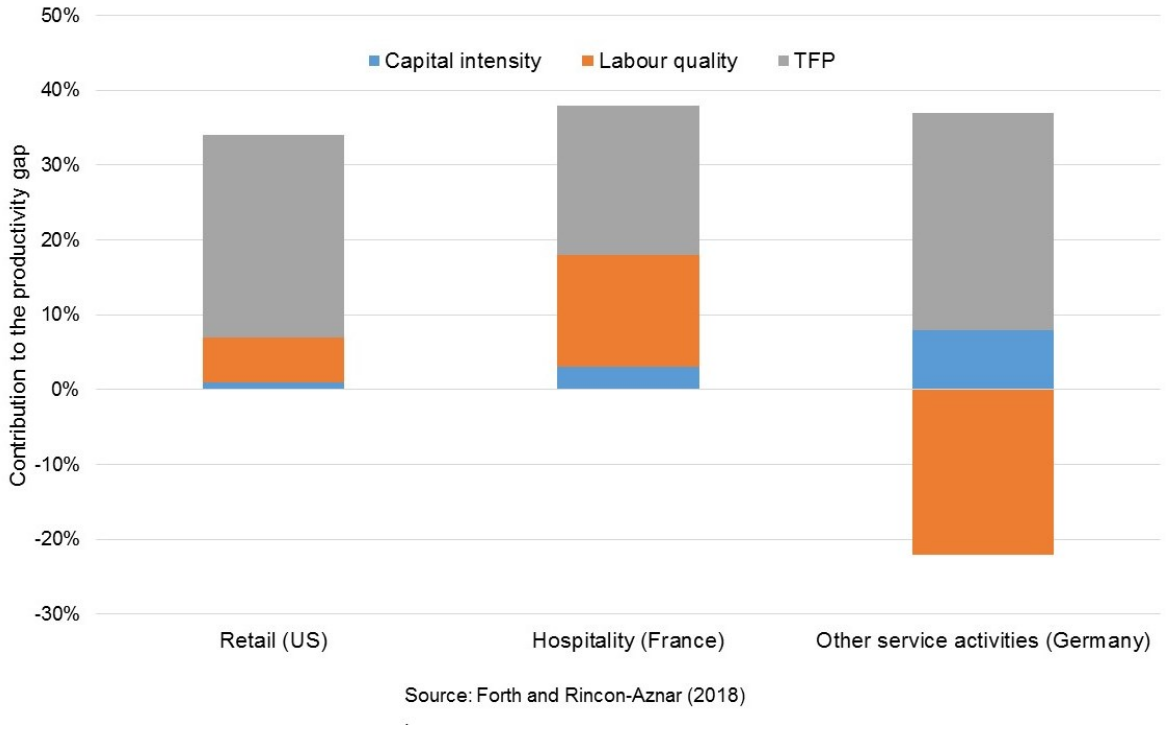


Chart 4: Contribution of capital intensity, labour quality and TFP to the UK's productivity gap with the international sector leader

These TFP differences could be influenced by a range of factors, but our analysis across a range of sectors and countries indicates that what happens within firms could be particularly important. When we looked at the UK's relative TFP position across a wide range of sectors, we found that countries were more likely to have a TFP lead over the UK in cases where they had a higher proportion of workers in training, more extensive use of management practices such as performance-related pay, a higher share of employees using ICT and a lower share of employees on temporary contracts. The organisation and management of low-paid work thus appear to be critical areas for future attention.[3]

There are two main points to take away from this analysis overall. Firstly, productivity in most of the UK's low-wage sectors lags that found in the same sectors in other countries. Secondly, because a number of these sectors account for sizeable shares of national value-added, raising productivity in these industries would go some considerable way to raising national levels of productivity. They thus have the potential to help the UK address its current productivity challenge, alongside the higher-value sectors that often gain most attention.

In addition, because many of these sectors are also large employers, and are necessarily characterised by low wages, there is also a broader inclusivity argument for giving them particular attention.

So what should we do?

The main implication of the above analysis is that low-wage sectors deserve a place in the government's industrial strategy. The government's main offer for specific sectors so far has been through sector deals. Twelve deals have been announced, or are being actively discussed, but only one is for a low-wage sector: tourism, which overlaps closely with the hospitality sector. There has so far been no sector deal for the two largest low-wage sectors, retail and administrative and support services. The government has set up a Retail Sector Council, but it is unclear how much of a role this will play in relation to the industrial strategy. Sector deals have been criticised for representing the interests of incumbent firms over potential entrants and innovators (Industrial Strategy Commission 2017). Nevertheless, the government should outline the policy infrastructure it will provide to raise productivity in low-wage sectors.

Some new innovative examples show what support to improve productivity in low-wage sectors could look like. The Productivity Through People programme takes experts from highly productive companies, such as BAE systems, to provide advice to low productivity ones, and provides anecdotal evidence of success in raising productivity. This chimes with a lesson from the above analysis that improving productivity in low-wage sectors requires some influence on the internal operations of firms. Business support services that encourage firms to get more from their workforce through on the job training, improving management practices or providing better contracting could raise productivity.

The industrial strategy white paper recognised place as one of its five foundations. Place is important because the needs and opportunities for an industrial strategy differ greatly across the country. Nevertheless, several low-wage sectors – in particular retail, hospitality and social care – are pervasive across the country and so should be a priority for many places. Local industrial strategies, currently being designed and led by city-region mayors and Local Enterprise Partnerships, could be a fruitful testing ground for the experimentation required to create policies that are successful at raising productivity in these sectors. Local experimentation should be encouraged and evaluated so we can learn from policy success and failure.

If the industrial strategy is to be judged a success, it also needs to be successful at the second of the government's aims: increasing earning power. However, recent studies have found only a relatively weak link between increasing firm or sector productivity and wages (Ciarli *et al.*, 2018; Card *et al*., 2018). Efforts to raise productivity will therefore need to be complemented by other policies to ensure that workers enjoy a fair share of any additional value added.

One direct lever that government could pull is the wage floor. The introduction of the National Living Wage (NLW) has been effective at raising low wages, and so far there is little evidence this has come at the cost of employment. Further rises in the NLW over the next couple of years could also help raise productivity. There is some evidence that increased labour costs arising from the NLW have 'shocked' managers into organisational improvements and led to improved productivity (Riley and Rosazza-Bondibene, 2015; Green *et al.*, 2018). However, raising the wage floor has also increased wage compression at the bottom of the distribution, and does little to help workers progress out of low pay (D'Arcy, 2018). It can only be part of the solution.

A second approach is to look for productivity improvements that also improve the quality of work, by promoting the concept that 'good work is good for business', as endorsed by the

Taylor Review (2017). This approach also underlies recent steps to create a Good Employment Charter in Greater Manchester and Good Work Standard in London, again showing the benefit of local leadership. A third approach would be to look at policies that shift the balance of power in wage setting from employers to workers.

Low-wage sectors have not been the traditional focus of industrial strategies. But productivity differences between the UK and its competitors show it is possible to raise productivity in these sectors and contribute to closing the productivity gap. We do not yet know what policies would most effectively raise productivity and improve the quality of work in these sectors. We do know that these sectors will be vital to the government's aim of creating 'an economy that works for all'.

Notes

1. Over half of these (37 per cent of the total) are employed in retail and hospitality: two sectors which Sissons et al (2017) estimate to account for one-third of all workers in poverty in the UK.
2. Here we calculate the reduction in the aggregate productivity gap that would arise if productivity levels in the ten sectors in the UK were equalised with those found in the same sectors in the comparator country.
3. Other work has indicated the important role that management practices play in explaining productivity differences across firms and countries (see Bloom *et al.*, 2012, 2016; Awano *et al.*, 2018; Bryson and Forth, 2018).

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12

The foundational economy and industrial strategy

Julie Froud, Sukhdev Johal and Karel Williams

The most recent UK incarnation of industrial policy – now labelled industrial strategy – identifies raising productivity and earnings as key objectives for the economy, businesses and workers (HM Government, 2017). This is to be achieved by a focus on five 'foundations of productivity' (ideas, people, infrastructure, business environment and place) and by specifically addressing four grand challenges (AI and the data economy, clean growth, the future of mobility and the ageing society). On the face of it, this appears an ambitious mix of what were previously denoted as horizontal and vertical policies, targeting both broad cross-industry issues like training, as well as sector-specific actions to boost particular activities and technologies. Yet, while the industrial strategy white paper seeks to recognise current and looming social and economic issues, its conception of the economy is narrow and its aspirations are largely pinned on next generation technologies in competitive markets. In this chapter we focus on the largely neglected, foundational economy and how industrial strategy priorities could be redefined to better support and sustain the foundational activities that are the infrastructure of everyday life. The chapter first explains the significance of the foundational economy, before discussing how industrial policy could be extended to support and sustain its economic and social contribution; as one of the largest foundational sectors, care is used to illustrate some of the arguments.

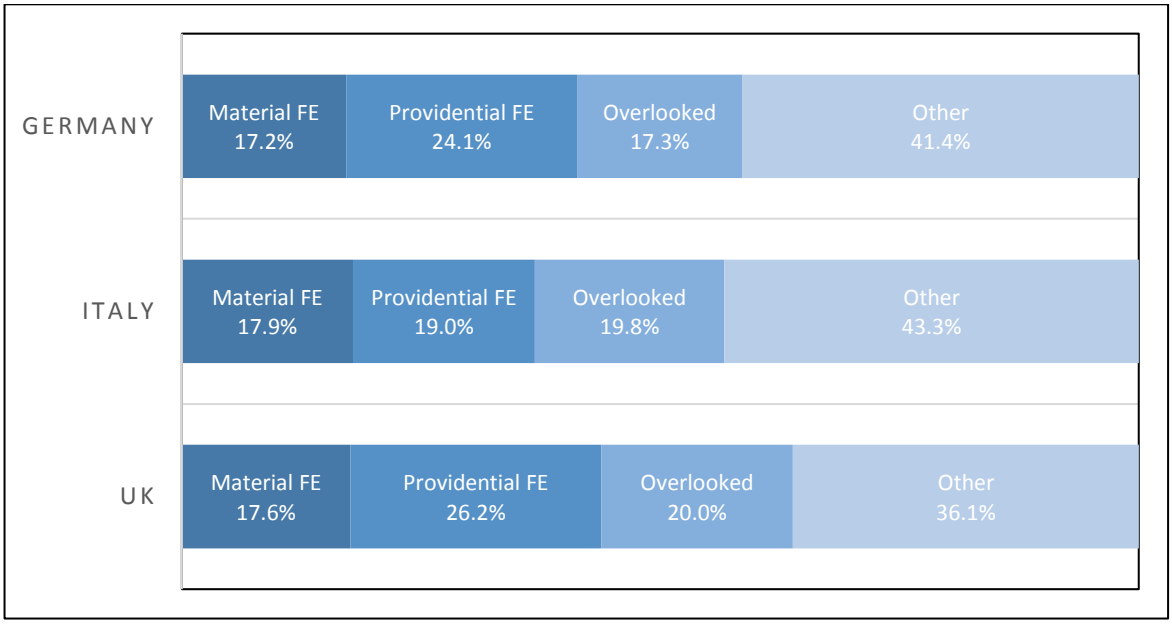
The foundational economy and public policy

Standard industrial policy documents provide a poor guide to the shape of the economy, the scale and role of different activities and their challenges. There is often a sketchy view of those industries that are already politically important – in the UK typically aerospace, life sciences and automotive – and of those where governments would like to see the UK succeeding through innovation in next generation technologies. The 2017 industrial strategy is a little broader in scope than earlier versions, for example in anticipating a demand for new technologies in response to demographic change or demands for cleaner energy. But, as Fothergill *et al.* (2017) note, in allocating funds to R&D, for example, it ignores most parts of the economy. The proposed concentration of resources can be seen in relation to sectoral focus, where the R&D funds will go to 1 per cent of the economy – or 10 per cent of manufacturing – by size. While, in geographical terms, the spend is heavily weighted to parts of the south east, despite stated ambitions to spread prosperity across the UK. In this sense industrial policy largely represents a gamble on the UK succeeding in developing new technologies, in competition with other countries. As well as the uncertain outcome of policy interventions to support UK endeavours in these technologies and sectors, such policies do not engage with most of the activities in the existing economy.

A foundational approach starts in a different place. A simple analysis shows that much of the economy of the UK or other industrialised countries comprises everyday services meeting household and small business needs. These foundational activities are not only important in terms of employment but because they provide the infrastructure of everyday life which can enable households, businesses and other organisations to function (for an introduction to the foundational economy, see Bentham *et al.*, 2013; Foundational Economy Collective, 2018).

We can organise the foundational economy into two categories[1] – providential and material – and also recognise a third, outer group of activities – the overlooked economy.

- The *providential foundational economy* includes classic welfare or universal services like health and education, as well as housing and care. Even where – as in the case of care in the UK - services are not necessarily provided on a universal basis, the state often retains a residual role in accessing or funding these services for citizens. Provision of providential services is increasingly outsourced or marketised but remains heavily dependent on state funding or financing because it is either typically means-tested or free-at-point-of-use.
- The *material foundational economy* consists of the pipes and cables, networks and branches which continuously connect households to daily essentials - like water, electricity, telecoms, retail banking and food - where interruption of supply results in immediate crisis. This category generates a revenue stream from households and, as a result, in recent decades private provision or privatisation of state provision has proved an attractive policy option.
- The *overlooked economy* includes goods and services that are culturally defined as essential, requiring occasional purchase, for example, a sofa or holiday from work, as well as the haircuts, pet products and house repairs etc that are generally low-tech and taken for granted but nonetheless contribute to the quality of everyday life.



Sources: Bundesagentur für Arbeit, ISTAT and ONS

Fig 1 The significance of foundational economy activities by numbers of employees, 2016-17

Figure 1 underlines the significance of foundational economy activities in terms of employment in Germany, Italy and the UK. While there are some differences, in each of these economies the foundational economy (providential and material) accounts for well over one third of employment; when the overlooked activities are added in to create a *foundational economy plus* measure, this accounts for nearly two-thirds of UK employment. It is all the more striking that the focus of UK industrial strategy is generally on (some of) the 'other' category, which includes tradeable goods and services. This part is treated in industrial policy as though it is all or most of what matters in the economy even though it employs only 36 per cent in the UK. In economic terms, using conventional measures such as employment or gross value added

(GVA), foundational activities clearly matter; moreover, providential, material and overlooked activities are relevant in all kinds of places as they are distributed according to population. So, if we take the care sector, around 6 per cent of the UK population is employed in this providential foundational activity and this percentage will be similar across regions.

But, more than this, foundational services are important because access to such services is essential to everyday life; and the quality of these encounters shapes firm and citizen capabilities. Access to decent housing, health and care, affordable mobility and utility services as well as food and credit can be taken for granted but failures of provision rapidly become high profile - whether they are caused by fraud in food chains, collapse of retail banking IT systems, or inadequate care in hospitals or care homes - because these can threaten quality of life in very direct and immediate ways, as well as undermining capabilities. This is the case even in societies where there is high employment and market incomes. While foundational goods and services are essential for civilized life, the citizen entitlement to most of them is limited outside of health, education and basic welfare. Moreover, there is no guarantee that foundational infrastructures will be created and renewed in countries where market incomes are boosting individual consumption.

Policy is therefore important because foundational goods and services are often collectively provided and consumed under a variety of business models and organisational arrangements. Citizens may be able to afford a car, but they are then dependent on the road network, as they are on other material infrastructures that deliver energy, water and communications. Policies related to financing, maintenance and upgrade, charging, quality standards and inspection will all be important to the ways that foundational services are provided, regardless of the extent of private or public ownership. However, decisions on investment and service provision are often fragmented across different departments, agencies and regulators with little overall co-ordination of and accountability for these foundations of everyday life.

The foundational economy has not simply been ignored in mainstream industrial policy – it has been actively undermined through policies of privatisation, outsourcing and so on in the UK and elsewhere (Foundational Economy Collective, 2018). Much of the foundational infrastructure was created through large scale, co-ordinated investment and policy innovation, to offer citizens access to essential material and providential services. But it has been subsequently degraded through both under-investment in renewal and upgrade, and financialisation/marketisation which sought to place services within some kind of competitive market, often with complex contracting arrangements where regulation and inspection have stood in for citizens' interests. Continuing the example of care, care provision has been privatised mainly to private companies of all types from family firms to private equity owned chains; and the scale of formal care is dwarfed by informal care (which is excluded from traditional measures of the economy). In 2014, the ONS estimated that 8.1 billion hours of home care are provided informally by one in ten adults, compared with 318 million of paid hours (NAO, 2018).[2]

The politics of the foundational economy

The foundational economy becomes politically visible in response to crisis or threat, because its intrinsic civic value is seldom recognised by politicians; and, correspondingly, policy responses are often sticking plaster measures intended to address some symptoms which fail to restore or instate sustainable systems of provision and access. For example, care of older people is now a higher profile and pressing policy and political problem in the UK because of demographic change, the dysfunctionality of local authority funding arrangements and the impact of care problems for bed availability in the NHS. The intrinsic importance of care for both givers and receivers has seldom been brought into focus, though this is changing outside Westminster. The Welsh Government's inclusion of care as one of four 'foundational sectors'

in its 2017 Economic Strategy recognises care as a sector that needs specific attention because of its scale and reach and implications for quality of life.

The recognition by the Welsh Government of the foundational economy as 'the backbone of our local communities' (2017: 15) is an important step in a broader reappraisal of what is in the economy and how it matters. It breaks with the Westminster government's partial focus on tradable goods and services or its aspirational focus on new technologies. Backbench movement can also be found in Rachel Reeves' (2018) pamphlet *The Everyday Economy,* which is a first attempt from a Westminster politician to highlight 'the forgotten and neglected everyday economy' when rethinking economic policy more broadly. The political classes are beginning to talk about the foundational economy but that leads quickly to the question of how to do (industrial) policy differently. Our answer is that it requires an approach that addresses not only the instruments of policy but also its objectives and the actors involved in design and implementation.

Objectives

Traditional industrial strategy focuses on combinations of standard economic indicators, including GVA (growth), employment, productivity and exports, sometimes as proxies for more difficult to measure outcomes like innovation. Such indicators can be ambiguous in several ways. They can be stubborn to shift and, even when this is possible, the means of achieving improvements can be problematic. For instance, reducing regional inequalities in the level or growth of GVA has proven difficult to deliver, even if consumption-led growth, underpinned by debt, may be possible at the aggregate level; or, productivity is a complex problem often described as a 'puzzle' and not easily amenable to direct policy action. On the other hand, creating jobs has been easier (albeit not necessarily as a direct consequence of industrial policy) but many new jobs are low wage and/or insecure, often requiring welfare support or failing to provide households with sufficient income for independence. More of the same may be possible but not automatically desirable; thus, policies to more explicitly support the foundational economy require fresh thinking on objectives.

Alternative policies would focus more directly on what matters rather than abstract economic categories; and this would be to secure the supply of foundational services for all citizens while also sustaining the range of businesses and other organisations that provide them. Citizen access and sustaining capable providers are two sides of the same objective and both contribute to the support of communities everywhere. As part of this, addressing job quality in sectors like care can directly improve the lives of carers and the cared for; this runs beyond traditional concerns like productivity which capture inputs and outputs in financial terms, but do not measure relevant quality and effectiveness. Quality outcomes could be improved through job redesign, lower staff turnover or a focus on person-centred care rather than bio-medical tasks and so on; and productivity gains would then be a consequence of better care rather than the immediate objective or the superordinate priority.

Actors

Opening out policy so that it is not simply something conceived of and implemented by small and isolated groups of technocrats allows for recognition of citizen and provider interests, a focus on capabilities and new political alliances to help explore priorities and develop capacity in and between organisations. This is important because much of the foundational economy in the UK and elsewhere is undermined by business models that, for example, promote rates of return to providers of capital over service quality and infrastructure renewal (see, for example, Burns *et al*. (2016) on care). Political input is often limited to the generic promotion of markets and competition, while failing to focus on firm capabilities, citizen priorities or the wellbeing of communities, all of which are more important and more complex than simplistic supply or demand caricatures.

Industrial policy that recognises the foundational economy will need to engage with a broader group of interests to reflect both citizens and providers. Citizen perspectives can help to reflect specific places, as well as priorities for how foundational services are organised and accessed, while provider perspectives broaden out the scope of policy beyond the usual - large company - suspects to include small businesses, non-profits and intermediary institutions that are capable of providing expertise, agency and resources. When the UK economy is dominated by small and micro firms, it is clear that providers and citizens are overlapping categories in that the citizen who depends on foundational services is likely to work in a micro firm which is in the foundational economy or the foundational economy plus, and will itself be dependent on everyday infrastructure.

Conclusion

This new focus will, of course, be as or even more challenging than implementing the old UK style of industrial policy, yet the failure of top-down economic policy to deliver good outcomes for a large part of 'the economy' suggests that alternatives are worth consideration. So, simply recognising sectors like care as important does not constitute a policy that can be implemented; but, working with a range of organisations and people involved in providing and receiving care could allow development of different ways to commission care and support a diversity of business models in its local provision. In this sense the novelty is not limited to the focus of policy but to the possibilities of different actions and experiments.

Recognising the importance of the foundational economy and its relevance for rethinking industrial policy, therefore, requires a series of steps. The first involves recognition and understanding of the history, significance and challenge of the foundational. The second involves policy innovation in terms of objectives and actors to allow creativity about what policy can be. It is time to move beyond narrow conceptualisations of both economy and policy.

Notes

1. See https://foundationaleconomy.com/introduction/ for further discussion.
2. Similarly, it is estimated that grandparents provide around 40 per cent of childcare in the UK (Department for Education, 2012).

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13

Equality-led development as part of a comprehensive industrial policy

Özlem Onaran

Productivity in the UK is lower than other developed countries, and the Great Recession has made this dismal performance even worse. This chapter argues that a comprehensive industrial policy for the UK has to integrate industrial relations, because the low-road labour market policies which characterise the UK political economy lie at the heart of the so-called productivity puzzle.

Given the investment pattern in the UK, this should not be seen as a puzzle at all. Among developed countries, the UK also has one of the lowest private investment rates as a ratio of GDP. At the core of this development lies the missing link between profits and investment. Rising inequality and financialisation have been the main reasons behind this missing link – hence the major brakes on investment, growth, and productivity. The focus of this article is the impact of rising inequality on investment, and the policies which might enable equality-led development as part of a comprehensive industrial policy.

Inequality, investment and productivity

Productivity is conventionally defined here as output per employee, with two components. One is simply related to demand, as actual output is demand-driven. The second component is about potential productivity, which is determined by technological progress, which is in turn affected by both investment and wage costs. Private investment responds to demand and public infrastructure, rather than profitability alone. The UK's reliance on low-wage industries not only leads to lower demand, but also makes firms reluctant to invest due to a tendency to exploit low labour costs.

In the last four decades, inequality has increased substantially, and the share of national income that goes to wages has fallen dramatically – from 74.1 per cent of national income in 1975 to 66.8 per cent in 2017.

The decline in the wage share was accompanied by weaker growth in output. While wage stagnation has fuelled increasing profits as a share of GDP, it has led to bleak prospects in terms of demand, which in turn has discouraged investment – despite high profitability. Although this is a puzzle from a neoclassical point of view, which generally sees wages as a cost to business, it is not unexpected for post-Keynesian or post-Kaleckian perspectives, which highlight the dual role of wages as both a cost item and source of demand. It is clear that a lower share of wages in national income leads to a lower GDP in most large countries, including the UK (see Onaran and Obst, 2016; Onaran and Galanis, 2014; Obst, Onaran and Nikolaidi, 2017).

Hence the demand regime can be described as 'wage-led'. On the one hand, a pro-capital redistribution of income leads to lower domestic consumption demand. As the majority of middle- and low-income people depend on wages, a decrease in the wage share implies a redistribution of income from middle and low-income households to high-income households, who spend a lower share of their income than people at the bottom. Therefore, a decrease in the wage share decreases household spending.

On the other hand, the stimulus to private investment due to higher profits remains weak (or even absent). Despite increasing profit share in GDP, private investment has been weak in the UK since the 1980s, due to the substantially negative impact of the fall in the wage share on demand (Onaran and Obst, 2016; Obst, Onaran, Nikolaidi, 2017). Firms directed their profits to financial speculation in the absence of a healthy growth in demand.

This is worth exploring further. Financialisation is a major source of the missing link between investment and profits. Non-financial corporations' profits devoted to real investment declined from about 80 per cent in the 1980s to less than 50 per cent in the last decade, while their financial assets increased substantially (Tori and Onaran, 2018). High dividend payments and surging financial activities have crowded out private investment in physical machinery and equipment. The physical investment in manufacturing industries suffered even more, experiencing a finance-led deindustrialisation. In particular, for the pre-crisis period in manufacturing we find that the adverse effects of financial payments and financial incomes almost entirely offset the positive impacts due to increasing sales and retained profits (Tori and Onaran, 2018).

The much celebrated impact of wage stagnation on external demand, that is, higher net exports, is rather weak in the UK, and the impact is diminished substantially when all countries implement the same international competiveness policies based on labour market flexibility (Onaran and Galanis, 2014; Onaran and Obst, 2015). This leaves the UK with the net negative impact of rising inequality on domestic demand, and explains why Britain's export performance is poor, despite falling labour costs. International competitiveness is more about productivity than labour costs, particularly in a world in which a 'race to the bottom' in labour costs has been normalised.

In the aftermath of the Great Recession, the lack of a full recovery in wage income continues to be a drag on household confidence and demand, which in turn discourages business investment in the absence of a healthy growth in domestic demand. In the past, the UK relied on household debt to maintain consumption levels in the absence of growth in wages. After the crisis, recovery is still based on the same shaky grounds, as it is driven by a massive increase in private household debt and will remain fragile to any increase in interest rates in the future.

Overall, the mixture of financialisation and rising inequality has created an increasingly fragile mode of production, with stagnant demand and investment. In the absence of strong investment performance, and with stagnant demand, it is no wonder that Britain is in a phase of low productivity and low potential growth. The negative effect of inequality on growth is also confirmed by recent research by international organisations such as the OECD and the International Monetary Fund (see IMF, 2009; Dabla-Norris *et al.*, 2015; Ostry *et al.*, 2014; Foerster and Cingano 2014). The IMF, after promoting 'trickle down economics' for several decades, recently became outspoken about the negative impact of personal income inequality on growth.

However, the IMF's focus is on only personal income distribution, and neglects the inequality between labour and capital. Moreover, the effects work only over longer periods of time. For example, it links increasing inequality to lower growth via a worsening of access to education for low-income households, growing trade imbalances and a higher probability of financial crises. In contrast, the negative effect of higher inequality on demand, as emphasised by the research cited above, could lead to lower growth immediately, due to demand effects of wages, as well as in the long-run, due to supply-side effects.

High-road labour market policies and public investment

The UK needs to adopt a 'high road' economic development strategy that boosts demand, investment and productivity by tackling inequality. But what explains rising inequality, and more specifically the decline in the labour share? Strengthening the bargaining power of labour must be at the heart of any progressive agenda, since changes in bargaining power between labour and capital explain more than half of the decline in the labour share (Guschanski and Onaran, 2017). A strong deterioration in union density, and retrenchment of the welfare state, are central components of this trend.

Other factors are relevant too. Globalisation has had an important effect on the rise in inequality. Offshoring (that is, the relocation of production to low-wage countries), rather than migration, is the most important driver of the negative impact of globalisation according to the research cited above. Technological change has a negative effect due to the automation of routine tasks; however, it does not alone explain the strong decline in the wage share, specifically not for low-skilled workers. Crucially, labour has not benefitted as much as capital from the technological advancements due to the decline in workers' bargaining power.

The increase in female employment in the absence of strong collective representation of women and the enforcement of equal pay legislation also contributes to the fall in the labour share. Finally, and importantly, the research also finds a negative effect of the 'shareholder value' orientation and increasing financialisation on the bargaining power of labour, and therefore the labour share in the UK (see Guschanski and Onaran, 2018).

This effect is worth detailing here. On the one hand, the orientation towards shareholder value has increased the dominance of shareholders' demands over workers' demands. On the other hand, increased domestic and global financial investment opportunities have increased the fall-back options of non-financial firms, in terms of both geographic location and financial assets. Financialisation and increased fall back options of capital, in particular with respect to tax competition between different jurisdictions, have also affected the composition of public spending and taxation (Onaran and Boesch, 2014), harming productivity growth negatively by reducing the generosity of social security (which contributes to the decline in the bargaining power of labour) and scaling back public infrastructure investment.

Setting up institutions for a 'level playing field' is the key to reversing inequality. The negative effects of openness, global integration and technological change on inequality are not an unavoidable destiny, but rather an outcome of current domestic and international policies, including persistent austerity and precarious employment practices in the name of labour market flexibility.

Primarily, tackling income inequality requires a restructuring of the institutional and policy framework in which wage bargaining takes place, ensuring that the bargaining power of labour is more in balance with that of capital. Specifically, this requires labour market institutions and policies that address the bottom, middle and top of the income distribution, including:

- A stronger bargaining power of labour via an improvement in union legislation, by re-regulating the labour market, banning zero hours contracts, widening collective bargaining and ensuring an active role for the state in institution-building to facilitate sectoral bargaining structures.
- Increasing statutory minimum wages and putting processes in place for the incremental increase of the minimum wage to the level of a living wage; expediting this process through the use of public contracts.
- Improving and enforcing equal pay legislation and women's representation in collective bargaining;

- Enforcing pay ratios via public procurement criteria between the top paid and lowest paid at companies, to moderate high pay.

The impact of increasing the wage share on growth and investment is amplified if it is combined with a policy of progressive taxation and public investment. Economic modelling indicates that a 1 percentage point increase in the wage share, combined with an increase in public spending of 1 per cent of GDP (around £20bn per year), an increase in the average tax rate on capital of 1 per cent, and a cut in the average tax rate on labour income of 1 per cent, would lead to an increase in GDP by 3.37 per cent (Obst, Onaran and Nikolaidi, 2017). Private investment would increase as well, since public investment complements private investment. Expectations of future sales, rather than immediate profits, boosts investment and higher wages stimulate productivity.

Re-orientating macroeconomic policies towards ensuring full employment is also crucial in order to rebalance both power relations and the structure of the economy. Public spending in public services and social security, ending public sector pay freezes, and restoring and strengthening the welfare state increase the social wage, and thereby the bargaining power of labour.

Public infrastructure investment, in particular in green renewable energy and public transport, is less disputed as a key ingredient of an industrial policy. We also need to increase awareness that public spending in health, social care, education and childcare, as key social infrastructures, are as important as physical infrastructure (UK Women's Budget Group and Scottish Women's Budget Group, 2015). If industrial policy is to be comprehensive, inclusive and equitable, investing in the care economy must be a central part of it.

Industrial policy should also address concerns about the negative impact of automation and technological change on jobs and inequality. A key policy measure to maintain equitable development with full employment along with higher productivity is a substantial shortening of working time, in parallel with the historical growth in productivity. Reduction in weekly working hours should take place without loss of wages, particularly in the case of low and median wage earners. This implies an increase in hourly wages as well as the wage share.

This is not an unrealistic target. Compared to the nineteenth century, we are all working part-time today. But the shortening of working hours has slowed down since the 1980s, with the notable exception of France, despite the fact that the shortening of hours over previous decades has been associated with higher hourly productivity (Bosch and Lehndorff, 2001). More equal countries have shorter working hours (Schor, 2010). Shorter working hours not only create more growth, but also increase the job creation potential of a given rate of growth. The UK and the United States have much longer hours than Germany and the Netherlands (Schor, 2010). This means that an employer in the UK needs more demand than a German employer to create an additional job. Reducing working hours is also a way of combining full employment and low carbon emission targets.

Last, but not least, a process of *de*-financialisation in the non-financial sector is a pre-condition for a stable and vigorous investment performance. This would require greater regulation of companies' non-operating financial activities, as well as financial regulation (Tori and Onaran, 2018). Instead of lowering corporate taxation, we need to develop corporate governance policies to create incentives for long-term investment and disincentives for short-term speculation by, for example, setting a higher rate of taxation on corporate profits which are not invested. Similarly, managers' short-termist behaviour, and decisions exclusively aimed at maximizing dividends distributed to the shareholders, should be disincentivised. Prohibition of share buybacks, decoupling executives' remuneration from share prices, and including representatives of employees and the wider public on company boards would help to rebalance our economy (see Guschanski and Onaran, 2018).

Conclusion

The empirical evidence regarding the vicious circle of inequality, sluggish investment and productivity hints at the need for a coordinated mix of labour market policies targeting the bottom, middle and top of the wage distribution to reverse inequality. This would be embedded in a broader macroeconomic and industrial policy framework, alongside action on financial regulation and corporate governance. Only then will investment flow, and productivity follow.

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14

Care as investment in social infrastructure

Susan Himmelweit

It may be surprising to see a section on care in a book on industrial strategy. How care is provided is rarely acknowledged to have strategic importance and tends to be seen as more a part of a nation's welfare and family policy than its industrial structure. However, that view fails to recognise that care and the capabilities that it enables are part of the infrastructure upon which the reproduction of society, the health of the economy and the quality of all our lives depends. Policy that ignores effects on care not only may lead to bad outcomes for people and society as a whole, but also may undermine its own aims for industry and the economy as more conventionally understood.

Although the basic capabilities necessary to function in particular societies vary, in all there are people, including children, adults with disabilities and the frail elderly, who need help from others to have even those basic capabilities. Only through the support of others are such people able to choose to be and do what others can do unaided, and it is society's care system that provides or fails to provide such support. Some support can be provided wholly or in part by physical aids, such as walking sticks and spectacles, and new technologies might develop products able to meet more needs in the future. However, there will always be types of support for those with reduced capabilities, both now and in the foreseeable future, that can be provided only by services, through personal hands-on-care.

Most care is currently provided unpaid within families and communities, in some cases reducing considerably the capabilities of those who provide that care. However, there is a growing industry of paid care provision across both public and private (for-profit and non-profit) sectors. Indeed, with the increasing employment of women, the paid care industry is one of the fastest growing in most advanced economies, and one upon which, along with unpaid care, all industry depends both for its future labour force and to retain its current one. It is therefore high time that industrial strategy recognised the strategic importance of both paid and unpaid care to its concerns.

The aims of industrial strategy

Like all policy, the overall aim of industrial strategy should be to improve well-being, but as 'strategy' it needs to have a particular focus on sustainability and future well-being. Such an aim is often put in terms of future growth paths, now increasingly qualified as 'sustainable' or 'inclusive' growth, recognising that growth *per se* is neither of these things. However, retaining GDP growth even as a qualified goal is distorting and biases strategy away from aspects of well-being not captured in GDP. This is for two reasons. First, GDP counts only the output of paid labour or the production of goods that either were or could have been transferred to others. It does not count the output of unpaid labour that goes into services, thus in particular misses the benefits of all that unpaid care upon which economies depend. Second, GDP is not a measure of well-being. An economy's GDP is measured as no higher for its population being better cared for, healthier or better educated; all that matters is how much it produces. GDP therefore does not measure much of what we should be interested in.

We need a better measure of well-being around which to develop industrial strategy. The capabilities approach, the basis of the UN's Human Development Index (HDI), measures well-

being by what people are enabled to be and to do. Using such a measure, industrial strategy would focus on the equitable and sustainable development of human capabilities, a goal for developing strategy that properly recognises the contribution of both paid and unpaid care to our current and future well-being. There have been a number of attempts to develop finer grained measures of capabilities than those used in the HDI, which could be called upon by the Office of National Statistics in developing indices to use in policy assessment (Alkire, 2008; Anand and van Hees, 2006).

Investment in infrastructure

Such an industrial strategy would evaluate spending on care as a form of investment in social infrastructure, balancing what it does to improve future capabilities against its current costs. It is *investment* insofar as it is spending from which the benefits are intended to last beyond the current period. And it is investment in *infrastructure* insofar as the services provided have a public good character, whose benefits are experienced beyond their direct users, and therefore if left to the market will be under-provided (that is, only to the level and quality that the direct users choose and are able to purchase).

The case for there being long-term and public good benefits vary for different types of care. The investment case may be stronger for the care of younger people but, insofar as the care of people of any age brings improvements in capabilities that are cumulative, at least some portion of expenditure on it should be seen as investment. And there is certainly a strong public good case for having reliable systems of care to enable everyone to be confident that not only their children and their parents, but they themselves will be looked after well when they are older. All these effects can be quantified in GDP terms but, as argued above, that is not really the point. A better measure of the gains of any investment, and hence also of its costs, is by its effects on capabilities. Thus, funding a care facility through taxes on people whose low incomes constrain their current capabilities might be a bad investment, even if it increased some people's future capabilities. But funding a facility whose cost in terms of current capabilities were smaller, perhaps because more equitably spread, or future capability gains greater or more widely spread, might well be a good investment.

The benefits of spending on care are widely underestimated, largely because it is seen as welfare spending whose long-term effects are rarely assessed. Current accounting rules enshrine the existing bias, by counting expenditure on physical assets alone as investment coming from the capital account, while all expenditure on care, even though it builds up human and social capital, comes from the current account. These accounting rules are quite consistent with the way GDP is calculated, by counting as assets only what can be transferred to others, and thus excluding human or social capital. It is the same problem that makes GDP such a poor measure of well-being (indeed the System of National Accounts, on which these accounting rules are based, emphasises in its handbook (SNA, 2008) that GDP is not meant to be a measure of well-being).

Not counting the investment aspects of spending on care and other forms of social infrastructure as investment results in capital account spending being entirely biased towards physical infrastructure, and current account spending on care being less than it might be, through having also to cover any investment spending on social infrastructure. This matters in terms of public discourse, but matters even more when enshrined in fiscal rules that treat investment and current account spending differently (a distinction which would be maintained by the Labour Party's (2017) proposed Fiscal Credibility rule).

Treating spending on care as investment in infrastructure is a very different approach to current government policy on care, which, except with respect to childcare, is focused on meeting a minimal (and rapidly falling) set of obligations to provide care to those with bodily care needs, with little regard to the development of any wider set of capabilities. This has led

to a system crippled by failure to invest and a counting of immediate costs, widely recognised now as being in a crisis state. Massive investment in our care infrastructure is now needed – not just to provide care for the 1.3 million people not getting the care they need but also to transform the way care is delivered.

Problems with the current approach

In pre-industrial times, care for those with families was carried out like other subsistence work within the home, under a gender division of labour that allocated it mostly to women, along with what we now think of as healthcare and much other unpaid domestic work (and then as now, there was some community provision for those without families, then usually through the church). Through industrialisation, many previously domestically produced products have become more efficiently provided through mass production and are now bought with wages earned through labour outside the home. Historically, this outsourcing was rarely a purely market driven process, with the state intervening at various stages to deal with the difficulties of commodification, including through employment regulation, food and other product standards, nationalisation (for example, of healthcare) and other forms of industrial policy. Because of some specific properties that make its commodification problematic, care is effectively the current, and perhaps final, frontier of that process, and one in which its quality really matters

Care is a relational activity, in which the quality of the relationship between care giver and receiver is crucial. Relationships cannot be spread over too many people without reducing their quality. This limits the scope for reducing the time required to provide good quality care (though there is scope for quality improvements by, for example, reducing the time spent on associated activities). Although with smaller families there may be some scope for both time-saving and quality increases through the professionalisation of care, the continual cost-cutting that productivity increases through mass production and mechanisation have provided for other consumption goods has not been possible to anything like the same extent in care.

This has implications for how good quality care can be provided. Without the scope for productivity increases, employers can cut costs in care only by employing fewer people, or by employing more vulnerable or less well-qualified staff who can be paid less – inevitably leading to lower quality care. Difficulties associated with doing either of these in the public sector was one of the main drivers for privatisation. Privatisation was supposed to harness consumer choice to improve quality but, given the difficulties of achieving the intended cost reductions, has in practice both lowered care quality and workers' working conditions and pay. Although austerity intensified it, this process was going on well before the financial crash.

Consumer choice cannot adequately guarantee the quality of care provided by profit-seeking institutions. For the market to police quality and provide value for money, consumers need to be well-informed, able to make choices and put them into practice, and mistakes need to be costlessly rectifiable (Blank, 2000). None of those conditions are satisfied for care: the quality of relationships is hard to assess without experiencing them, choices are often made in emergency situations from a limited set of available alternatives and changing provider is costly since new relationships need to be built. The key conditions for the successful exercise of consumer sovereignty are simply not met in the market for care. As a result, care that is produced for profit tends to be of poor quality, and the inevitable scandals that occur are not so much exceptions as the tip of an iceberg of systemic failure.

This is not to say that all existing for-profit providers are delivering low quality. Some do an excellent job in poor conditions. But it is not competition in the market that has ensured or enabled them to do so. Given the pressure to cut costs they manage to provide high quality care *despite* the need to make a profit, rather than because of it, and often are private-for-profit enterprises only because that is the easiest institutional form currently available.

Although they often provide higher quality, small providers have difficulty competing financially. This is because the industry is increasingly dominated by large chains that are simply too big to be allowed to fail, whose financial engineering and cost cutting to achieve high rates of return in an essentially low-risk industry is a major contributor to low care quality (see Burns *et al.*, 2016).

A future vision for care

Industrial strategy focused on increasing the nation's capabilities would do so both by closing the gap in healthy life expectancy to reduce the need for care, and by enabling high quality caring services to be provided for all who continue to need them. This strategy would involve many industries in improving the capabilities and life chances of the population as a whole, and would require specific developments in the care industry.

These developments would be overseen by a National Care Service, closely allied to the NHS and the education systems, providing care free at the point of need. The National Care Service would locate overall responsibility for care provision in the public sector, but could fund some provision by non-profit organisations. It should aim to reduce (eventually to zero) current reliance on private for-profit services, which for reasons outlined above, and with some notable exceptions, have a tendency to deliver minimal quality care. There is much scope for institutional innovation here, including co-operatives of care-users and care-givers. A key aim should be a transformation of the UK's currently low-aspiration care provision. In Denmark, for example, all care workers are trained to see their job as helping care recipients learn, even those who work with the elderly. In other countries, care workers share their first year of training with health workers.

Taking an overall approach focussed on capabilities is a challenge, particularly in elder care, where it requires a much greater change from existing practice than in the care of younger people with disabilities or childcare. It will require completely new forms of training, and the employment of appropriately paid and trained staff. The latter will be necessary anyway, because the care industry already has severe recruitment and retention problems, and in parts of the country is largely staffed by immigrants (often with skills, but unrecognised ones), which may no longer be possible after Brexit. Up to now, care work is too often a job of last resort, for those who cannot get a 'proper' job, who then must put up with terrible working conditions, especially if they also need accommodation. This should be transformed so that care work is well-paid, skilled work under good conditions, that sufficient numbers of both men and women are proud to choose as a career.

Investing in paid care can also increase the capabilities of those who currently provide unpaid care, by enabling them to do other things with their time. Investment in care should also mean much better support, with both money and services, for those who continue to provide unpaid care, so that their capabilities are enhanced rather than reduced by providing care.

There is also scope for thinking about care service provision as part of a solution to other social problems. For example, domiciliary services could be run from local care centres, like some that exist in France, that include a day centre and sheltered housing around a residential home. Such coordinated local services would enable people seamlessly to receive the level of care they need while retaining and developing capabilities and relationships in their own community. And such centres, if made sufficiently desirable, should have the side effect of freeing up under-occupied accommodation and so contribute to reducing the housing shortage. They should also help to keep older people active for longer, safe in the knowledge that the level of care that they need in the future will always be available without disrupting their current social relations and support.

Similarly, community centres could combine childcare for pre-school children with other children's services, as well as training courses and evening events for adults – effectively SureStart centres for the whole community. They could be combined with the local care centres, so that all ages would mix in them. In this way, a focus on care also means a focus on communities.

Planning, more generally, should routinely consider impacts on capabilities, including on how care is provided, instead of assessing costs and benefits in terms of market outcomes which accord little value to those needing and providing care.

First steps

Not only the benefits, but also the costs of any investment should be evaluated in capability terms. This means raising revenue in ways that reduce capabilities as little as possible, for example, by progressive taxation on the assumption that lower incomes constrain capabilities more than higher incomes. A capabilities-based measure to be used in this way would take time to be developed and find acceptance. In the meantime, a cruder measure of investment in social infrastructure, evaluating effects on the public finances on the assumption that future society will be at least as caring as today's, could be used in policy development.

In such terms, the initial costs of setting up such a National Care Service would undoubtedly be expensive. However, costs would reduce in the long run, since capabilities would increase and thus the need for care would fall. Further, some of those costs are inevitable since the currently under-funded social care system already cannot recruit the staff it needs, and Brexit will only exacerbate its problems.

And even in the short-term there are employment gains that would reduce costs as well as increasing capabilities. Research by the Women's Budget Group has shown that investing in care generates more jobs than some other types of infrastructure investment. For example, up to 1.5 million jobs could be created in the UK if 2 per cent of GDP were invested in care industries, compared to 750,000 for an equivalent investment in construction, the usual focus of physical infrastructure investment (De Henau *et al.*, 2016). Furthermore, unlike most other forms of investment spending, investment in care also increases the labour force, by enabling those currently doing unpaid care to take jobs or increase their level of employment (and hence their capabilities in many cases). Thus, even in times of near-full employment, investment in care expands the economy and thus its tax receipts.

The balance of current costs versus increased tax receipts depends on the type of care provided, whether those who currently provide it unpaid would be likely to take employment and the current system of state subsidies it attracts. It will also depend on the quality of care provided (the above estimates of jobs generated assume that care workers remain on current rates of pay; however, initial results suggest that paying care workers considerably better would still leave the highly labour-intensive care industry a far better generator of jobs than construction). Childcare provision is likely to have the largest effects on labour supply, and around 90 per cent of the annual cost of providing universal childcare could be recouped from increased tax revenue from additional earnings (including indirect taxation from increased consumption) and reduced spending on social security benefits (De Henau, 2016). This is without counting the gains from the increased capabilities of either better cared-for children in the future or their mothers retaining their labour market skills.

Conclusion

A focus on capabilities provides a rationale for including many forms of "welfare" provision within industrial strategy. The focus here has been on care for both children and adults. A reformed care sector, based on universal provision, innovative institutional change and the

professionalisation of care work could transform the lives of both those who need care and those who currently care for them. Investment in care would both create jobs and improve job quality, while delivering a much needed public good and, through increased capabilities, improving quality of life for all.

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15

The case for Universal Basic Infrastructure

Tom Hunt

At its simplest, industrial strategy is about managing the economy; more expansively, it is a long-term strategic plan to realise the potential of the UK's people, places and industries. But industrial strategy cannot only be about building on economic strengths, as it is expected to do, it should also focus on repairing the weaknesses in the economy that hold people back. In the UK, this means, among other things, addressing the social and spatial inequalities which make the UK the most geographically unequal EU economy.[1] This chapter focuses on infrastructure and argues that unless the UK's new industrial strategy seeks to upgrade the UK's infrastructure, it will not tackle those inequalities nor enable the potential of the UK's people, places and industries to be fully realised. But it argues that for this to happen we need to think about infrastructure differently. The chapter explores and advances an argument for Universal Basic Infrastructure; a guarantee for all citizens of the provision of high quality hard and soft infrastructure (Industrial Strategy Commission, 2017).

A year after the publication of the government's industrial strategy white paper, the case for Universal Basic Infrastructure has become more pressing. In the eighth year of austerity, the effective bankruptcy of Northamptonshire County Council has highlighted how vulnerable the provision of public services has become in some parts of the country, particularly outside of large conurbations. Similarly, the question of how to help struggling towns (such as Blackpool, an example discussed below) which have both high levels of deprivation and poor economic performance continues to rise up the political agenda. An industrial strategy that commits to upgrade both the UK's hard and soft infrastructure can be part of the solution for overcoming the challenges that people in places like this face.

Doing it the hard way

The traditional conception of infrastructure refers to 'hard' assets: the long-lasting and capital-intensive fixed physical assets that comprise the systems for our transportation and the provision of energy, water, and mobile and fixed-line communications. Hard infrastructure enables us to light and heat our homes and workplaces, get from A to B, communicate and share knowledge. This physical understanding of infrastructure is widely shared by policy-makers and the public, and comes adjoined to a similarly shared recognition that there are serious deficiencies – and serious discontent with – these fundamental systems. The last few months alone have provided plenty of examples:

- The on-off – and now seemingly *on* – plan to electrify Northern rail lines, amidst an ongoing need for greater rail capacity and growing concern about declining bus service provision (Campaign for Better Transport, 2018).
- The potential imposition of regional hose-pipe bans whilst an estimated three billion litres of water leak from the network per day (Jeffay and Webster, 2018).
- Analysis showing that parts of many large cities can only receive broadband at speeds below the 'minimum standard' threshold (Smith *et al*, 2018).

All things being equal, all places in the UK would be supported by high quality hard infrastructure systems, but things are far from equal with stark regional imbalances in the quality of infrastructure and the amount spent on maintaining and upgrading its networks.

Transport spending is one of the most obvious ways to demonstrate this. Coyle and Sensier (2018) show how the methodology used by the Treasury to appraise infrastructure projects encourages investment in already highly productive areas such as London and the South East, thus widening regional imbalances. New analysis by IPPR North lays those imbalances bare: from 2016 to 2017 public spending on transport in London rose by 11.4 per cent, compared to a 3.6 per cent fall in the north of England (Raikes and Corrigan, 2018). Over the last decade, per capita transport spending in London was an average of £708, 2.4 times higher than in the north of England (£289).

When regional disparities in hard infrastructure are highlighted they generate a sense of outrage that the unfairness both exists and because it is perceived, rightly or wrongly, to be tolerated by policy-makers. That outrage is grounded in a recognition that substandard infrastructure can have a severely limiting effect on the earning power of individuals, public services and private businesses. If a business has slow broadband speeds it hampers their ability to function in our digitalised economy. Getting to and from work in a town with poor public transport and congested roads becomes a challenge and puts off business and tourist visitors.

But it is not only hard infrastructure that holds people back. Poor health, poor educational outcomes and poverty all limit people's ability to acquire and maximise their knowledge and skills, and work against efforts to improve living standards and create growth and prosperity. If a prosperous society is one where all can contribute and flourish then the 'soft' infrastructure of social institutions that invest in human capital - universal and lifelong education, health and care services – should be brought fully into a definition of infrastructure.

Universal Basic Infrastructure

If industrial strategy aims to enable all people, places and industries to realise their potential, then Universal Basic Infrastructure is about enabling the conditions in which this can happen. It is the state setting out a contract with its citizens to provide an environment where everyone has a guarantee of being served by both high quality hard infrastructure and access to high quality universal services.

To meet this guarantee, government – through its industrial strategy – should set out which services and networks comprise universal basic infrastructure and how they are to be judged to be high quality. The government's recent moves to first set a legal universal service obligation for broadband speeds and to then set a target that ultra-fast broadband should be provided for all within fifteen years is a good example of how infrastructure standards can be established and shows what the consequences can be of doing so (HM Government, 2017; 2018). The setting of this new target led BT to switch its investment plans from upgrading its copper line network to introducing three million new full-fibre lines (Fildes, 2018). Similar regulatory standards and targets could be identified for other fixed physical networks. In regard to universal services, ensuring all citizens have access to high quality education could lead to targets being set that include raising attainment outcomes in below-average local authority areas, or ensuring that pre-school children's services or adult education classes are provided in all places.

A Universal Basic Infrastructure guarantee therefore provides a set of standards by which to judge local infrastructure against: what services are missing or substandard, and what mechanisms are needed for doing so. Specifying the components of a Universal Basic Infrastructure guarantee would also highlight where stark spatial inequalities exist and demand greater political efforts to reduce and eradicate them.

Viewed in this way hard and soft infrastructure become two sides of the same coin: turning around poor educational outcomes in a town, city or rural area, for example, should be seen

to be as important as fixing substandard transport connectivity to and within that locality. Infrastructure shifts from being simply seen as the underpinning services and networks in our lives to being the building blocks that enable people to develop the capabilities needed to lead a life they would find meaningful. Over time this approach could begin to shift the perception that new physical infrastructure must always be built to fix, boost and grow an economy.

Considering infrastructure from a Universal Basic Infrastructure perspective would also encourage a rethink about how local economies and local service provision are viewed. Social policies for example, have direct implications for the economy and should not be seen as separate from industrial strategy or economic policy more broadly. From this perspective, the consequences of Northamptonshire County Council going bankrupt would be seen as relevant for economic development and within the purview of industrial strategy. In August 2018, the Council announced plans to close 21 of the county's 36 libraries; children's services are expected to be cut; and users of adult social care services face service cutbacks and increased charges and fees. Bus subsidies have already been removed and road repairs are suspended (De Freytas-Tamura, 2018; Butler, 2018). If citizens are no longer guaranteed access to high quality education service, whether pre-school, primary, secondary or tertiary, or if mental and physical health services and social care systems are cut back, then the infrastructure guarantee between them and the state is breached.

By not seeing hard and soft infrastructure in dichotomous terms, new space opens up for rethinking how UK infrastructure can be provided, managed and owned. As an example, the reforms to decarbonise the energy economy recommended by the Industrial Strategy Commission could have a local devolved dimension. A low-carbon energy network that was managed and owned locally, and where energy was generated locally, could be seen not just as a utility but as a key service for citizens (for further discussion of this issue, see Hunt, 2016). The establishment of locally run infrastructure depends upon strong local leadership, the devolution of new powers but also, crucially, on the funding for local and regional authorities.

As more local authorities are predicted to experience similar financial crises in the coming years the level of public spending for local authorities and universal services is of direct consequence for industrial strategy. To meet a guarantee of Universal Basic Infrastructure it is likely that greater investment will be required. This could be provided through the establishment of a public infrastructure bank, by granting borrowing powers to local and regional authorities to finance investment themselves, and through greater direct investment from central government itself. The specification of a Universal Basic Infrastructure guarantee should also encourage businesses that provide privatised infrastructure services – such as rail operators, bus companies and public utility providers – to invest in upgrading their services. This could be capital intensive for business but the incentive for investment would be to avoid penalties if the appropriate service standard was no longer met.

A town the economy forgot

Whilst national guarantees are needed, bespoke local solutions will be required. Blackpool – a town 'the economy forgot' – is a case in point (O'Connor, 2017). The Lancashire town has come to epitomise the high levels of deprivation increasingly found in UK coastal regions. The decline of its one comparative advantage – tourism – following the development of new business models and new technology in the industry, has led to declining earnings and rising poverty. It is the fourth most deprived area in England and in 2017 residents had the lowest residence-based median gross annual earnings within Great Britain (Lancashire County Council, 2018a; 2018b). Unemployment is above the national average with hidden unemployment (people not seeking work but 'hidden' on incapacity benefits) far higher (Beatty *et al*., 2017). The town has the highest number of drug deaths per head of population and had the lowest male and female life expectancy in England for the 2013-15 period (Elliott, 2018). This is a town that 'exports healthy skilled people and imports the unskilled, the unemployed

and the unwell' (O'Connor, 2018) and where employment for many is low-paid, low-skilled, insecure and with little prospect for career development (Bloodworth, 2018).

Applying a Universal Basic Infrastructure framework raises two questions: to improve life in the town, do Blackpool's residents have access to high quality local services and networks, and if not, how can the situation be improved? Education offers an example of an appropriate place-specific answer. In 2016, GCSE results in Blackpool were among the lowest in England, but that year the local authority was selected as one of twelve Opportunity Areas for education across the country (HM Government, 2016). A programme of targeted investment and support has seen local schools, colleges, businesses and community organisations develop a local plan with the aim of raising attainment and improving post-education opportunities for children and young people in Blackpool (Department for Education, 2017). This is the kind of long-term place-specific policy intervention of which much more is needed within industrial strategy. Similarly, the local council and the Local Enterprise Partnership have also identified that Blackpool has specific hard infrastructure needs and are, amongst other things, investing to improve the tram system (Lancashire Enterprise Partnership, 2017).

To turn around Blackpool's deep-set social and economic problems, place-specific policy interventions are essential but so too is extra investment. However, this same argument can of course be made for many other areas: so why does Blackpool deserve new funding? To answer this, it is useful to consider the nearby Lancashire town of Preston where an economic development strategy led by the city council and other anchor institutions has garnered significant attention in recent years.

The 'Preston Model' takes a 'community wealth building' approach to support the development of locally-owned businesses and co-operatives; ensure that the proceeds of growth are invested locally and that local services are in democratic collective ownership (Chakrabortty, 2018; Centre for Local Economic Strategies, 2016). In the face of declining annual budgets, Preston's leaders have acted innovatively and provided an example for other councils to follow. However, unlike Preston, Blackpool is a unitary authority with responsibility for the provision of more services, and it is a far poorer local authority area. High levels of deprivation place great pressure upon local services, and the most deprived local authorities have experienced the biggest cuts to their budgets (Innes and Tetlow, 2015). Notwithstanding the efforts of local political leadership, a local authority's level of deprivation and its national funding allocation determine to a great extent a local authority's ability to provide existing services and support new economic development strategies. The application of a Universal Basic Infrastructure framework could help determine fair distribution of funding to ensure that places like Blackpool receive a level of central government funding that is commensurate to their needs and to give each area an equal opportunity to succeed.

Conclusion

A new Universal Basic Infrastructure guarantee would put people squarely at the heart of industrial strategy. Its adoption would help to break down a crude divide between what is considered economic or social policy and it would focus attention on how – and, crucially, where – people, places and businesses are held back from being able to fully meet their potential. The exposure of sharp regional inequalities in current provision would place greater pressure upon local and national policymakers to put solutions in place as citizens demand better. Moving the provision of universal and lifelong services from the margins of industrial strategy to the centre would open up a much-needed conversation about the role of the state in enabling and directly providing high quality well-funded local services for all.

Notes

1. See 2017 Eurostat data on 'GDP at regional level', available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/GDP_at_regional_level#Regional_GDP_per_capita.

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Section 4: Finance and investment

16

A question of fit: reforming the UK's outsized financial sector

Loren King

When the UK government published its latest industrial strategy white paper at the end of 2017, there was one major difference relative to previous editions. The white paper made it clear that the objective of this industrial strategy was to improve the performance of *all* firms. Unlike in previous iterations, the focus is not solely on firms at the cutting-edge of technological innovation. This apparent expansion in scope is laudable and recognises that much of the UK's poor productivity performance is due to the country's long tail of low-productivity firms and the significant disparities in performances across regions (IPPR, 2017).

This expanded strategy will, however, be harder to achieve. One of the reasons previous industrial strategies focused so much on innovative firms is that these tend to be high performing, and require only a little assistance. By contrast, significantly improving the performance of the UK's large base of low productivity firms will require a much more significant intervention. Part of the problem is that many of these firms operate in an environment that makes success harder to achieve. The first step to transforming UK businesses will be to transform their environment. The white paper appears to have recognised this when it comes to physical infrastructure and workforce skills, but curiously absent is any discussion of the financial environment in which firms operate. Yet a well-functioning financial sector is just as critical if firms are to achieve their potential.

To the extent that the government's white paper discusses the financial sector, the focus is on how to improve financing for technological innovation. But this is not what most companies need. Most will look to the financial sector for strategic advice and capital for all manner of investments, not simply R&D. And there are a number of reasons to believe that the UK's financial sector is not performing these functions well. If the government's industrial strategy is to succeed, the government must address these issues, just as it needs to in the case of innovation, infrastructure and skills.

Within the context of industrial strategy, discussions of the financial sector are narrowly focused on the funding of technological innovation

Until very recently, the UK's industrial strategy was narrowly focused on improving the UK's position at the cutting-edge of technological innovation. Whether it is the R&D tax credit or Innovate UK, a publicly-funded organisation which supports private sector innovation through grants and university-industry collaboration, the government's signature initiatives were focused on frontier firms, those engaged in pushing the boundaries of existing technologies, and developing new ones.

From a financing point of view, these companies have different needs to that of other firms. Investments in new technologies are not just risky in the same way that any new business ventures are; their outcome is fundamentally *uncertain*. It is impossible to attach any plausible probability to their chance of success. Not only that, but they often require access to significant upfront capital for projects that are technologically complex and difficult for non-experts to assess. Owing to these factors, the financial sector is less willing to lend to these firms.

Traditional economics will point to two possible market failures: one relating to information asymmetries between frontier firms and possible funders, and another resulting from the positive spill-overs generated by new technologies, each of which provide a rationale for government intervention. More recently, innovation scholars have emphasized the potential for the government to 'direct' private R&D toward solving society's most pressing problems, such as climate change or the ageing population. Regardless of the exact reasoning, there is a broad consensus that the government should take an active role in ensuring frontier firms are adequately funded to pursue technological breakthroughs.

These arguments are familiar, and the government's recent industrial strategy has largely taken them on board. The government's strategy includes a number of policies aimed at making investments in cutting-edge technologies (and, by extension, firms) more attractive to financial sector players. The government will significantly expand the scope of the British Business Bank, which was created with the explicit aim of making innovative SMEs more attractive to the financial sector. It will expand the tax credits available to venture capitalists and private equity investors. In parallel, the Industrial Strategy Challenge Fund will seek opportunities for co-investment with the financial sector in four key technological areas: clean growth, AI & the data economy, ageing, and the future of mobility (HM Government, 2017).

In other words, the government has taken a whole series of steps to address the possible lack of funding for technological innovation. Whether these interventions are sufficient, effective or correctly targeted is a question we will set aside for now. The bigger issue with the government's initiative is not what it includes but what it leaves out. Even if these interventions succeed in facilitating access to funding for frontier firms, it will do little to boost the performance of all other firms, despite that fact that these others firms are likely to be disproportionately represented in regions outside London and include firms in the long-tail of low-productivity firms. While these firms may not invest in the cutting-edge of technological innovation, ensuring the financial sector is working effectively for these companies is no less critical to the success of industrial strategy.

For industrial strategy to be successful, the financial sector must support productive investment throughout the whole economy

On the face of it, the absence of any detailed discussion of the financial sector would suggest there is little wrong, or that could be improved, beyond funding for innovation. And clearly the financial sector is succeeding on its own terms; it contributes roughly 7% of GDP, and employs 1.2 million people in relatively well-paying jobs. London is one of the world's principal financial centres, and the sector has a trade surplus larger than all other sectors with a surplus combined (the City UK, 2016). Partly as a result of its international role, the sector is also large. The balance sheets of UK banks are roughly 4 times the size of UK GDP, far larger than comparable OECD countries (Bank of England, 2014). But the sector's size and international standing have little relation to its relationship with non-financial UK firms.

From the perspective of industrial strategy, what matters is that the financial sector is aiding businesses to become more productive. For most businesses, financial advisors, whether banks and private investors will not simply provide capital but also strategic advice. Whether it is identifying acquisition targets for large corporates or simply reviewing a small business' expansion plan, financial advisors play a key role in pointing business managers to new business opportunities. Even for day-to-day affairs, they can be a valuable source of external advice. The UK's financial sector is one of the primary vehicles through which firms, whatever their size, can be directed towards productivity-enhancing investments.

Indeed, if we look to Germany, an economy often heralded as an example of what the UK's industrial strategy should aspire to, the majority of its SMEs are supported by a network of

publicly-owned local banks – the Sparkassen. These banks appear to play a key role in directing German SMEs toward productive investments. As they are anchored locally, they can provide businesses with advice tailored to local conditions, and they have played a major role in creating, and sustaining, Germany's base of highly productive SMEs. Better yet, they appear to have done this while achieving rates of return broadly comparable to those of international banks (NEF, 2015).

Currently, the UK's financial sector's primary focus is *not* productive investment

The German example illustrates the potential benefits of a financial sector that is aligned with industrial strategy. In the UK, there are at least three reasons to believe that the financial sector is not as focused on supporting productive investments, relative to its international counterparts. First, much of the UK's financial sector activity is either internal to the sector, or international. Second, its rapid growth over the last few decades appears to have incentivized large corporates to focus away from the long-term. And third, the UK's banking sector appears to be disproportionately focused on real estate, fuelling the UK's asset bubble at the expense of productive investment.

Most of what the UK financial sector does has little to do with UK non-financial corporations. Much of its activity is international, with over 50% of bank's balance sheets held in foreign currencies, and the majority of UK shares owned by non-residents (Bank of England, 2018; IPPR, 2017). Much of what banks do is trade with other financial actors, as reflected by the significant proportion of their balance sheets accounted for by intra-bank loans and derivatives (Kay, 2012; Bank of England, 2014). Once all these activities are accounted for, loans to UK businesses account for less than 5 per cent of UK bank assets (Bank of England, 2018).[1]

The fact that so little of what the UK financial sector does relates to UK non-financial businesses is not, of itself, proof of a problem. Financial firms could still perform their advisory and lending functions well, even if their primary focus is elsewhere. And yet, the growth, and success, of the financial sector appears to have gone hand in hand with the growth in short-termist pressures on corporations. By now, the evidence that corporations face strong pressures to maximise returns is well established, coming both from surveys (Bank of England, 2017) and empirical analysis (Haldane and Davies, 2011). And much of this pressure comes directly from the financial sector.

The growth of the financial sector has resulted in the explosion of intermediaries, from hedge funds and asset managers, through to brokers, and high frequency and proprietary traders. For the most part, these organisations earn a return through trading and so in their advice to corporations tend to suggest action over inaction. In his sweeping review of the UK's equity market, Kay concluded that financial advisors have a systematic bias towards activity (2012). In an environment where shares are traded multiple times per nanosecond, it is hardly surprising that corporate decision-makers focus on the short-term. In this respect, the UK's outsized financial sector may be actively hindering the corporate sector's ability to pursue long-term productive investments, relative to countries where finance is less dominating.

Outside of the corporate sector, pressures from the financial market are likely to be less astute. SMEs predominantly deal with banks, on which they largely depend to acquire loans.[2] But when it comes to lending, UK banks appear to be excessively focused on real estate. Real estate lending, in and of itself, only impacts on asset prices and will not, at least directly, impact the performance of businesses.[3] And yet, this is most of what UK banks do when it comes to their interactions with actors outside the financial sector. While European banks provide, in value, roughly as much finance to businesses as they do to individuals to buy houses, in the UK, the ratio is closer to three to one in favour of real estate (European Central Bank, 2018). Even within business lending, roughly half goes to financing the purchase of property (Bank of England, 2018). With their focus on real-estate, it seems unlikely that banks, especially local

branches, have developed the necessary expertise to effectively advice SMEs on non-real estate investments, particularly when compared to their international counterparts, like the Sparkaassen.

In sum, a more detailed look at the financial sector suggests it is largely focused on activities that have little to do with facilitating productive investments in the UK. Most of what it does is international, intra-sector or related to real estate. Recognising this, it is hard to sustain the view that the UK's financial sector is working optimally to help drive productive investments on the part of UK firms. And yet discussion of the role of the financial sector is absent from the government's industrial strategy, except in the context of funding for innovation. Even on the issue of short-termism, the government's focus has been narrowly focused on highly innovative firms (HM Treasury, 2017).

Conclusion

None of the potential problems described above are insurmountable, and there is much the government could do to redirect the financial sector's attention towards funding productive investment. It could promote local banking, and trial state or municipally owned banks following the German model. It could introduce a form of financial transaction tax to counterbalance the in-built bias toward action within the financial sector. And/or it could increase the risk premium on real estate. Each one of these options will require careful consideration. From this review, it is clear that, for the government's industrial strategy to succeed, it must take another more critical look at the role of the financial sector. If it does not, the UK's long-tail of low productivity businesses are unlikely to receive the support they need. If that is the case, and for all the change in rhetoric, the government's industrial strategy will have once again excluded the majority of UK firms.

Notes

1. Compared to 14 per cent, on average, for the Eurozone (European Central Bank, 2018).
2. Although as discussed in the previous section, particularly innovative firms tend to rely on private investors and venture capitalists too.
3. While location is likely to materially impact on a firm's performance, the purchase of real estate is often more of a financial investment, made in the hope that the asset will increase in value, irrespective of its use.

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17

Financing industrial strategy: the role of state investment banks

Laurie Macfarlane

The UK is in a crucial time of transition. The global financial crisis exposed major weaknesses in the UK economy, and this has been compounded by the post-crisis turn towards fiscal consolidation. Living standards have declined, productivity has stagnated and economic growth remains highly dependent on private debt-driven consumption. The vote to leave the European Union now poses new economic challenges.

At the root of the UK's weak economic performance is a low rate of investment. Despite having one of the largest financial sectors in the world, the level of public and private investment amounts to just 17 per cent of GDP – the fifth lowest of the EU countries and ranking 118th in the world (World Bank, 2017). Accounting for depreciation, the UK's capital stock has been declining on a per employee basis since 2011 (Office for National Statistics, 2016). The link between the UK's low investment, low productivity and stagnating wages is now increasingly being recognised.

This comes at a time when governments across the world are facing major social and environmental challenges such as tackling climate change, reducing inequalities and adjusting to demographic changes. Although these challenges are not just technological (they also require behavioural and systemic changes), they have much to learn from previous 'mission oriented' feats such as those which put a man on the moon or led to the emergence of new general-purpose technologies. In these instances, the story was not one of the state getting out the way, but of an 'entrepreneurial state' that has often acted as a lead investor and risk taker in the economy (Mazzucato, 2013). By making strategic investments across many different sectors and nurturing new industrial and technological landscapes, governments have often acted to steer the path of growth and innovation towards desired ends.

In the UK, the government's new industrial strategy set out four 'grand challenges' to position the UK at the forefront of the industries of the future. But a key question remains over how investment can be financed and directed to achieve these goals. Here the structure of the financial system is key. This chapter focuses on the possibility that state investment banks might play a role in financing this investment and altering the structure of the UK financial system.

Finance is not neutral

The works of many economists, including Thorstein Veblen, John Maynard Keynes and Hyman Minsky, have long pointed to the fact that the character of specific financial structures (for example, the types of banks and markets) is important to the workings of the real economy and productive enterprises. Finance is not neutral; the type of finance received affects the types of investments made and the type of economic activity that occurs (O'Sullivan, 2004). In the UK, the banking sector has largely retreated from funding productive activity in the real economy, and is instead focused on financing and trading existing assets. Bank balance sheets have expanded through the proliferation of complex financial instruments such as securitised mortgages, commodities futures, and a range of other financial derivatives. The

result is that since the mid-1980s the share of lending going to businesses has been falling rapidly, and now represents less than 10 per cent of total lending (Mazzucato and Macfarlane, 2017).

The UK is unusual among major advanced economies in having few major public sources of long-term, patient, committed finance. This is despite clear evidence that this type of finance is essential for long-term growth and innovation. From advances such as the internet and microchips to biotechnology and nanotechnology, many major technological breakthroughs were only made possible by the state supplying the patient strategic finance that the private sector was unwilling to provide. In each of these areas the private sector only entered much later, piggybacking on the technological advances made possible by public funds. Evidence from around the world shows how public sources of long-term, patient finance can help to create and shape new markets and nurture new landscapes, which the private sector can later develop further.

This takes different institutional forms, but in many countries patient strategic finance is increasingly coming from state investment banks, or development banks. These institutions have their historical roots in the reconstruction plans for Europe following the Second World War. The aim was to create institutions to provide a flow of patient finance to fund the post-war reconstruction, and avoid the destabilising effects that speculative private finance could have on the economic recovery. Since then, many new state investment banks have been established across the world, and a recent survey identified at least 90 state investment banks serving different countries and regions (Luna-Martinez and Vicente, 2012).

While the traditional functions of state investment banks were in infrastructure investment and counter-cyclical lending during recession when private banks cut back on lending, they have over time become more active as key players in the global economy. By placing state investment banks at the centre of the investment process, countries like Germany and China have taken centre stage in confronting the key social and environmental challenges of the twenty-first century. By steering the path of innovation towards overcoming key challenges, these banks are not just correcting ‘market failures’; they are actively creating and shaping markets and enabling activity that otherwise would not take place (Mazzucato and Penna, 2014).

Issues in the design of state investment banks

The institutional design of state investment banks varies significantly between countries, as does as the political characteristics and the economic environments in which they act. The roles they perform, and their investment activities, also evolve over time in line with country-specific developments and challenges, as well as the wider institutional landscape. Crucially, what matters is not just the ownership structures (by definition state investment banks must be majority public-owned), but also their mandate, the type of finance they are providing, the instruments they are using, the nature of investments they are making, their governance structures, and their relationship to wider government policy.

Recent decades have seen the rise of state investment banks that are ‘mission-oriented’, with a mandate focused on overcoming key societal challenges rather than static economic objectives such promoting ‘growth’ or ‘competitiveness’ (Mazzucato and Penna, 2015). In these institutions, investment activities are guided by outcomes-based ‘missions’, rather than an ex-ante desire to serve any specific sector. Typically these institutions sit at the centre of the investment process, nurturing knowledge and expertise and coordinating other stakeholders in the investment ecosystem. In some cases they invest directly in firms and infrastructure aligned with the missions of the bank, while in other cases they coordinate investment with other actors (Macfarlane and Mazzucato, 2018).

In order to fulfil a mission-oriented mandate, state investment banks typically have a wide range of instruments at their disposal, including both debt and equity, suited to different areas of the risk landscape. For example, equity investments may be suitable for high-risk innovation, while debt instruments such as long-term loans may be better for lower-risk, incremental activities. This enables them to invest across the innovation chain from the pre-R&D phase all the way through to providing long-term patient capital for established innovative firms. Some state investment banks, such as the German KfW, design specific products that target particular societal challenges. These programmes offer loans to customers which meet certain criteria, often with advantageous terms. In addition to lending operations, many state investment banks offer advisory services such as strategic planning, capacity building, and training programmes help to create viable projects and catalyse investments that otherwise would not happen.

A key difference between many state investment banks and private banks is the breadth of expertise contained within the workforce. In many cases this includes not only financial expertise but significant in-house engineering and scientific knowledge about the sectors the bank is active in. This enables them to base investment decisions on a wider set of criteria than relying on market signals alone, and assess the potential of firms and projects more robustly from an economic, social and environmental standpoint. Significant in-house expertise also enhances the ability of state investment banks to crowd-in private investment by acting as a hallmark of quality, giving private sector actors the confidence they need to invest (Macfarlane and Mazzucato, 2018).

Acting as lead investor necessarily means absorbing a high degree of uncertainty and accepting failures when they happen. This highlights the importance of finding the right balance between risk and reward. In making investments state investment banks can learn from the portfolio strategies of venture capitalist firms, structuring investments across a risk-return spectrum so that lower risk investments help to cover higher risk ones. It also highlights the importance of being able to capture some of the reward (the ‘upside’) that is made possible by the risk-taking and investment of state investment banks in order to cover the inevitable losses (the ‘downside’). Many state investment banks employ mechanisms which enable them to do this, such as retaining equity in the innovative companies they support, or sharing ownership of a proportion of the intellectual property that their support helped to create.

Some state investment banks have been criticised on the basis of ‘picking winners’, ‘crowding out’ or funding large incumbent companies. While there are instances where criticism is merited, often it is misleading. Part of the reason for this may lie in the absence of monitoring and evaluation frameworks which adequately capture the dynamic outcomes of mission-oriented investments and the additionality generated by these institutions. As a result, new monitoring and evaluation frameworks may be required in order to assess the performance of mission-oriented state investment banks, which could include an array of new indicators aimed at assessing the extent to which they have been successful at catalysing activity that otherwise would not have happened. Criticism can also be averted by avoiding focusing on firms of a specific size or in a specific sector (‘picking winners’), and instead investing in firms that are willing to invest in innovation (‘picking the willing’) (Macfarlane and Mazzucato, 2018).

To be most effective, the missions of state investment banks should be aligned with the government's industrial policy. This close alignment can create a powerful synergy between policy, regulation and financing, which can be simultaneously coordinated for maximum impact. For example, new government policies can be complemented with new financing instruments in order to transmit policy objectives more efficiently. Although potentially powerful, this relationship is highly dependent on effective governance arrangements, which are particularly important for public banks. On the one hand, it is their distinct governance structures that enable them to play a fundamentally different role in the economy compared to that of private financial institutions. Their governance arrangements typically do not create

pressure to deliver short-term returns, meaning that they can provide patient financing over a longer time horizon and prioritise wider social and environmental objectives. However, many of the problems that have commonly been associated with state investment banks, such as weak performance, financial problems, unfair competition with the private sector, and capture by interest groups can be attributed to poor governance.

Achieving the right balance between political representation and independent decision making is a key challenge. While political representation can help to maintain alignment with government policy and maintain a path of democratic accountability, steps should be taken to prevent undue political interference or capture by interest groups. It is important that management teams are free to make sound, long-term decisions in line with the bank's mandate, free of day-to-day political interference (Macfarlane, 2016). The experience of other successful banks indicates that the idea of including a wider range of stakeholders such as industrial trade bodies, trade unions and regional representatives can be beneficial, so long as mechanisms are in place to make sure that none of these groups ask for special favours but remain objective evaluators.

Towards a new state investment bank for the UK

In the UK, the European Investment Bank (EIB) has long been a key source of patient capital for businesses and infrastructure projects, financing £7 billion of projects in 2016 alone. However, in light of the Brexit vote the EIB has decided to put its UK operations on hold. Meanwhile, previous initiatives such as the Green Investment Bank and the British Business Bank have seen their activities restricted due to concerns around the impact on the public finances.

However, HM Treasury's approach to measuring public finances is highly unusual, and creates a bias against public investment. The main measure of public debt in the UK is 'public sector net debt', which is defined as public sector financial liabilities less liquid assets. According to the Office for National Statistics definition, the public sector comprises central government, local government and public corporations. While the UK government targets total debt across the whole public sector, this is not standard practice internationally. Most other countries, including across the EU, monitor and target 'general government gross debt', which includes both central and local government but excludes public corporations—including state investment banks.

So while across Europe state investment banks such as the German KfW and the Italian Cassa Depositi e Prestiti can borrow and invest prudently without clouding the debate about the public debt and deficit, a British equivalent could not. A strong case can therefore be made for aligning the UK's measurement of debt and deficits with the approach used elsewhere, thus allowing a state investment bank to borrow and lend without impairing the public finances (Mazzucato and Macfarlane, 2017).

Conclusion

With a renewed focus on industrial strategy across the UK, the debate should not be about whether the state should or should not be involved in driving investment and growth – but how it can do this most effectively. If the UK government is serious about its industrial strategy, then it must also be serious about creating new sources of long-term patient finance. State investment banks, if structured and governed correctly, can play a key role catalysing the transition towards a more sustainable, smart and inclusive economy. We should not let bizarre accounting rules or economic dogma get in the way of establishing one.

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18

The investment triad and innovative enterprise

William Lazonick

We want an economy that generates stable and equitable growth – or what I call 'sustainable prosperity'. We want productivity growth that makes it possible for the population to have higher standards of living. We want stable employment opportunities that enable people to remain productive for some four decades of their working lives while providing them with enough savings for adequate incomes over some two decades of retirement. And we want an equitable sharing of income among those whose work efforts and financial resources contribute to the nation's productivity.

Sustainable prosperity requires innovative enterprise. The essence of innovative enterprise is investment in productive capabilities that can generate goods and services that are higher quality and lower cost than those that had previously been available. The innovative enterprise tends to be a *business* enterprise – a unit of strategic control that over time must make profits to survive. But, in a modern society, business enterprises are not alone in making investments in the productive capabilities required to generate innovative goods and services. Household families and government agencies also make investments in productive capabilities upon which business enterprises rely. I call these three types of organisations – household families, government agencies, and business enterprises – 'the investment triad', and this chapter explores how they can work in harmony to achieve sustainable prosperity.

The investment triad

Household families invest in the education of the young with a view to providing them with the knowledge that they will need to function as productive adults, who will then use the income from productive employment to have families of their own. Critical determinants of household investments in productive capabilities are the relation between spouses as providers of household care and income, the quality of education that the young are able to receive, and the number of years over which they receive their education. A productive society requires the presence of the supportive family.

Government agencies support the investments in productive capabilities by household families by providing schooling that households, each acting on its own, could not afford. A well-financed primary, secondary, and tertiary education system is a necessary condition for a modern society to embark on a path of sustained development through which most of the population can attain higher standards of living (see Lazonick, 2009). Government agencies can also be charged with investing in the creation, through basic and applied research, of new scientific and engineering knowledge that would otherwise not come into existence. As a critical component of investment in productive capabilities, government agencies are involved in providing services for public and personal health. In addition, we rely on government agencies to invest in physical infrastructure such as transportation systems, communication systems, energy systems, and water and waste systems. Taken together, the investments in productive capabilities, both human and physical, by government agencies manifest the presence of a 'developmental state'.

Business enterprises make use of the knowledge and infrastructure provided by government agencies, and the human capabilities provided by household families, as foundations for

making further in-house investments in human and physical capabilities that can generate goods and services that these businesses can sell on product markets. In high-tech fields, business enterprises may have to make specialised investments in in-house capabilities to absorb the high-tech knowledge that investments by government agencies have created. In many cases, government agencies make strategic investments in knowledge-creation through business enterprises in the forms of research contracts and subsidies. Of particular importance, it is typically through on-the-job experience in business enterprises as well as government agencies that masses of individuals, building on their formal educations, accumulate the productive capabilities that enable them to contribute to the innovation process. The development and utilisation of these productive capabilities are the essence of the innovative enterprise.

The investment triad enables innovative enterprise to function as a foundation for sustainable prosperity. Stable and equitable growth occurs when the investment strategies of households, governments, and businesses interact as supportive families, developmental states, and innovative enterprises. Households and governments interact through investments in education. Governments and businesses interact in the development of the high-tech knowledge base. Businesses and households interact through the employment relation. The quality of these interactions in the development and utilisation of productive capabilities is of critical importance to the productivity of resources that are invested in the innovative enterprise.

Business enterprises provide adults in household families with employment that, with sufficient productivity, should enable them to support their families. Through formal and on-the-job training, business enterprises also invest in the knowledge of some or all of the people whom they employ. These enterprises then have an incentive to retain the people whom they have trained. They generally do so through pay increases and promotions to jobs that require superior functional capability and greater hierarchical responsibility. Indeed, it is primarily through in-house pay increases and promotions for valued employees in stable employment relations in innovative enterprises that households' living standards increase over time. It is through the employment relations of productive enterprises, not labour-market supply and demand, that an economy gets the thriving middle class that is the social substance of stable and equitable growth.

In short, the investment triad puts in place the productive capabilities that are essential to a prosperous economy. Investments in the knowledge base by household families, government agencies, and business enterprises must be financed. Investments in educating the labour force are generally funded by some combination of after-tax household incomes supplemented by household debt and government tax revenues supplemented by debt issues at local, state, and federal levels. To some extent business enterprises finance the education of the labour force through corporate taxes, philanthropic contributions based on business fortunes, and direct payments to employees for the education of themselves or their children as part of the employment relation.

The investment-triad perspective views *organisations*, not *markets,* as the microfoundations of sustainable prosperity. Comparative-historical study reveals that developed markets in products, finance, labour, and land are *outcomes*, not *causes*, of economic development (Lazonick, 1993; 2003; 2007). Product competition assumes the existence of business enterprises that have developed the capabilities to produce goods and services of a quality that buyers want and need that can be sold at prices that they are willing or able to pay. Developed markets in stocks and bonds depend on the existence of business enterprises with the capability to issue and pay yields on these securities. Employment opportunities that can be accessed via labour markets assume the existence of business enterprises and government agencies that have developed the capability to employ labour productively. A

market for land exists because households, governments, and businesses have invested in the infrastructure of a particular locality.

For the sake of continued innovation, the organisations on which the economy depends for investments in productive capabilities need governments to regulate these developed markets once they have emerged (Lazonick, 1990; 2017). Developed markets *are* of utmost importance to our economy and society; they can allow us as individuals to choose the work we do, for whom we work, where we live, and what we consume. Insofar as we have market choices, however, it is because the economy is wealthy, and it is wealthy because of the triadic investments in productive capabilities by household, government, and business organisations. If market processes cannot explain investment in productive capabilities, then the theory of the market economy cannot explain the wealth of nations. If economists want to devise public policies to shape the processes and influence the outcomes of investment in productive capabilities, we need to construct an account of 'organisational success' within the capitalist economy.

The theory of innovative enterprise

As suggested above, at the centre of an account of organisational success must be a theory of innovative enterprise (TIE) (Lazonick, 2015b). There is no way in which an economy can attain stable and equitable growth unless its major business enterprises focus on investing in productive capabilities for the sake of generating innovative products. TIE is an analytical framework for understanding how a business enterprise can generate a product that is higher quality and lower cost than products previously available, and thus be a source of productivity growth. It begins with a characterisation of the innovation process as *uncertain, collective, and cumulative*:

- Uncertain: When investments in transforming technologies and accessing markets are made, the product and financial outcomes cannot be known; if they were it would not be innovation. Hence the need for *strategy*.
- Collective: To generate higher-quality, lower-cost products, the enterprise must integrate the skills and efforts of large numbers of people with different hierarchical responsibilities and functional capabilities into the learning processes that are the essence of innovation. Hence the need for *organisation*.
- Cumulative: Collective learning today enables collective learning tomorrow, and these organisational learning processes must be sustained continuously over time until, through the sale of innovative products, financial returns can be generated. Hence the need for *finance*.

TIE then articulates three social conditions of innovative enterprise – *strategic control, organisational integration,* and *financial commitment* – that can support the innovation process, and enable the firm to manage the uncertain, collective, and cumulative character of the innovation process:

- Strategic control: For innovation to occur in the face of technological, market, and competitive uncertainties, executives who control corporate resource allocation must have the abilities and incentives to make strategic investments in innovation. Their abilities depend on their knowledge of how strategic investments in new capabilities can enhance the enterprise's existing capabilities. Their incentives depend on alignment of their personal interests with the company's purpose of generating innovative products.
- Organisational integration: The implementation of an innovation strategy requires integration of people working in a complex division of labour into the collective and cumulative learning processes that are the essence of innovation. Work satisfaction, promotion, remuneration, and benefits are important instruments in a reward system that

motivates and empowers employees to engage in collective learning over a sustained period of time.

- Financial commitment: For collective learning to cumulate over time, the sustained commitment of 'patient capital' must keep the learning organisation intact. For a startup company, venture capital can provide financial commitment. For a going concern, retained earnings (leveraged, if need be, by debt issues) are the foundation of financial commitment.

Armed with TIE, we can then consider the impacts of the innovation process on employment stability, income equity, and business productivity. We can ask whether the dominant characteristics of the nation's major business enterprises support or undermine the attainment of stable and equitable growth in the economy as a whole.

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The uncertainty of an innovative strategy is embodied in the fixed-cost investments required to develop the productive capabilities that may, if the strategy is successful, result in a higher-quality product. But an innovative strategy that can eventually enable the firm to develop superior productive capabilities may place the innovating firm at a competitive *disadvantage* because such strategies tend to entail higher fixed costs than the fixed costs incurred by rivals that choose to optimise subject to given constraints. As an essential part of the innovation process, the innovating firm must access sufficient markets for its products to transform high fixed costs into low unit costs, and, thereby, convert competitive disadvantage at low levels of output into competitive advantage at high levels of output.

Along with investments in plant and equipment, investment in productive capabilities entails training and retaining employees. It may also possibly entail sustaining learning relationships with firms that act as suppliers of inputs and distributors of outputs if these services are performed by legally independent enterprises. When a company enhances the productive capability of an employee, either through formal or on-the-job training, that employee's capability takes the form of a fixed-cost asset that can enhance the quality of the product that the innovating firm has to sell while increasing the need to attain a large extent of the market to transform high fixed costs into low unit costs.

The generation of a high-quality product and the attainment of low unit costs for that product are, therefore, interdependent processes. When, through organisational learning and the fixed costs that such learning entails, the firm succeeds in developing a product that buyers perceive as higher quality than those previously available, the innovating firm is positioned to capture a larger extent of the market, driving down unit costs. It is possible that the innovating firm will be able to gain an even larger extent of the market by cutting its product prices, and, depending on the relation between the change in prices and the change in its unit costs, the innovating firm may even be able to increase its profits while providing its customers with expanded output as lower product prices.

Investment in productive capabilities, including those of its labour force, drive innovation and the growth of the firm. To retain and motivate the employees that the firm has hired and trained, the innovating firm generally offers these employees higher pay, more employment security, superior benefits, and more interesting work, all of which add to the fixed cost of the productive asset that an employee's labour represents. The innovating firm makes its employees better off, but it can afford, and indeed profit from, the increased labour expense when that labour's productive capability enables the firm to gain a competitive advantage by generating high-quality, low-cost products.

Conclusion: sharing the gains of innovation

The innovating firm shares the gains of innovation with its employees by making investments in what I have called their 'collective and cumulative careers' (see Hopkins and Lazonick,

2014; Lazonick *et al.*, 2014). Under such circumstances, increases in labour incomes and increases in labour productivity tend to show a highly positive correlation (Lazonick, 2015). When successful, the innovating firm may come to dominate its industry, but its output is far larger and its unit costs, and hence potentially its product price, far lower than they would be if a large number of small firms had continued to populate the industry (Lazonick, 1990; 2015b).

Through transforming technologies and accessing markets, there are gains to innovative enterprise that can be shared. It is theoretically possible (although by no means inevitable) for the gains to innovative enterprise to permit, simultaneously, higher pay, more stable employment, and better work conditions for employees; a stronger balance sheet for the firm; more secure obligations for creditors; higher dividends and stock prices for shareholders; more tax revenues for governments; and higher-quality products at lower prices for consumers. Innovative enterprise provides a foundation for achieving sustainable prosperity.

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19

EU state aid law and industrial policy

Andy Tarrant

The advocates for leaving the EU in 2016 made claims to support their endeavour in a number of areas of political economy which had typically formed no part of general political discourse in the UK since the 1970s. These included issues such as the workings of state aid and trade rules, where most national politicians were only, at best, vaguely aware of the actual substance of the EU rules. State aid rules were deemed by some to prevent the kind of direct investment into private economic activity which is usually at the heart of industrial policy. Since the referendum there has been a much wider societal discussion of whether or not the claims made by Brexiters were true, and how the ongoing relationship with the EU should be structured as a consequence of the veracity of those claims, or lack thereof. This debate has been particularly lively within the Labour Party, due to its support for a more extensive industrial policy, and the (mis)understanding of some regarding state aid rules, which arguably underpins the desire for a 'Lexit' from the EU.

The question of post-Brexit state aid matters across the political spectrum, however, given the May government's commitment to a new industrial strategy. This chapter explores the nature and practice of state aid rules. What is clear that the UK government generally neglects to use its existing scope to use state aid to intervene through industrial policy (House of Lords European Union Committee, 2018). Currently, the UK provides below-average levels of state aid compared to other member states: according to the EU Commission's state aid scoreboard, the UK would have to increase the amount it currently spends on state aid by 360 per cent to reach the same proportion of GDP spent by Germany (European Commission: 2017).

Claims about EU state aid law

Antagonistic claims on the nationalist right of politics have been populist: rather than hostile to state aid laws *per se*, they have tended to suggest in response to specific UK sectoral economic crises that, absent the constraining effects of EU state aid law, UK politicians would have had discretion to assist (see Pickard, 2016). The mainstream right has in practice tended to suppose that state aid rules are a positive constraint on the state. The government's Withdrawal Bill reflects this by incorporating EU state aid rules into UK law. The government has also stated that in the event of no deal it intends to mirror the EU provisions (BEIS: 2018). It would seem that in so far as there is a debate on the right about state aid law, it is largely restricted to *who* makes decisions rather than their content.[1]

Antagonistic claims on the left are more comprehensive. The Lexiters argue that the EU is a neoliberal construct, and by definition opposed to government intervention through industrial policy. Specifically, they argue, *inter alia*, that this means the EU would use state aid laws to oppose Labour's programme of utility nationalisation, and that it would prevent the state providing subsidies (see; Lapivitsas, 2018; Nicol, 2010; Tuck, 2018). Their opponents argue that these claims are miscast because this mischaracterises the nature and objectives of the EU institutions and what the state aid laws are intended to constrain (see Donovan: 2018; Tarrant and Biondi: 2017). As explored below, the debate on the left is partly about sovereignty, but also partly about the nature of industrial policy.

The current government's position is that the substantive content of EU state aid law will continue to apply. The EU's position is that any extensive deal will require substantive adherence (European Council, 2017). This is generally the EU's stance in trade negotiations (Hofmann *et al.*, 2017). In the event that a future British government wished to rely on World Trade Organisation (WTO) arrangements only, it would still be caught by similar state aid rules (Peretz and Bacon, 2016). Advocates of the WTO approach argue that these state aid law requirements are less onerous than the EU rules, because they only apply to aid which harms imports or benefits exports, and the sanctions only consist of retaliation against exports (Lapivitsas, 2018). In practice, the former is not significantly different from the EU's tests, and the latter is not much comfort if the country is not intending to practice autarchy. An additional downside of relying on the WTO approach is that there is no mechanism, as there is in the EU, to obtain *ex ante* administrative clearance so that investors can be certain they have legal protection when accepting aid from the state.

The intention behind EU state aid law

EU state aid law is designed not to *prevent* but to *channel* subsidies. State subsidies could be a mechanism for beggar-thy-neighbour policies: protection against imports and export subsidies, as they were in the 1930s. Alternatively, they could be a mechanism for correcting market failure. Such market failures could include, amongst other things, regional inequalities and the failure of financial institutions to provide long term patient capital. As Jansen puts it, the EU seeks to prevent 'bad' state aid and encourage 'good' state aid, and the latter is very much seen as an input into EU-level industrial policy (Jansen, 2016).

The EU institutions are key agents in this process, as their role is to keep the member states honest: sifting out attempts to engage in 'bad' state aid. If each member state could instead decide whether a particular grant was 'good' or 'bad', the first best situation for the government of the day in each country would likely be full compliance by all other member states while they free-ride themselves. It would be a recipe for disintegration of the single market.

On industrial policy, the approach of the EU has followed the direction taken by northern European countries like Germany, which have never upheld the Anglo-Saxon view that industrial policy was a mistake. What has changed in the northern European countries since the 1970s has been a move from what is described as 'vertical' to 'horizontal' industrial policy. Instead of picking 'individual' national champions, it is about setting policy frameworks and then letting arms-length agents compete within these frameworks. This could include aid, but aid is available to any qualifying applicant; for example, where aid is for research and development (Buiges and Sekkat, 2009).

'Horizontal' in this sense does not necessarily mean economy-wide: policies can be tailored to specific sectors. EU industrial policy seeks particularly to support investment in advanced manufacturing technologies for clean production, bio-based products, sustainable construction, clean vehicles and vessels, and smart energy grids (EU Commission, 2012). In order to accelerate the flow of investment into sustainable production and create a regulatory race for higher standards, member states do not have to seek authorisation at all for aid to the private or public sector which assists enterprises to meet standards which member states wish to set, and which go further than existing mandatory EU environmental standards (EU Commission, 2010).

Once a state aid intervention is not economy-wide, the distinction between vertical and horizontal could become theoretical rather than practical. There may, for example, be few potential beneficiaries in any one national economy for some of the aids the EU encourages for very advanced manufacturing technology. The distinction between historic forms of national state aid and EU compliant state aid may be more about the process by which it is

granted. Justification for the grant requires proof of 'mission-orientedness' capability, rather than an *a priori* grant to a company simply because it exists in a particular sector.

How do the state aid rules actually work?

The rules in the EU Treaty are structured as a general rule prohibiting aid from the state to individual enterprises in principle, and then a series of exceptions, some of which are always applicable (for example, aid in the event of a natural disaster) and others which are discretionary. Some of the discretionary exemptions are very wide; for example, aid is potentially permissible 'to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest' (Article 107(3) (c) TFEU). This legal structuring is seen by some as an *a priori* objection to state aid. But this misinterprets the provision. What it comprises of is a withdrawal of discretion from member states, and its transfer to the EU level.

Exemptions are delivered either by individual notifications of proposals to the Commission from member states, which the Commission then assesses case-by-case and determines whether, on balance, the adverse effect on trade is outweighed by the common interest. Exemptions are also delivered via 'block' exemptions, that is, where the Commission sets out characteristics of aid which require no prior individual notification, because the assumption is that the benefits of such aid always outweigh the disadvantages. Most forms of infrastructure spending, for example, benefit from a block exemption.

Assessment of the acceptability of aid is intended to be a logical, reasoned process. The applicant has to show:

i. it is aimed at making a material improvement that the market alone will not deliver;
ii. there is a logical connection between the provision of aid and a change in the behaviour of the undertaking that receives the aid, which will bring about the outcome the aid is intended to achieve;
iii. the aid is limited to the minimum necessary to achieve the outcome;
iv. the benefits of the aid outweigh any costs in terms of damage to trade; and
v. the grant is transparent.

This final criterion is an important benefit of this reasoned process, as it forces states to transparently assess why they are granting an aid, and to demonstrate why there is a reasonable basis for concluding that it is in the public interest. In those areas where no prior notification is necessary, member states are still required to comply with strict rules on transparency and publications of the aid granted. This 'evidentiary' characteristic of state aid control is an important corrective to the susceptibility of the modern state either to be held to ransom by multi-national corporations, or to indulge in 'corporate welfare' (Farnsworth, 2013).

State aid rules and nationalisation

It should be noted initially that nationalisation is not in-itself an industrial policy in the sense discussed throughout this volume. In practice, it could either facilitate an industrial policy, or militate against it. This would depend on the sector context, as well as the subsequent rules adopted with respect to competition, investment, wages and pricing. To give one negative example regarding sector context, a decision to recreate a UK rail freight monopoly, a sector now reliant on pan-European links to operate, would largely destroy it as a transport mode.
The argument that state aid prevents nationalisation is incorrect. What state aid rules prevent is the provision of aid to a loss-making public enterprise where private enterprises would in practice be capable of operating in the same market profitably.[2]

Governments can nationalise profit-making enterprises or loss-making ones if there is a good case that they can be returned to profit, and, in most areas, a government could also withdraw a sector from the market altogether if it so chooses. Scotland has done so with the NHS. In certain specific utility areas, the EU has collectively decided that national monopolies cannot be created – because the construction of pan-European networks is in the greater public interest (for an explanation of the EU's reasoning, see Tarrant and Biondi, 2017). Lexiters presumably regard all of this as neoliberal. But the application of state aid in practice suggests otherwise. As an illustrative thought-experiment, there would be little that would be progressive, for example, about allowing the devolved Scottish administration, in a common market with the UK, nationalising a loss-making manufacturing plant and cross-subsidising its production, only to undercut a competitive plant in English or Wales.

Conclusion

As the Industrial Strategy Commission (2017) noted, once the UK leaves the EU, a progressive and comprehensive industrial strategy would depend on recreating state aid rules, not abandoning them. Industrial policy should be focused on enabling productivity-enhancing disruptions, not supporting powerful incumbent firms. Moreover, given the UK's trade balance would become an even more acute problem post-Brexit, it is vital that firms and industries genuinely able to compete within the international economy but being held back by supply-side inadequacies in the UK are supported.

Crucially, there is little within the EU's current state aid regime that would prevent the May government industrial strategy approach, or indeed Labour's more expansive alternative, including its stated plans for nationalisation. This debate has therefore been rather surreal. Rather than focusing on the potential liberation from state aid rules post-Brexit, the left, and anybody interested in developing a sustainable industrial strategy, should be rather more focused on the wider, negative impacts of Brexit on UK industry. And, if the UK does exit the single market, there will need to be a focus on developing mechanisms for channelling scarce state aid resources to the most effective uses. Even if the UK nominally forswore a state aid regime, it would have to reinvent a similar discipline in order to ensure that state investment delivered economic growth.

Notes

1. The Brexit white paper does contain a paragraph which could suggest that the UK government would seek to exclude the EU from unwinding UK deals providing individual companies with 'sweetheart' tax deals (HM Government:2018). On the other hand, it could simply be a restatement of general EU law: the EU has no jurisdiction over general national tax policy.
2. This is quite different from saying that state aid prevents the provision of subsidy for loss-making activities. Where the latter are a government objective for social purposes, it can subsidise these. To illustrate the difference: France could, for example, offer a subsidy for providing unprofitable rural broadband and not breach state aid rules. What it could not do is simply hand France Telecom an untargeted sum of money in the hypothetical situation that it was loss-making simply because it was amongst other things the provider of rural broadband, and where the absence of targeting and auditing allowed it to use the state subsidy to instead undercut more competitive international rivals from other member states.

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Section 5: Greening industrial policy

20

Clean and lean: an industrial strategy for an era of globalisation and climate change

Dustin Benton

The UK's economy grew by 1.7 per cent in 2017, buoyed up by the first synchronised bout of global growth since the financial crisis. However, while favourable global economic conditions may have pushed the UK's economic output up a bit, the country has the slowest growing economy in the G7.[1] Some of this is probably down to the anticipation of Brexit, but there is a wider problem: real wages have grown by just 0.2 per yet per year since 2006-07 (versus 3.3 per cent per year between 1996 and 2006), and the past decade has seen a persistent UK trade deficit, the hollowing out of the labour market, and very low productivity growth (Tily, 2018).

This chapter needs to learn from the biggest economic success story of the past decade: clean growth. In 2016, the last year for which there is data, the green economy grew at 5%.[2] It has maintained similar rates of growth since the financial crisis. And it has done so while major underlying technologies have become subsidy free: offshore wind's cost fell from around £150/MWh in 2013 to below £60/MWh in 2017. This did not happen by itself: rather, it is a vindication of a strand of the UK's low carbon industrial strategy in which all three major parties had a hand. Ed Miliband and Lord Mandelson began it under the Labour government, Liberal Democrats Vince Cable and Ed Davey supported the offshore wind industry as it matured under the coalition government, and Amber Rudd and Claire Perry guaranteed that the government will continue buying it through the 2020s under the Conservative government.

Family incomes, industrial success, and economy-wide growth are not the same thing, but the former cannot grow without the latter two. And again offshore wind provides a good example of how growth and industry can underpin good quality jobs: there are around 10,000 direct jobs in offshore wind in the UK today, and this figure will likely double by 2032. The vast majority of these are skilled manual labour, technical professionals, and management jobs, which tend to support high wages, high working standards, and long tenure. Moreover, these jobs are not likely to disappear because they are creating value that will be retained in a low carbon, resource resilient economy.

Productivity through clean growth

Clean growth raises productivity and supports growth in good quality jobs in three main ways: through resource efficiency, by supporting exports, and addressing the hollowing out of the labour market.

Resource efficiency

The average UK manufacturer spends five times as much on resource costs as on labour, so there is much more scope to raise productivity via resource efficiency than by cutting labour costs. For example, the best manufacturers have improved their energy efficiency by 50 per cent over ten years, whilst the rest have only achieved 10-15 per cent (Francis and Brandmayr, 2017). Closing this gap would allow businesses to pay employees well while maintaining their competitiveness and cutting their environmental impact.

A focus on resource productivity would have the added benefit of reducing the UK's regional economic disparities. Those areas in the UK with a larger manufacturing economy also have lower overall productivity. As Green Alliance has shown, a manufacturing advice service that supported resource productivity, alongside targeted innovation spending into resource efficiency technologies for manufacturers, would automatically benefit lagging areas more, helping to close the gap with London and the South East (Francis and Brandmayr, 2017).

Clean growth as a source of exports

The global economy is going green, and the UK will need to grow its exports if it is to maintain growing incomes. Already, 39 per cent of the global economy is governed by states and regions that are legally committed to cutting emissions by at least 80 per cent by 2050. Investment in renewables globally was double that of fossil fuels in 2016. This is a big part of the reason that engineering giants like GE and Siemens have announced tens of thousands of job losses in their gas turbines divisions while they continue to grow their renewables businesses.[3] The lesson for workers is clear: get a green job because this is what the world is buying.

Looking only at the clean growth opportunities in emerging economies, the UK could grow its share of low carbon services by £12.5-£16 billion by 2030 (Neal, 2017). These will be key markets for UK companies as Brexit reduces the scope for trade with the EU. Looking at goods, the story is more mixed: the chemicals industry has a £3bn trade surplus in GVA terms, above-average productivity and good quality employment, but has no plausible route to decarbonisation that does not include carbon capture and storage. This technology suffered a severe blow in 2016 when the UK decided not to fund a long-running carbon capture and storage (CCS) competition. The recent revival of CCS, in the form of the UK's Carbon Capture, Usage and Storage Cost Challenge Taskforce, could provide an opportunity to remake UK CCS policy around a clean industry goal.

More positively, the UK has a head start in the technology that is likely to dominate the future of cars and vans: electric vehicles (EV) (Francis *et al.*, 2017). Nissan's Sunderland plant is the largest EV manufacturing plant in Europe. Modelling by Vivid Economics (2018) suggests that moving the UK's petrol and diesel phase out to 2030 would enable the UK to supply nearly half of EV sales across Europe that year, compared to about a third under current policy.

Of course, this analysis does not consider the potential impact of Brexit. Leaving the single market and customs union (or equivalents thereof) will heavily constrain UK automotive manufacturing. This matters not just for existing workers, but for the character of the economy as a whole: transport sector jobs are higher than average productivity, so replacing them with lower productivity average jobs (or with unemployment), would lower wage growth.

Addressing the hollowing out of the UK's labour market

Intermediate skill levels have been hit hard by the so-called hollowing out of the labour market. Mid-skill and mid-earning jobs have been at the heart of previous periods of robust family income growth. Modelling that Green Alliance undertook in 2015 showed that if the UK introduced policy akin to the EU's circular economy package, it would create around 205,000 jobs, 54,000 of which would be taken by people who were unemployed (Morgan and Mitchell, 2015). As chart 1 depicts, the greatest net job creation could be in occupations which currently have the highest unemployment. Because circular economy activity, encompassing remanufacturing, recycling, servitisation and repair, is well-correlated to skill levels that have been hollowed out by mechanisation and globalisation, these jobs are likely to reduce structural, and not just cyclical, unemployment.[4]

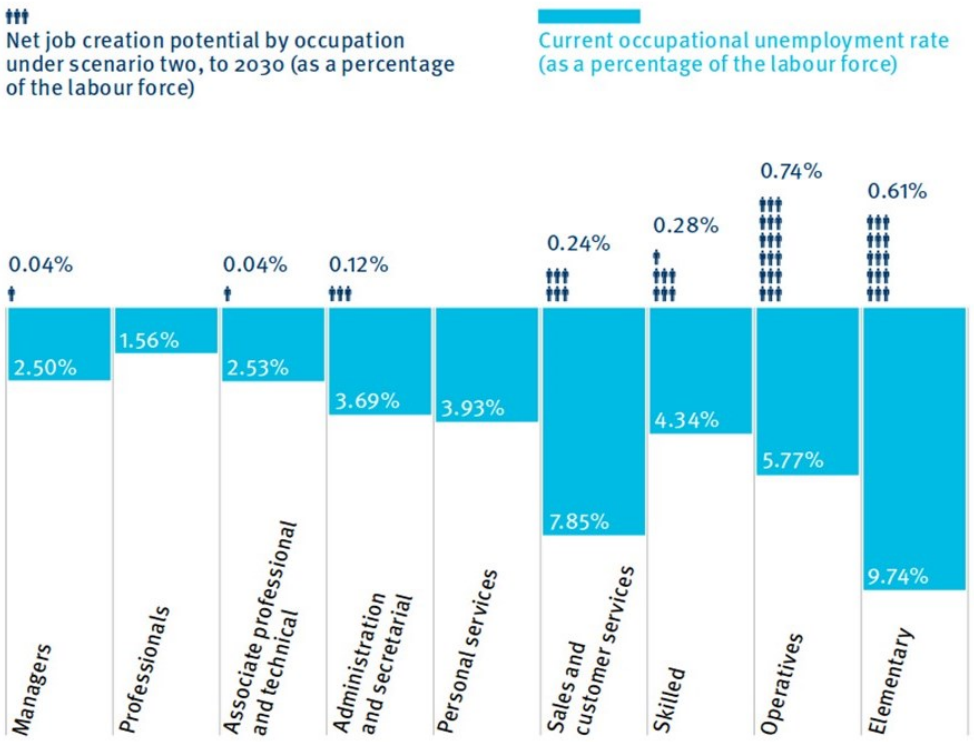

Chart 1: Jobs created by the circular economy could match the previous experience of the unemployed (Source: Morgan and Mitchell, 2015)

The story of good quality jobs that fit the UK's workforce is true at the level of individual jobs too, for four key reasons. First, workers in circular economy jobs are less likely to be underemployed, with fewer than 6 per cent of people in circular industries suffering inadequate hours, compared to an average of nearly 10 per cent across all other employees in the UK. Second, 40 per cent fewer people in circular economy jobs are seeking alternative employment, compared to the average worker. This suggests that they have higher job satisfaction. Third, remanufacturing jobs, which would make up the bulk of UK circular economy employment, tend to have somewhat longer tenures than the average job. And finally, 90 per cent of the jobs created through circular economy activity are likely to be around for at least a decade, despite the effects of continued digitalisation and mechanisation of employment (Coats and Benton, 2016).

A policy agenda

The UK should rapidly pursue an economic policy of clean growth. This would of course improve the environment, but it would also be good industrial policy. At the level of international and particularly trade policy, the UK should maintain or, ideally, improve its high environmental standards, as these underpin its clean economy. No matter what the eventual relationship that the UK strikes with the EU, it should stay close to and seek to influence EU standards, for the simple reason that there are currently two regulatory superpowers in the world: the US and the EU. These standards are essential to clean energy, electric vehicles, green finance, and the very large UK professional services market, which had a trade surplus of £24bn in GVA terms in 2016 (Francis and Brandmayr, 2017).

At the level of industrial policy, the government has identified clean growth and future mobility as two of four of its grand challenges, noting that clean growth is 'one of the *most* significant and *foreseeable* global economic trends of our time, representing one of the greatest industrial opportunities' (BEIS, 2018). However, there is a yawning gap between, on the one hand, the

government's significant (and largely unheralded) innovation spending and overall strategy, and, on the other hand, its resistance to regulate for zero carbon homes, support heavy manufacturing in decarbonising, or capitalise on its leadership in clean vehicles.

If policy-makers are interested in future-proofed economic growth that addresses both regional inequalities and supports good quality jobs in the hollowed-out mid-skill, mid-wage parts of the economy, it should ban conventional vehicle sales by 2030, and adopt a zero emissions vehicles mandate, modelled on similar policies in California and China. It should drive innovation in energy efficiency by supporting deployment of Energiesprong-style building retrofits so long as these come down in cost, mirroring the 'commit and review' approach it took to commercialising offshore wind (see Spencer and Tipper, 2014). And it should invest in resource productivity and circular economy approaches to heavy industry, to help these sectors succeed in a low carbon world.

It should do this to address climate change, but it should also do so because a transition to a low carbon, resource resilient economy is a route to remaking the well-paid, high-skill and often unionised jobs that traditional industries, like fossil fuels, have provided in a globalised economy. While traditional industries decline due both to the pollution they cause and competition from clean energy and transport, there is mounting evidence that it is possible to clean up while keeping and producing quality jobs.

A final note on politics: the UK's low carbon transition has benefited from a period of extraordinary political consensus. The UK halved power sector emissions since 2012 because Labour, coalition, and Conservative government policy has acted, albeit in different ways, to support a common goal. The UK's remarkable success in clean growth is built upon a deliberately non-partisan Climate Act that emphasises multiple routes to a low carbon future. The contrast of the United States, in which tribal politics prevented Republicans from supporting clean growth and thereby undermined Democratic efforts to generate it even before the election of Donald Trump, who is now undoing US climate policy, is a salutary warning.

This chapter is based upon 'Green and growing', an article first published in the Fabian Society pamphlet 'Raising the Bar: How Household Incomes Can Grow the Way They Used To'.

Notes

1. See ONS data, available at: https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/monthlyeconomiccommentary/june2018#the-uk-economy-grew-by-02-in-quarter-1-2018-revised-up-from-the-second-estimate-of-01.
2. See ONS data, available at: https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/finalestimates/2016.
3. See Reuters and Bloomberg reports, respectively available at: https://www.reuters.com/article/us-siemens-power-restructuring/siemens-says-to-cut-about-6900-jobs-idUSKBN1DG257 and https://www.bloomberg.com/news/articles/2017-12-07/ge-is-said-to-plan-12-000-job-cuts-as-new-ceo-revamps-power-unit.
4. The job creation projections are based on 'scenario two' in the modelling, that is, a continuation on the current trajectory, with significant further increases in recycling and remanufacturing likely (which is consistent with the EU's circular economy package). A more transformational approach would have even more positive impacts, but would require accelerated progress in recycling and remanufacturing, as well as major development of the reuse, servitisation and biorefining sectors.

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How sustainable is the sustainability element in the new industrial strategy? The difficult case of the car industry

Dan Coffey and Carole Thornley

Any general assessment of the May government's industrial strategy white paper must welcome the continuing move away from a generic or horizontalist approach towards industrial policy, in favour of policies which recognise the specific operating contexts and needs of individual sectors and industries. Similarly, the fact that space has been given to questions of environmental sustainability is entirely positive. But at the same time, there is a strong case to be made that sector policy formulation could be more imaginative. There remains a risk, firstly, of silo-thinking, in which the possible transformations that could be realised by recognising the new fluidities of sectors are overlooked because the industries in question are still being thought of in traditionally 'vertical' terms. There is a more general risk, secondly, that the model of growth which provides the undercurrent driving the new policy agenda will ultimately marginalise environmental concerns. This chapter explores these issues, particularly the latter, with reference to the car industry and connected industries.

The importance of thinking non-vertically about 'industries'

The importance of cross-connections between sectors is not difficult to illustrate. For example, according to a recent report prepared on behalf of the All Party Parliamentary Group for Steel and Metal Related Industries, the UK automotive sector absorbs around one third of the country's steel output. The same report identifies measures which if properly delivered *could* combine support with enhanced sustainability, including: basic materials research; supply chain reorganisation; and a greater effort to realise a 'circular' economy in steel. Currently, the UK imports around 60 per cent of its new steel, but exports a similar percentage of its scrap steel for re-processing overseas; this is a wasteful system (APPG-SMRI, 2017).

Acknowledging how an issue in one sector can spill over into others, the report also recommends experimenting with a more locally distributed energy system to bypass the highly expensive energy obtained via the national grid. The same recommendation is relevant for other processes in the car industry supply chain. In a more complex and multilateral way, there are additional change potentials in the energy-industry nexus on the side of automotive: if a substantial electric car fleet *could* be constructed, its combined fleet battery would have the potential to smooth energy consumption against supply by allowing it to be sold back to the national grid, which would in turn impinge on price structures.

As awareness of the scope for inventive cross-connectedness achieved by means of cyber-physical systems, digital factories and autonomous connected products grows, it is important that policy keeps pace with altered boundaries. And in cases such as steel and cars, the policy goal cannot always be about 'biggering' the industry – but should focus rather on 'bettering'.

The importance of realism in hard cases

In the difficult case of cars, it would be wrong to say that no substantial efforts are being made to usher in alternatives to the fossil fuel driven internal combustion engine (ICE) technologies

which have dominated the global car industry for more than a century. Policies connected to the 'grand challenge' of mobility in the industrial strategy white paper represent continuity with the array of match-funded innovation projects administered through Innovate UK (previously the Technology Strategy Board), plug-in car and van grants, infrastructure investments for electric vehicle charging points, and public procurement policies already in place, albeit with a new awareness of the legal and regulatory issues arising around connected vehicles and the self-driving car. There is also a significant research investment push in electric battery technologies. But the industrial strategy for cars in the UK nonetheless frames environmental improvements principally in selling terms, and the techno-gloss on what remains a marketing model obscures the depth of the crisis of the car.

There are three main problems. First, there is a lack of realism about how car markets actually work. Volume manufacturers, as opposed to new arrivals still on the margins of the global industry, have more to think about than just lifting sales of technologies like the electric car to the point where the costs of manufacturing and distribution match those for the old ICE technologies. In fact, the old business model that must be contended with has two profit centres: the profits from making and selling cars, and the profits from the replacement parts servicing those cars. The parts market in turn is embedded in the existing fleet of previously sold cars, which in global terms means a massive stock approaching two billion (or so) fossil fuel technology vehicles. But not only is there, as yet, no established parts market for electric cars; the technology in question does not even conduce to this kind of parallel evolution. This being so, and without a very radical change in the basic business model, then absenting continuing and increasingly large state subsidies, the medium-term commercial prospects are tougher than many seem to think.

Second, there is insufficient sensitivity to resource issues. A small expansion in electric car production in Britain on its own might have little impact on the world prices of trace elements used in battery technologies, but global expansion is another thing. Recently expressed fears about shortfalls in trace element supplies are a harbinger of what would happen if tomorrow the world car industry really pushed towards mass conversion to electric cars. For instance, the *Financial Times* reported last year that '[p]rices for lithium carbonate, used in the cathode of a battery, have more than doubled since 2015 … This week a representative from Volkswagen told a lithium conference in London that supplies of lithium and cobalt, another battery metal, are of the greatest concern' (FT 2017).

Third, thinking is incorrectly scaled. Considered solely in carbon footprint terms, it is simply not true that it is safe to accept that the already massive worldwide car fleet continues growing year-on-year while new technologies are gradually ushered in under policy guidance. And nor is it true that the negative impact of the car resides *only* in levels of CO_2 emission, with no other concerns in terms of resource depletion or environmental degradation. Moreover, accelerating the elimination of fossil fuel cars from the worldwide car fleet is its own problem (for example, what to do with eight billion or so tyres, and counting). Furthermore, there are additional worldwide automotive vehicle fleets of trucks, buses, ambulances, tractors, diggers, harvesters, etc. The hope embedded in the UK's industrial policy of an indefinite vista of expanding market opportunities for cars, followed by more cars, is not a realistic one.

Different business models demand a different kind of industrial strategy

Sensibility to the urgency of hard cases like the car industry has been dulled by a one-sided focus in the industrial strategy on *domestic* advances in reducing carbon emissions:

> The UK is already one of the most successful countries at growing our economy while reducing emissions. We have cut emissions by more than 40 per cent since 1990, while our economy has grown by two thirds. (HM Government 2017: 43)

But when it comes to manufactured goods like the car, the industrial strategy for the UK is not inward-looking, but rather export-led. The relevant environmental data should therefore also be outward-looking, with a realistic grasp of the *world* situation informing national policy. One of the oddities of UK industrial policy discourse as it is playing out is the disconnect between a desire to win bigger shares for the UK in expanding global markets in the automotive and other industries, and successive bad news stories about the actually existing global environmental situation. Whether right or wrong, the recent study published in the Proceedings of the National Academy of Sciences, positing the transformation of carbon sinks into sources of future carbon release, is a recent example (the study in question is published as Steffen *et al.*, 2018). If correct, then the global environmental situation is far more precipitous that previously assumed in international policy debate.

This would be extremely depressing if there was nothing else to say. But in the difficult case of the car industry at least it is possible to see a way forward through service-led manufacture, rather than a still old-fashioned policy predicated on car exports. The United Nations Environmental Programme (UNEP) favours service-led manufacture, such as the provision of mobility services through access to a car and related services. Control of vehicle life-cycles, technologies, and environmental impacts would be more manageable if policy shifted towards managing maintained or reduced rather than growing car fleets, and businesses which are currently car manufacturers developed new profit centres by becoming mobility service providers. There are hints of this in the new industrial strategy – the notion of 'mobility as a service' appears in the white paper (HM Government, 2017: 48) – but with a tepid follow through. The reorganisation of the industry would have to be substantial: eight years ago we recommended at the Volkswagen University that the company consider forward integrating into services to reconfigure profit centres and develop a whole new business model. However, the economy that is able to export expertise in reconfiguring into service-led manufacture *will* have a strategy that is much easier to reconcile with global environmental imperatives – and as Dowler (2017) observes, the UK does already possess experiential advantages in services and consultancy.

There are hints already of a partly spontaneous transition in this direction. Ride-hailing and ride-sharing services enabled by connected car technologies point this way. KPMG and SMMT (2015) describes how new income streams will appear in areas like telecommunications and digital and media services linked to networked cars, and through monetisation of the big-data connected cars will generate. If households and businesses were encouraged to lease cars from service-oriented manufacturers rather than buy them outright, the industry would evolve further. In the UK, policy should also work to substitute car imports with more localised production for the domestic market, while there is scope for a re-imagined public sector mobility provision to accompany this. To simply think of connected and autonomous vehicle technologies in terms of managing more densely packed roads at home and more car exports overseas would be to head in entirely the wrong direction, if environmental concerns are put foremost in policy.

What must also be of concern to anyone who thinks about it is the growth of the shale oil and shale gas sector, especially in the United States. This is a lower source of carbon emissions, excepting of course leakages of the greenhouse accelerant methane, although there are multiple other environmental problems associated with the industry. But the great fear should be that the introduction of this cheaper fossil fuel power source has effectively capped world oil prices that would otherwise have risen, thereby tacitly pricing back in other fossil fuel technologies, not least petrol-driven car engines in the United States and elsewhere. Otherwise, having gradually more expensive fuel sources for the old ICE technologies would naturally favour alternatives.

On a world scale, the link just indicated between cars and oil is huge. Daniel Sperling and Deborah Gordon illustrated the accelerating consumption of oil by noting in 2009 that the ten

years from 2000 would see one quarter of all the oil *ever* consumed in known human history being consumed, against a rising trend rate of consumption driven overwhelmingly by growth in oil-burning vehicles (Sperling and Gordon, 2009: 3-4). Attempts to dismiss this problem are inexplicable; but handling cars 'better' will help with oil.

In the meantime, UK government support should certainly continue for the so-called energy intensive industries (EIIs), principally steel, aluminium, glass, cement, oil and chemicals, ceramics and paper-making. Some of the elements in calls by the UK's trade unions for a low carbon domestic growth strategy also dovetail positively with the new industrial strategy, including greener housing construction. In the case of steel, the model that should also be adopted is to follow through with the sustainability measures now identified for the industry, while developing alternatives in tandem as a substitute track for jobs and income.

Conclusion

There is a need for a rethink on the framing principles of the new industrial strategy vis-à-vis sustainability and growth. It is incorrect, although understandable, to assume that because a cost-reducing innovation also reduces carbon emissions, it will thereby follow that the overall situation is improved, at least so far as CO_2 is concerned. (For further discussion of some of the issues raised in this chapter, see Coffey and Thornley 2015.)

Consider the hypothetical case of a firm that manufactures a product linked to carbon emissions. Through careful research and investment it identifies a cost-saving innovation that economises on energy costs. As a result of the latter, it reduces the CO_2 released into the atmosphere for every unit of its product that it makes and sells. On the face of things, this is precisely what is needed to achieve greener growth in the economy. However, things are rarely that simple. When a firm cuts production costs it is usually able and willing to sell more of its product by passing some of the benefit of this cost reduction onto its customers. At first glance, this is a win-win scenario in which both economy and environment gain.

On the side of the economy, this seems relatively straightforward: more is made and sold, and customers pay less than they did before. But whether or not the environment also gains is less clear cut, and depends on the impact of the extra units that are now added to the previous production – it could be that both sides of the picture improve, but not necessarily. It is also possible that despite energy-saving and a 'greener' process, the overall outcome is to increase CO_2 emissions. Understanding the unexpected rebounds that can and will arise is essential. But this requires a frame of mind in which expectations of growth are not allowed to trump sustainability.

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Green industrial policy in the UK: river basin planning and the limits of transparent appraisal

Martin P.A. Craig

'Green industrial policy' is the intersection of industrial and environmental policies – the latter, of course, being intimately linked to the former. The mainstream debate on industrial policy tends to focus on 'high value' manufacturing sectors and new financial institutions. When looked at in these terms, the UK's experience with green industrial policy is a mixed story of notable successes and high-profile setbacks. There have certainly been major gains in the scale and cost-competitiveness of UK wind power, enabled in part by state subsidies. The establishment of the Green Investment Bank in 2012 arguably represented a seismic step forward in the greening of industrial policy capable of addressing multiple economic sectors, but its ambitions were curtailed by the denial of access to capital markets – and the fund was sold off in 2016.

One might be tempted to see the latter episode as something of a high-water mark for UK green industrial policy. Yet this would be to miss a second (albeit equally mixed) story that continues to the present. This story becomes visible when we consider a second theme of the mainstream industrial policy literature: its focus on industrial policy 'ecosystems' (or in other words, the relationships among private, public and research sector actors implicated in industrial policy) (Mazzucato, 2013). When looked at in these terms, one can discern a new landscape of green industrial policy quietly emerging around the implementation of high-level environmental policy goals at the regional level. Facing legally-binding targets in areas such as wildlife conservation, surface water quality and carbon emissions, UK governments have assembled new institutions and new capacities for economic planning, concerted industrial intervention and the inclusion of various industrial and political 'stakeholders' when delivering environmental policy obligations.

In this chapter I consider this multi-sectoral plan-based approach to environmental governance as a form of industrial policy, and reflect upon its relational dimensions so as to inform broader industrial policy debates. In particular, I draw attention to the role of economic valuation methods as a tool – and constraint – in planning, policy-setting and consensus formation among stakeholders in the local implementation of higher-level industrial strategies.

The water framework directive as an industrial policy ecosystem

A well-developed example of this emerging field of green industrial policy is found in the UK's implementation of the EU Water Framework Directive (WFD), adopted in 2000. The WFD ostensibly committed EU member states to achieving 'good ecological status' in all surface water bodies by 2015, although a degree of flexibility meant that compliance in certain localities could be delayed as far as 2027 where specific exemption criteria were met (on which more shortly). The directive stipulated a new geography of policy intervention: that of the 'river basin district' (the geographical areas comprising and feeding into major river systems), of which there are nine in the UK. Plans are assembled in each district which specify a range of voluntary and regulatory interventions with which to move economic activity within the district towards a form compatible with WFD objectives. So far, two planning rounds have

been completed (the first ending 2009, the second 2015), and the final round is currently underway.

Two novel aspects of the WFD are its stipulation of transparent economic appraisal in the selection of interventions, as well as the inclusion of stakeholders in development and implementation of river basin plans (Annex III and Article 4 of the directive, respectively). In each river basin district, the Environment Agency utilises a nationally-developed methodology to appraise proposed interventions in terms of cost-effectiveness, cost-benefit ratios and the distribution of compliance costs amongst industries and social groups. In an innovative development, this methodology sought to monetise the non-traded economic benefits of conservation (increasingly discussed under the rubric of 'ecosystem services') alongside the costs of conservation. These non-market benefits represent the gains in economic welfare that arise from implementing the WFD, such as improved recreational value of landscapes or the reductions in water treatment costs. By quantifying the scale of these gains in monetary terms, the intention was that the full range of economic benefits would be incorporated in the appraisal of compliance options where a bias might otherwise exist towards slower implementation. To this end, a national survey was carried out in 2007 and updated in 2012 which measured the public's 'willingness to pay' for various environmental benefits associated with WFD implementation (Metcalf et al, 2012).

An expansive architecture for stakeholder consultation has also grown up around WFD implementation. The national economic appraisal methodology was itself the product of a collaborative research programme in the mid-2000s to which stakeholders were invited to contribute. Subsequent river basin plans have been subject to large national consultations. So-called 'liaison panels' were also established at the national and river-basin levels to provide an ongoing dialogue between stakeholders and government. The panels included representatives of the sectors impacted by the directive, prominent amongst which were the water industry, agriculture, recreational groups, conservation organisations and public-sector agencies and authorities (Environment Agency, 2016).

These bodies were purely advisory and membership was by invitation, yet they reflected an intention to accomplish 'buy-in' and shared ownership by the major stakeholders in each district (DEFRA, 2006). This was in part due to a desire to deliver WFD compliance through voluntary and incentive-based programmes as well as regulatory enforcement, including the government's Catchment Sensitive Farming Scheme (which awarded payments to farmers for voluntary investments in reducing their impact on water quality). Latterly, the government has also expressed enthusiasm for an additional and more local level of stakeholder inclusion, manifest in 'catchment partnerships' within river-basin districts through which local stakeholders are invited to devise local solutions for accomplishing water policy goals, including WFD implementation (DEFRA, 2014).

Conflictual dynamics in WFD implementation

Bodies such as the liaison panels and catchment partnerships represent a space for dialogue, compromise and collective decision-making and problem-solving amongst stakeholders and government in the regional implementation of WFD objectives. In combination with the transparent appraisal process (itself the product of dialogue with stakeholders) with which to understand the scale and distribution of costs and benefits of interventions, this might have been assumed to foster a consensual process for WFD implementation. Yet implementation in the UK has proven contentious, culminating in two judicial reviews which have forced the government to change tack in its approach to river basin planning.

Amongst the roots of these conflicts have been the very economic appraisal methodology that was intended to place planning on a transparent footing. The WFD permits local non-compliance with its objectives (so-called 'derogations' and 'alternative objectives') under

certain specific circumstances, foremost amongst them 'technical infeasibility' and 'disproportionate cost'. Where these are judged to obtain, ministers may delay compliance to a subsequent round of river basin planning, or set a less stringent objective for that particular locality (in the UK, the preference has been for the former).

The adjudication of derogations is complicated by high levels of uncertainty around the likely environmental effects, costs and benefits of interventions. In relation to disproportionate cost analysis, ministerial guidance made clear that the margin at which quantified costs exceeded quantified benefits was not alone sufficient to arrive at the conclusion that costs outweighed benefits (or vice versa), for the scale of ecosystem service gains or losses were not necessarily fully understood (DEFRA, 2008). A range of semi-quantitative evidence of benefits was also admitted to supplement analysis where otherwise only imprecise estimates of the impact of interventions could be estimated, yet the adjudication of disproportionate cost remained a matter, ultimately, of political discretion.

Uncertainty was not the only factor necessitating ministerial discretion in the granting of derogations. A second related to the distribution of costs and benefits amongst stakeholders. A general principle underpinning WFD implementation in the UK is the 'polluter pays' principle, according to which costs should be distributed amongst stakeholders in accordance with their levels of responsibility for degraded water quality (DEFRA, 2008). Transparent economic appraisal was intended both to facilitate such attributions, but also to allow for the justification of deviation from the polluter pays principle under certain conditions. One such condition was to ensure that the government's broader social policy objectives were not compromised, another was to ensure that the burdens being placed on polluting sectors would not compromise their viability. Again, the effect was to render derogation subject to political discretion. In this case, it also made such discretion a matter of political calculation in relation to the claims of particular interest groups, amongst them agriculture (a major source of dispersed water pollution in the UK).

In its first ministerial guidance on river basin planning to the Environment Agency, the Department for Environment, Food and Rural Affairs (DEFRA) instructed the agency to make full use of derogations and alternative objectives using the grounds of technical feasibility and disproportionate cost (DEFRA, 2006). A 'phased' approach to implementation was therefore adopted in which the goal of compliance by 2015 was greatly relaxed.

Concern grew amongst conservation groups that discretion in technical feasibility analysis and economic appraisal was being used to legitimatise unwarranted delay in implementation. In 2007 the Fisheries and Angling Conservation Trust (representing the broader recreational water use sector) expressed concern that delay would lead to a loss of momentum and produced a legal opinion that the tests for 'disproportionate cost' were being set too leniently (DEFRA, 2007). In 2010 FACT's successor organisation – the Angling Trust – joined WWF in seeking a judicial review of the 2009 river basin plans. The case rested on two claims: that the plans did not specify a coherent timeframe and corresponding set of measures for compliance, and that they used derogations as a matter of course which were actually intended to be used in exceptional circumstances (Angling Trust, 2011). In effect, the review amounted to a challenge to the government's phased approach and the use of economic appraisal and technical feasibility studies with which it was calibrated.

A settlement was reached between the environmental non-governmental organisations (NGOs) and DEFRA prior to the case reaching court. The terms of the settlement committed DEFRA to a number of principles in the forthcoming river basin planning cycle, including a commitment to a more collaborative approach to river basin planning centred around 'catchment partnerships' at the sub-regional level, and the more vigorous use of regulatory measures where voluntary incentive-based measures were shown to have failed (DEFRA, 2011). A wider margin of uncertainty had previously been tolerated in relation to the latter

kinds of measures, whilst greater certainty in cost-effectiveness and cost-benefit analysis had been required before the consideration of regulatory enforcement tools. Amongst these enforcement tools were so-called 'water protection zones' (WPZs), which would place agricultural businesses in highly-polluted areas under strict controls over chemical usage.

During consultation on the 2015 planning round a broader coalition of environmental NGOs logged serious concerns that the government was failing to live up to commitments on enhanced stakeholder participation and charged that the pace of implementation in the draft plans remained unjustifiably slow (Blueprint for Water, 2015; WWF et al, 2015a). The consultation response on behalf of 16 prominent conservation organisations noted that catchment partnerships had not fed directly into the planning process, and raised additional concerns about discretionary judgements being made over disproportionate cost and the distribution of costs amongst sectors. It was charged that disproportionate cost (a scenario in which economic costs of an intervention outweighs benefits) was being conflated with 'affordability' (the willingness of government to dedicate resources to cost-beneficial measures, or oblige other sectors to do the same). For this reason, it was argued, many interventions were being held back because of a lack of funding, rather than because analysis showed them to be economically inefficient. Moreover, they pointed to a significant deviation from the 'polluter pays' principle in the draft river basin plans, with agricultural businesses being sheltered by around £165m per annum in the government's preferred scenario when compared to another in which all cost-beneficial interventions were implemented. These costs were only incompletely redistributed to the water industry, and so left an overall shortfall. The result, the coalition charged, was an unjustifiably slow schedule of implementation due to a sectoral bias on the government's part in favour of agricultural interests.

In 2015, WWF and Angling Trust again mounted a further judicial review. This time the case focused specifically on protected areas and the government's continuing reluctance to utilise WPZs to control diffuse agricultural pollution (WWF et al, 2015b). The case rested on an apparent unpublicised policy change in 2011 when Environment Agency officials began to treat WPZs as a 'measure of last resort', considered only if no other means of achieving WFD compliance could be identified in a given locality (Environment Agency, 2011). The NGOs argued that this stance was inconsistent with a separate evaluation carried out by the government the same year of the catchment-based farming scheme, one of the principle voluntary incentive-based schemes for water quality improvement. This analysis suggested that there was little evidence that the scheme was able to drive sufficient improvements in water quality, and that consequently the use of WPZs would be essential for meeting WFD objectives. The NGOs charge of inconsistency amounted to a distributional claim: that the government was making the discretionary decision to shelter agricultural businesses from the costs of compliance, with the result that compliance and its wider economic benefits would be unnecessarily delayed or indefinitely deferred. The government once again settled with the NGOs before the case reached court, pledging to conduct a thorough assessment of WPZs.

Conclusions

River basin planning constitutes a form of multi-level green industrial policy in which government seeks to shape economic activity in given localities so as to accomplish national compliance for high-level environmental policy goals. This approach represents a well-advanced (if seldom acknowledged) experiment in the creation of a multi-sector industrial policy 'ecosystem' for coordinating multiple stakeholders around the implementation of a shared goal. Yet despite considerable scope for stakeholder inclusion and participation, the approach has failed to contain and resolve conflict amongst stakeholders. Moreover, it is a notable feature of these conflicts that the very appraisal methodologies designed to place debates amongst stakeholders on a transparent footing have featured large within these conflicts.

A number of lessons can be gleaned from this experience. First, the development of commonly accepted and transparent set of metrics and appraisal methodologies may be a necessary condition of consensual implementation, but it is not a sufficient condition. Government succeeded in establishing general acceptance of a framework for economic appraisal, securing agreement from conservation organisations that economic analysis was the appropriate basis for environmental policy decision-making. Yet this is only the first step towards consensus formation in planning and implementation, and in this regard the government was less successful. Conservation organisations successfully contested discretionary government decisions and the interpretations of 'disproportionate cost'. Consequently, more than mere transparency is required if a common framework is to be translated into consensus on goals and implementation.

Second, it is apparent that even the relatively inclusive model of stakeholder engagement adopted in WFD implementation was insufficient to generate such a consensus. Although an ongoing relationship was maintained with sectoral stakeholders at the national and regional levels, their input was confined to that of advisory role in a centralised agency-led model of economic planning. Consequently, shared ownership of goals was not established, and it was in this context that certain stakeholders lost confidence in the impartiality of the government's discretionary judgements. Instead, disputes that might otherwise have been the subject of negotiation and compromise *within* the planning process manifested themselves in the form of legal challenges *outside* of it in ways that proved obstructive to the implementation of plans.

Finally, the case study reiterates the importance of political will in driving the implementation of industrial policy forward. DEFRA appeared to have judged a slower approach was preferable to confrontation with agricultural interests. Yet the result was a slower implementation of the WFD and reliance on methods that the government itself deemed ineffective. If ambitious objectives like the WFD are to be accomplished, governments must be prepared to confront non-compliant sectors with enforcement action where voluntary and incentive-based measures prove insufficient to the task. It is unlikely that such confrontations can be eliminated entirely through inclusive governance procedures alone. In this respect, political discretion and purpose remains an important variable in facilitating – or inhibiting – the implementation of green industrial policy.

Taken together, these points suggest that a successful green industrial policy ecosystem is likely to be characterised (amongst other features) by a transparent and widely accepted means for appraising interventions; an overarching public policy 'mission' backed by a realistic prospect of regulatory intervention if voluntary measures fail, and an institutional architecture that enables stakeholders to contribute directly to the setting and implementation of plans. Under such circumstances, the common methodology provides an agreed basis for disputes about the pace of implementation or the distribution of costs and benefits to be apprehended and resolved, the prospect of regulatory enforcement creates an incentive for stakeholder participation in the process, whilst channels for direct stakeholder input allow the unique capacities of stakeholders to be assembled and harnessed. Ultimately, however, no idealised governance blueprint of this kind can function where political will is lacking, or where it is being exercised in the service of particular sectoral interests to the detriment of others.

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Section 6: The local dimension

23

Local industrial strategy and 'left-behind' regions

John Tomaney and Andy Pike

A major stimulus for the renewed interest in industrial strategy within the UK – and elsewhere – concerns the need to address the problems of 'left-behind' regions. The uneven shift from a manufacturing to a service-based economy, globalisation and technological change have underpinned the long-term growth of regional inequalities in the UK. While a longstanding economic problem, such disparities have recently become highly politicised. The revenge of the 'places that don't matter' has fostered the rapid rise of populism (Rodríguez-Pose, 2018). 'Left-behind' places – largely former industrial regions – figured prominently among those that voted leave in the Brexit referendum in England and Wales, for Donald Trump in the 2016 US Presidential election and for Marine Le Pen in the French 2017 presidential election. In this context, this chapter's aims are fourfold. First, we sketch out the political economy of 'left-behind' regions. Second, we offer a critical account of recent efforts to 'regenerate' de-industrialised regions. Third, we outline new policy prescriptions for 'left-behind' regions attracting the attention for policymakers. Finally, we consider the politics of local industrial strategy, including the kinds of institutions that are required to affect a new economic future in such disadvantaged places.

The political economy of de-industrialisation

Christina Beatty and Steve Fothergill (2018) estimate that 16 million people live in the former industrial regions of the UK – almost one quarter of the national population. While these regions have shared in the rise in employment in recent years, growth rates in London and other cities have been three times faster. Despite de-industrialisation, these places still have a higher than national average share of industrial jobs, lack white-collar and graduate-level jobs, have lower than average pay and employment rates, are more dependent on in-work and especially incapacity benefits, and have ageing populations. Headline unemployment figures provide a poor measure of real economic conditions in these places. Considering their high dependence upon incapacity benefits, Beatty and Fothergill estimate the 'real' unemployment rates in such places to be 7.5 per cent of the working age population in spring 2017.

Andy Pike *et al.* (2016) have shown how the highest incidence of relative urban decline is primarily located in Northern England. Such places are characterised by lower rates of net in-migration of economically active age groups, lower rates of employment growth in the decade to 2008, and a higher rate of contraction in 2009-2012. They have substantially higher rates of poverty as measured by the unadjusted means-tested benefits rate. The factors most strongly associated with relative decline in the UK are skill levels, industrial history and location at city, regional and national scales. City size and the reduced presence of consumer services in places that are over-shadowed by larger neighbours are key differentiating factors between places in relative decline.

Former industrial regions have presented a persistent problem for public policy across the developed world for several decades. While the rapid decline or disappearance of employment in traditional industries has occurred across North America and Europe, the scale of these

changes has been especially marked in the UK and adds to the urgency of the issue. The UK's 'productivity puzzle' continues to vex policymakers (Haldane, 2017). There is a geography to this; Philip McCann (2016) shows that regions outside of London and the South have productivity levels akin to poorer regions in Central and Eastern Europe or Southern regions in the United States.

Former industrial regions have been subject to waves of policy innovation. Currently, a powerful orthodoxy suggests that cities offer productivity and growth premiums because they generate agglomeration economies through their scale, density and diversity. In this way, London acts as the dynamo that powers the UK economy, through its financial, digital and knowledge-intensive business services (KIBS) and provides an economic development model to which other places should aspire. The recent growth of Manchester, based on the expansion of services and property development, has been presented as the standard for other city-regions (Folkman, *et al.* 2016; Moran, 2018).

Public policy has aimed to facilitate the further growth of large cities – normally by easing planning restrictions to allow more development. Recently, city-centre regeneration has acted as a proxy for industrial strategy (Berry, 2018). The Northern Powerhouse, for instance, operates primarily as a brand for the marketing of Northern England for investment in residential and commercial real estate, infrastructure, and, to a lesser extent, advanced manufacturing, R&D, and culture (Lee, 2017). This development model lies behind the recent push to create 'metro-mayors' in city-regions as the government's preferred form of devolution based upon matching decision-making with 'functional urban areas' (Moran *et al.*, 2018). The implications of this strategy for former mill towns, mining villages, coastal and rural settlements have been ambiguous at best. Widening inequalities between and within cities and regions are the accepted consequence of this development model and seen as sign of a dynamic economy (Glaeser, 2013). Some commentators see efforts to revive lagging industrial regions as having failed and as being counterproductive; better to encourage migration to London (or other cities) where more productive jobs are plentiful (e.g. Leunig, 2008).

The limits of 'regeneration'

Rachel Reeves has cogently summarised the limits of recent policies:

> [I]ndustrial strategy has tended to concentrate on cities as engines of growth, on property development, technological innovation and the high-productivity trading sectors. This approach to economic growth neglects middle- and low-paid workers in the low-productivity, non-traded sectors, as well as the civic infrastructure required to develop research and innovation across the whole economy. It also tends to exclude rural areas and towns from the very wealth-creating activity it is promoting (Reeves, 2018: 30).

Philip McCann (2016) has shown that there is little evidence that other regions benefit from London's growth. Instead, fortuitously capturing the benefits of globalisation through its specialisation in financial services, the attraction of multinational companies, foreign investment and international migrants, London has effectively 'de-coupled' itself from the rest of the UK economy (see also Beatty and Fothergill, 2018). Very little of London's growth has been driven by migration from elsewhere in the UK; people have a low propensity to move out of lagging regions for a range understandable reasons (Rodriguez-Pose, 2018).

Similarly, there is little evidence that faster-growing cities in the North are contributing to the growth of neighbouring places. The economic performance of cities is crucially determined by the region in which they are located. Cities in Southern England and Scotland have tended to grow above the national average, while cities in the English North grew more slowly (McCann, 2016). Although the gap between major cities and their regional hinterlands has widened,

much of the growth, even in success stories such as Manchester, has been in low productivity, low wage sectors rather than KIBs (Folkman *et al.*, 2016). With their greater social needs and costs of service provision, local authorities in 'left-behind' places have borne the brunt of austerity since 2010 (Bounds, 2017).

Developing 'left-behind' places

Geographical inequalities continue to increase, generating social, political and economic costs. Recent studies from the OECD and International Monetary Fund (IMF), among others, suggests that inequality is the cause of slow growth rather than its outcome (Cigano, 2014; IMF, 2017; see also Stiglitz, 2015). In the United States, the Brookings Institution has argued that places disconnected from economic opportunity 'may hold back collective growth and threaten the social fabric on which a healthy democracy depends' (Berube and Murray, 2018: 2). Policy-makers' continued faith in agglomeration and densely-developed cities as the route to economic development is being challenged by research suggesting that large cities are not always the most dynamic engines of growth (Dijkstra *et al.*, 2013).

In the UK, the productivity growth of Southern service-based cities has been modest, slowing any increases in national average productivity, despite higher levels of skills and the presence of KIBs. Some smaller and medium-sized cities have outperformed larger cities (Martin *et al.* 2018). The OECD has cautioned against only focusing on the largest 'core cities', suggesting:

> Larger cities create benefits, but as benefits grow, so do 'agglomeration costs' ... costs and benefits increase in parallel, reducing the pull of larger cities … a well-connected 'megaregion' with rural areas and a network of smaller, but well-connected cities, could provide agglomeration benefits while limiting the costs from congestion and densification (OECD, 2018: 86).

Given this geographical differentiation of economic conditions, place-based approaches offer a novel approach to the development of local industrial strategy. Such approaches aim to release untapped potential in lagging regions by empowering local stakeholders to maximise their skills, talent and capabilities in ways that enhance economic performance and potential.

Such strategies tailor their mix of policies to local conditions, improving opportunities for citizens and workers wherever they live, allowing them, through a combination of targeted development strategies and institutional improvements, and capability improvements (Immarino *et al.*, 2018). The World Bank calls for regions to act as the architects and implementers of their own programmes to address their locally unique capabilities and challenges, while acknowledging this will require 'more intensive, on-the-ground support, including technical assistance and capacity building at the regional and the local level' (Farole, 2017: 11). Conventional approaches to economic development that focus on raising GDP/GVA have had limited impact in 'left-behind' places. The growth of GDP has not translated into rising living standards with households in left-behind places experiencing declining real incomes, suggesting the need for more rounded forms of development that focus on human wellbeing (Stiglitz *et al.*, 2010).

The pursuit of major inward investments, development of KIBS or advanced manufacturing are unlikely to create inclusive growth in 'left-behind' places (Lee, 2018). Low-paid and precarious forms of work in mundane sectors of the economy – what Rachel Reeves (2018) calls the 'everyday economy' – have been neglected in debates about local industrial strategy, but these sectors are present in all local and regional economies and are disproportionately important in 'left-behind' places. Such sectors typically comprise the 'foundational economy' of economic activities that are immobile and relatively protected from competition but provide the social and material infrastructure of civilised life, including water, gas electricity, housing, health, care, education (Foundational Economy Collective, 2018). Rather than competing for

the next big thing against already strong and larger urban economies, 'left-behind' regions would be better served by policies aimed at securing the foundational economy. Strategies should include asset-based forms community development that aim to increase local asset ownership that anchor jobs locally by broadening ownership over capital (CLES, 2017). Such strategies would rely more upon a relaxation of austerity and public investment, than ideas about, say, mission-oriented innovation policy (Mazzucato, 2017).

The politics of local industrial strategy

Place-based forms of economic development of the type sketched out above require strengthened institutional frameworks. Tackling the entrenched problems of 'left-behind' places will require more imaginative and flexible geographies than the current top-down approach to devolution which has fetishised city-regions and metro-mayors (Tomaney, 2016) and would reflect emergent international patterns and dynamics of geographical change, including urban archipelagos, patchworks, and mosaics rather than simple binary cores and peripheries. The new theories of urban and regional development suggest the importance of the regional scale in addressing links between dynamic and large cities and the 'left behind' within urban hinterlands, smaller cities, towns and coastal and rural areas. Finally, the politics of local industrial strategy are linked to questions of democratic and political legitimacy. Sustainable solutions for 'left-behind' places are likely to come from the bottom-up, involve a range of political and civic actors and foster a sense of belonging that provides communities with cultural identity, respect and resilience.

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24

Designing a resilient local industrial strategy

Marianne Sensier and Fiona Devine

This chapter investigates how the government's industrial strategy could translate into local industrial strategies for regional economies and asks what local industrial strategies could imply for inclusive growth in the local economy. Local industrial strategies will have a wider remit than an area's strategic economic plan. There is now a focus on addressing challenges in terms of low wages, low skills and low rates of productivity. Strategies need to be developed that stimulate demand for jobs that are more secure and better paid, and all actors within the local economy need to pull together to make the strategy work. The chapter also argues that government needs to bolster Local Enterprise Partnerships' capacity so they have the tools at their disposal to manage local industrial strategies, and that greater engagement with local people is vital to find local solutions.

The OECD (2018) describes inclusive growth as economic growth that creates opportunities for all segments of the population and distributes the dividends of increased prosperity, in both monetary and non-monetary terms, fairly across society. Place-based local industrial strategies are vitally important as, while some areas of the UK have prospered over time, others have seen the loss of industry and changing structure of their local economies where low paid insecure work has become more prevalent (see Pike *et al*., 2016).

Spatial disparities

The headline figures for the UK aggregate economy mask huge regional disparities. The UK has the greatest spatial disparity among European countries in terms of GDP per head.[1] The Industrial Strategy Commission stated that this extraordinary regional imbalance is 'now a major drag on the performance of the whole UK economy, with deleterious effects on productivity and fiscal balance' (2017: 87).

In the UK, individuals and families have different opportunities and life chances according to where they live. The political consequences of this inequality of opportunity became clear with the Brexit vote. Sensier and Devine (2017) find a strong negative correlation between the ranking of English local authorities in the Social Mobility Commission's index and the rank of the leave votes. While some UK regions have plenty of high quality, highly paid jobs, others are dominated by low quality, low paid jobs. The Great British Class survey (Savage *et al.*, 2015), found a powerful spatial dimension to these disparities, with an elite and high professional and managerial middle classes concentrated in London and the South East. A third of the country's population live in London and the South East, and more than half of these are in the top 10 per cent of the income distribution (Cribb *et al.*, 2017). These disparities have widened since the financial crisis of 2008, with some regions demonstrating greater economic resilience while others have been slow to recover. This is particularly striking for Britain's older industrial towns where employment has grown by only 2 per cent between 2010 and 2016, compared to 7 per cent in regional centres, and 14.5 per cent in London (Beatty and Fothergill, 2018).

Spatial disparities have been reinforced by government policy over time, which from the 1980s focused on deregulation of the financial sector, cutting taxes and curbing trade union power.

This allowed the pay of working class groups to fall, and growth of top earners to rise. We also need to look at areas such as infrastructure spending. Coyle and Sensier (2018) argue that the transport infrastructure spending official methodology has reinforced the regional imbalances of the UK economy. In the 1980s, public investment in rail infrastructure in London provided the Docklands Light Railway, which opened up the Docklands for commercial and residential property development at Canary Wharf (Metz, 2016). Transport investments are costed based on time savings for the travelling public, which is valued to be higher in London, since wages are higher in the capital. There is little consideration of how infrastructure investment in more deprived regions could have a step-change effect on areas that are opened up to new development.

Regional economic resilience

For a local industrial strategy to work, it is not only important to monitor a set of annual metrics, but also to analyse a place against its historical evolution over time and its economic resilience to shocks. Economic resilience is the ability of an economy to withstand or recover from an economic shock, which could be a global event (the financial crisis), national event (UK house price crash of the early 1990s) or a local event (the closing of a factory). Martin (2012) defines four interrelated dimensions of economic resilience that are necessary for describing how a regional economy responds to a recessionary shock. The first is resistance, which is the sensitivity of a region compared to the nation during the recession. The second is the speed and extent of recovery from the recession, and the third is whether the region goes through structural re-orientation – and what implications this has for the region's jobs, output and income. The fourth dimension is the degree of renewal a region will undergo following the shock, and the extent to which it renews its growth path.

To operationalise the measurement of resilience we need to date turning points in the business cycle of the national and local economy. In Sensier *et al.* (2016) we measure the economic resilience of European regions' GDP and employment for their recovery from the financial crisis. Our method differs from Martin in that we allow for individual turning points for each series, which are dated by noting the local maximum (peak) and minimum (trough) points. We then measure the length of time it takes to recover to the pre-recession peak level which is the length of the recovery. Comparisons can be made to the national turning points, the depth of the recession can be measured along with the speed of recovery and if the local economy leads or lags the national business cycle. We found that no UK region's employment cycle (at the NUTS2 level) had resisted recession, and that 9 out of 37 regions had recovered from the recession with data up to 2011 (these were mostly located around London). This compares to Germany, where the employment cycle for 17 out of 39 regions had resisted recession, and 15 of the 22 regions in recession had recovered by 2011.

Additionally you could look at the productivity of places, and compare the economic resilience of the components of productivity (real productivity = real GVA/jobs). When we analyse the components of productivity time series for Greater Manchester, for instance (Greater Manchester will be the first area to put their local industrial strategies into operation from April 2019), we find that real GVA reached its peak in 2007, and took 6 years to recover. Jobs growth was relatively flat until 2011, but between then and 2016 over 100,000 jobs were created. However, when we analyse the time series for real productivity this measure has not recovered its pre-recession peak from 2007, which could infer that many of the jobs that have been created in Greater Manchester are lower paid, and they have not boosted real GVA sufficiently. It could also be an indication of the 'hollowing out' of the labour market where medium paid jobs are being lost and lower paid jobs being gained. In Greater Manchester there is some evidence of this, with a loss of middle income jobs and an increase of higher paid jobs being added to the labour market (see Rubery, et al., 2017).

The contrasting fortunes of places can affect their ability to withstand economic crisis. Lewin *et al.* (2018) found that US counties with higher income inequalities entered recession earlier and were less resilient. They suggest that rising income inequality has led to falling savings, rising debt, and relates to residential segregation, barriers to economic inclusion and greater health disparities. Higher income households usually own larger shares of financial, physical and human capital and are less connected to their local economy. Lewin, *et al.* infer that the lack of local spending by wealthy residents could be a potential causal mechanism for why increased income inequality translates to lower local resilience. In the UK, the Financial Conduct Authority (2018) analysed its Financial Lives Survey 2017 data at the regional level, finding low levels of financial resilience in the most deprived areas of the UK along with the lowest savings, lowest pensions provisions and greater amount of people without bank accounts.

Local industrial strategies: policy into practice

The industrial strategy white paper announced that local industrial strategies would be led by devolved administrations and mayors in combined authorities, and by Local Enterprise Partnerships (LEP) in other areas of England (HM Government, 2017). In a further government report on strengthening LEPs, there is an emphasis on local industrial strategies to improve productivity and create more inclusive growth to benefit people and communities (HM Government, 2018). The report states that the strategy will need to be evidence-based and will highlight local strengths, challenges and future opportunities. It also focuses on monitoring and evaluating impact of activities and productivity improvements. Below, we outline our plan for delivering on this agenda.

A step-by-step guide for a local industrial strategy

As local areas need to create more secure and productive jobs, LEPS and local authorities should use the additional resources from government to implement the following:

1. **Communicate the local industrial strategy** to the business community and the general public in a series of workshops, and create forums for open discussion.
2. **A Co-operative Development Network** should be established to encourage co-operative company development, as they are found to be more productive and resilient (Lawrence *et al.*, 2018). As company owners retire or want to pass on their businesses, co-operative development networks could help employees become owners, as well as scale-up existing co-ops with advice on finance.
3. **Demand-side policies**, like using public procurement at the local level, need to be joined up with business support services, education and skills opportunities to improve local supply chains. Anchor institutions (local authorities, universities, colleges, hospitals, housing associations and other large local employers) should reorient their spending towards local companies where possible, and when procurement opportunities arise that could be met locally the co-operative development network should aim to develop co-ops to meet the demand.
4. **Monitoring key metrics** over the longer term is necessary to understand the economic resilience of places to past shocks and to prepare for potential Brexit opportunities and challenges. Key metrics include: productivity, employment, inactivity, claimant count and underemployment rates and detailing the composition of the local labour markets, the share of jobs in different sectors and the wage distribution across the locality. Are jobs polarised in the economy between low and high pay and if so could the introduction of demand side policies encourage intermediate paid employment?
5. **Local authorities could provide office space and resources** (e.g. fast internet) at affordable rates for co-operative companies to share facilities.

6. **Community banks** should be established that will offer patient capital to local business and allow anchor institutions and local people the chance to have current and savings accounts to circulate money within the local economy, see Sensier (2017), to improve financial resilience. Germany has an established network of regional banks and German regions' employment cycles were more resistant to the financial crisis (Sensier *et al.*, 2016).
7. **Focus on the 'foundational economy'** (see Engelen *et al.*, 2017), that is, the more mundane, lower-tech sectors that predominate in lagging regions. Co-operatives could be established to provide services in childcare and adult social care with the support of the local authority.
8. **Embed social value into procurement contracts,** making sure suppliers of public services are paying the real living wage and providing job progression opportunities.
9. Finally, LEPs should create a **local industrial strategy best practice policy network** for sharing case studies.

Conclusion

The headline national figures mask vast spatial and income inequalities that exist in the UK. The Brexit vote was a signal that all is not well and should be heeded by all political parties. Local industrial strategies could be an opportunity for local policy makers to target the areas of their local economy that are most in need and, with more government resources, could truly benefit the 'left behind' communities across the UK. It is essential to embed inclusive growth into an area's local industrial strategy.

Notes

1. See Figure 3 at http://ec.europa.eu/eurostat/statistics-explained/index.php/GDP_at_regional_level.
2. Mayor Andy Burnham has announced a Co-operative Commission for Greater Manchester. See: https://party.coop/2018/07/30/andy-burnham-announces-co-operative-commission-to-ensure-manchester-the-most-co-operative-region-of-uk/.

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Closing the North-South growth gap is the key policy challenge

Ron Martin

> You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete (R. Buckminster Fuller, 1981).

The need for socio-economic rethinking and transformation has an annoying habit of becoming evident only during or after a crisis. This was true in the wake of the Great Depression of 1929-32, and again following the financial crisis and associated Great Recession of 2008-2010, another climacteric of historic proportions. The Great Depression of the early-1930s not only changed how economists thought about the workings of capitalism, but also how governments saw their role in shaping the course and stability of capitalist growth and development. For more than four decades, up until the mid-1970s, a particular model of British political economy, of state-market relations and state intervention in the economy, held sway, designed to secure a steady, sustainable and more equitable growth in prosperity. From 1976 that post-war model was progressively abandoned and replaced by a new model, often labelled neoliberalism, in which the role of state intervention became increasingly circumscribed in favour of a greater reliance on free markets, individualism, private enterprise and globalisation. It was a model, an ideology, prosecuted especially by the three successive Conservative governments under Margaret Thatcher, but it so changed the economic and political landscape that it also permeated the policy stance of Tony Blair's New Labour governments.

For a while, from the mid-1990s onwards, this model appeared to provide a firm basis for steady economic growth, and was even hailed, as late as 2007, as having ushered in a new 'global economic order', a new 'NICE' era of *n*on-*i*nflationary *c*ontinuous *e*xpansion which had finally conquered the very cyclical nature of capitalism itself. In the UK, London was held up as the paragon of this new model of national political economy, as the exemplar the rest of the country would do well to emulate. However, the financial crisis of 2008, although originating in the United States mortgage market, revealed this model for what it was, an unsustainable form of economic growth based on the unregulated financialisation of the economy, on an unprecedented expansion of household credit, rather than on productive investment, and on an uncritical presumption that unfettered globalisation benefited all.

What was also revealed by the crisis was that this model was deeply and inherently divisive and unbalanced in its effects, not only socially, but also spatially. Not only was the pre-crisis 'long boom' of 1992-2007 associated with a widening of income inequalities across British society, it was also geographically unbalanced, both driven by and favouring London and the South East while leaving much of the rest of UK, and especially Northern regions and cities, trailing behind. Over the past decade, recognition of this latter problem and the need to do something about it has figured several times and in various ways in government statements concerning the need to achieve a more balanced economy as the basis for post-crisis recovery

and growth. Thus, almost immediately upon becoming Prime Minister in 2010, Conservative leader David Cameron declared that:

> Our economy has become more and more unbalanced… Today our economy is heavily reliant on just a few industries and a few regions – particularly London and the South East. This really matters. An economy with such a narrow foundation for growth is fundamentally unstable and wasteful because we are not making use of the talent out there in all parts of our United Kingdom (Cameron, 2010)

Cameron's Deputy Prime Minister, Nick Clegg, was perhaps more emphatic, arguing that:

> For years, our prosperity has been pinned on financial wizardry in London's Square Mile, with other sectors and other regions left behind. That imbalance left us hugely exposed when the banking crisis hit. … It is time to correct that imbalance. We need to spread growth across the whole economy and across all sectors (Clegg, 2010).

And yet more recently, Theresa May, David Cameron's successor as Prime Minister, once again stressed the need to secure

> an economy that's fair and where everyone plays by the same rules. That means acting to tackle some of the economy's structural problems… The need to make big decisions on – and invest in – our infrastructure. The need to rebalance the economy across sectors and areas in order to spread wealth and prosperity around the country (May, 2016).

But if the crisis has awakened a political realisation that the UK economy is too spatially imbalanced, what is the cause of this imbalance, and how can a more balanced distribution of growth and wealth across the regions be achieved?

The systemic nature of the UK's North-South growth gap

While the financial crisis may have thrust the economic divide between London and the South East of England and much of the rest of the UK onto the political agenda, the same basic pattern of geographically unbalanced economic prosperity in fact goes back much further, to the late nineteenth century, if not earlier. To be sure, in the nineteenth century some parts of northern Britain – the textile towns of the North West, the shipbuilding centres of Newcastle-Tyneside and Glasgow-Clydeside, and the coal mining areas of South Wales, the East Midlands, Durham, and Lancashire – helped forge the industrial revolution and fuelled the expansion of empire abroad. But even in the middle of the nineteenth century, London and the South East had the highest per capita incomes in the nation (Crafts, 2005; Geary and Stark, 2015; 2016; Martin and Gardiner, 2018) (see Table 1).

In the interwar years of the early twentieth century, this divide became both more visible and more entrenched, as northern industrial regions and cities bore the brunt of structural decline and the impact of the Great Depression, while London and the South East attracted the bulk of the new mass consumer goods industries of the period (Scott, 2007).

GB=100	1901	1911	19211	1931
London	134.2	133.8	137.4	144.3
South East	107.0	104.1	101.2	114.0
East Anglia	83.7	83.5	83.5	82.7
South West	91.7	92.4	91.3	92.3
East Midlands	92.4	97.2	88.6	86.6
West Midlands	86.0	90.5	82.1	95.7
Yorks-Humberside	88.3	90.1	93.6	86.4
North West	103.7	104.8	109.3	88.6
North	85.8	83.0	83.1	81.1
Wales	80.3	82.1	76.5	81.1
Scotland	90.5	86.9	92.3	94.3
Coefficient Variation (%)	*16.9*	*16.6*	*18.5*	*22.6*

Table 1: Regional GDP per capita relative to the average
Source of data: Geary and Stark (2015)

UK=100	1971	1981	1991	2001	2007	2016
London	153.3	163.7	163.0	165.6	169.3	176.5
South East	105.7	104.3	107.1	110.8	106.0	108.9
East of England	103.8	100.1	98.1	97.4	95.3	91.3
South West	90.9	94.1	92.0	92.3	90.6	87.7
East Midlands	80.7	85.0	84.7	82.9	83.4	80.4
West Midlands	96.4	89.8	90.0	87.4	84.4	82.9
Yorkshire-Humberside	80.7	85.5	84.7	81.4	85.8	78.5
North West	93.9	85.8	85.0	86.1	87.7	87.6
North East	75.3	79.2	75.8	72.0	75.5	73.0
Wales	78.5	78.2	75.3	71.5	73.7	72.7
Scotland	92.2	97.8	103.1	99.2	95.9	94.2
Northern Ireland	80.1	84.6	77.8	80.9	82.8	75.9
Coefficient Variation (%)	*21.0*	*22.9*	*23.8*	*25.2*	*23.3*	*27.7*

Table 2: Regional gross value added per capita, 1971-2016, indexed to UK=100
Source of data: Office for National Statistics

For almost three decades after the Second World War, from 1945 to around 1975, some slight reduction occurred in the scale of disparity between London-South East and the northern regions, but the gap still persisted. However, from the late-1970s through the 1980s, as the shift to neoliberalism occurred, convergence gave way to renewed divergence: by the mid-1980s London and the South East's lead over the rest of the UK had come to exceed even that of a hundred years earlier. During the 1980s, all the talk was of the 'North-South divide', a moniker that may have been too broad brush and oversimplified in its geographical claims, but which nevertheless highlighted the scale of spatial imbalance in no uncertain terms

(Martin, 2004). Unlike the concerns over the spatial economic imbalance expressed by the Conservative(-led) governments of David Cameron and Theresa May, those of Margaret Thatcher in the 1980s were largely dismissive of the gap between the more prosperous south and the lagging north. To the extent that the problem of northern economic underperformance was acknowledged, the northern regions themselves were blamed, as being insufficiently entrepreneurial, too dominated by labour unions and outmoded working practices, and too dependent on nationalised industries. London and the South East were held up as examples of what could be achieved if only northern regions and cities fully embraced market forces in the same way as their southern counterparts were claimed to have done. In fact, by the mid-1990s, the debate over the 'North-South Divide' had largely evaporated: indeed, some economists even claimed that the divide no longer existed. In actuality, the divide continued to widen still further into the 2000s (see Table 2). The long boom of those years, based as it was on the historic expansion of banking and finance, propelled London into a league of its own, a city increasingly global in orientation and in many respects decoupled from the rest of the UK economy (Deutsche Bank, 2013).

The problem of spatial imbalance of the UK economy is thus not a new phenomenon, but one that is both longstanding and entrenched in nature (Martin and Gardiner, 2018). While northern regions and cities have lost their former manufacturing export base, London and much of the South East have managed, repeatedly – once in the inter-war years, and again since the mid-1980s – to 'reinvent' their economies, each time around the new growth industries of the period. This capacity to adapt and re-orientate successfully is no mere accident. It is no coincidence that London and its environs also contain the major organs of national economic, financial and political power and decision-making. London itself houses the nation's key financial institutions – the Bank of England, the Stock Exchange, Lloyds Insurance, HM Treasury, and the greatest concentration of major banks, investment houses, accountancy firms, legal firms and related activities. As the seat of national government, it is in London that national economic policy is determined, more often than not to reassure the capital's financial markets than to support and promote growth in northern regions and cities. London, together with its commuter hinterland, extending 50 miles to form a 'Greater South East', contains over two-thirds of the nation's corporate headquarters, and the majority of is higher education institutions. Local government is largely dependent on and subservient to the financial and political decisions of central government in London. The national rail and major road network radiates from London, giving the capital and surrounding region a degree of connectivity unrivalled elsewhere in the country.

In short, the national political economy – the economy and its key institutions and levers of power – is based in and largely controlled from London. The UK economy is among the most centralised of the OECD nations. Both the scale and the geography of Britain's spatial economic imbalance problem are embedded in, and a product of, the very nature of this centralised system. It is moreover, a system that is self-reproducing, in which London, the South East and neighbouring areas enjoy cumulative advantage, and the scope for northern regions and cities to 'reinvent' their economies and improve their relative prosperity is rendered doubly difficult. Geographers have long talked of the process of 'combined and uneven development'. In the UK, this process has produced a systemic 'North-South' growth and prosperity gap that not only holds the whole economy back, but calls into question the policies, both past and present, intended to close that gap.

The failure of past regional industrial policies

For the past 90 years, successive governments have operated a series of regional industrial policies aimed at alleviating or reducing regional economic disparities across the UK. These started with the Industrial Transference Act in 1928, a policy of moving unemployed workers in northern and peripheral areas of mining and heavy industry to work in the south and east of England. From 1934 onwards, and throughout the post-war years into the 1990s, the emphasis instead was on policies aimed at 'moving work to the workers' in the lagging areas of the country, via a combination of investment grants to entice firms into those areas and restrictions on new investment and expansion in the more prosperous south and midlands regions (Parsons, 1986).

The fact that regional economic disparities are now as large, if not larger, than they were during the interwar years indicates that past regional industrial policies had little significant or lasting impact on reducing the scale and pattern of spatial economic imbalance. This might be attributed to a number of factors. It can be argued, for example, that the scale of policy intervention, in terms of the financial resources committed, was never up to the task. Even at its peak in the mid-1970s, regional industrial policy was only around £2 billion per annum. Given the scale, and systemic nature of the spatial economic imbalance problem, far greater resources would have been required.

Another possible critique is that regional industrial policy lacked strategic intent. Its main aim was simply to divert new investment, mainly in manufacturing, away from Southern England and the Midlands regions to those northern and peripheral areas designated as eligible for assistance. There was little by way of a development strategy associated with such schemes, no coherent view of how and in what ways the economies of northern lagging areas should have been re-orientated and rebuilt. For much of the period when these policies were in force, most parts of the UK, including London and the Midlands, were undergoing deindustrialisation, so that the supply of 'footloose' investment was in any case somewhat stagnant. Even when the policy emphasis shifted towards supporting service activity in the regions, there was no attempt at constructing integrated development strategies for the northern economies. To be sure, the Regional Development Agencies introduced by the New Labour government in 1998 were able to develop economic strategies for their regions, but these were still not comprehensive in remit, were under-funded in relation to what was really needed, and in any case were disbanded by the Conservative-Liberal Democrat coalition government that came into power in 2010.

A third problem is that national economic policy has often worked against the Government's regional industrial schemes. For one thing, there has rarely been any serious thought about how regional industrial policies could be linked to, and integrated with, national fiscal, monetary, infrastructural and other measures. For another, little consideration has ever been given to how macro-economic policy could be harnessed and designed so as to secure specific regional goals. Instead, regional industrial policy has always been seen as a marginal 'add-on', as wholly secondary to macro-economic management. The control of inflation and the protection of the pound sterling have been paramount, even if this has meant negative effects on the economies of northern regions. As Eddie George, when Governor of the Bank of England, opined in 1998, if higher unemployment in the North was the price for controlling inflation (via raising interest rates), then it was a price worth paying (see BBC News, 1999). In other respects too, much of national economic policy has worked against securing greater spatial balance, in the manner of what Michael Heseltine, when Secretary of State for the Environment in the early-1980s, labeled 'counter-regional policy'. He pointed to the fact that

government spending on defence, infrastructure and public procurement not only dwarfed regional industrial policy spending, but tended to favour southern firms and regions, thereby largely negating the impact of industrial aid and assistance in the lagging regions of the country (see also Heseltine, 2012).

The key point is that these and other regional and urban policies pursued over the post-war period have failed to prevent the widening of regional disparities that has occurred since the late 1970s. This is not too surprising, because none of these policies has addressed the fundamental issue – the geographical, institutional and political centralisation of the economy in London and its hinterland. The forces driving that centralisation have always outweighed measures to rebalance the economy spatially. Although certain parts and functions of central government departments have been decentralised to the regions, the locus of central government power remains firmly located in Whitehall. At the same time, it has all too rarely been sufficiently recognised that national economic problems, such as the current stagnation of productivity, are at least to some degree geographical in their complexion and causes. As the late North American urbanist Jane Jacobs (1984) once stressed, in one sense there is no such thing as the 'national' macro-economy, for it is in individual cities and regions that the everyday business of economic life takes place, where firms produce goods and services, jobs are created or destroyed, trade emanates, wealth is generated, households consume, and public services are used. Not only does this mean that what happens in individual cities and regions strongly shapes the performance of the 'national' economy. It also means that there is no such thing as a non-spatial national economy policy: virtually every national policy that central government undertakes has locally specific, and often highly locally uneven, effects. More than that, much 'national' policy is itself highly inflected by the 'London' effect', and thus inherently spatially biased. Spatial imbalance in the UK economy is thus not simply an incidental feature. It is, rather, a structural determinant of how our economy functions, and malfunctions. To this extent, concerns expressed by Cameron, Clegg and May about the need to spatially rebalance the economy are well-founded. The question is whether the various policy initiatives they have introduced over the past eight years or so go far enough to achieve that goal.

Rethinking the UK's political economy and policy model

It is certainly the case that since 2010 a barrage of new regional and urban industrial development policies and initiatives has spun out of Whitehall. New Local Enterprise Partnerships have been established across the country to replace the Regional Development Agencies. Whilst Chancellor, George Osborne championed the idea of developing a 'Northern Powerhouse' (the major cities of Northern England) into an urban-economic agglomeration of a size to rival London (Osborne, 2014). Local Growth Funds and City Deals have been introduced, along with other area-based schemes, to stimulate local development. Perhaps more significantly, the government has moved to devolve certain fiscal and other powers to a limited number of cities and city-regions overseen by new 'metro-mayors'. And yet more recently, a new 'place-based' industrial strategy has been launched to boost national innovation, growth and productivity (HM Government, 2017). Perhaps as never before, the issue and implications of spatial economic imbalance, and especially the performance gap between southern and northern regions and cities, has assumed a prominent visibility in UK political and policy discourse.

No doubt these various schemes and policies will have some impact, although they are being implemented against an unfavourable backdrop. A decade of national fiscal consolidation and cuts in public expenditure has left many local communities in disadvantaged regions with

seriously depleted public services (Gray and Barford, 2018). The impact of Brexit, that is, the UK's withdrawal from the European Union, will almost certainly have a negative impact on growth, and again possibly more so in Northern regions than in London and the South (Chen *et al.*, 2018; Dhingra *et al.*, 2016). And the plan to cut central government finance (that is, the Revenue Support Grant) for many local councils by 2020 (almost half will receive no core central government funding), will leave many seriously impoverished. Yet even in the absence of such adverse conditions, the present array of regional and industrial policies, though welcome, do not add up to the sort of coherent and integrated policy framework needed to reverse a century and a half of spatial economic imbalance.

We now have a plethora of different schemes and different policy geographies that verges on the chaotic, a mixture of schemes some of which are nationwide in coverage, such as the Local Enterprise Partnerships, and others that are highly spatially selective, such as the few combined authorities that are being given limited devolved powers and metro-mayors. Others are spatially competitive, such as the City Deals. Meanwhile, London continues to benefit from levels of per capita infrastructural investment several times those going to regions like the North East (IPPR, 2018), and new high-tech growth corridors have been designated in the Greater South East – such as Cambridge-Stansted-London, and Cambridge-Milton Keynes-Oxford – that are likely to concentrate economic activity and wealth still further in the region (LCCC Growth Commission, 2016; National Infrastructural Commission, 2017; Pearman, 2017). The claim that the planned High Speed 2 rail project, to link London with Manchester and Leeds, will boost the economies of those cities has no firm evidential basis (Odell, 2013). A more effective way of spending around £50 billion would be to improve and upgrade the rail networks linking the Northern cities themselves.

To the extent that the problem of spatial imbalance in the British economy, as manifested by a persistent North-South gap in economic prosperity and performance, is a systemic problem, it requires a systemic solution, a new model of national political economy that is explicitly regionally-based in its understanding of the 'national' economy and in governance structure and policy design. This would require central government to take direct account of the region-by-region impact of its macro-economic policies, both fiscal and monetary. It would require, as a matter of course, all central government departments to take the development needs and problems in the regions explicitly into consideration when planning and designing their expenditure programmes. It would require a nation-wide system of devolved economic and financial powers for all regions (Sandford, 2017), not just a select few, necessarily complemented by a centrally administered funding equalisation mechanism to ensure an equitable spatial distribution of resources. These regional (or city-regional) bodies would not only develop their own strategies but would be automatically consulted by central government as part of its policy-making machinery. It would require a National Investment Bank with an explicit regional focus, to help raise investment funds for both industry and infrastructure in the regions outside of London (Kerevan, 2017; Labour Party, 2017). In short, we need a radical rethink of the key institutions and governance structures that underpin and drive the economy, of the very model of national political economy and its geographical underpinnings. Just as the economic crisis and upheavals of the inter-war years catalysed a corresponding major re-orientation of economic thinking and economic policy, a similar rethink is required again. What is clear is that the popular disaffection and resentment with the remoteness and self-serving nature of the London political and economic establishment, which is now evident across the cities and regions of the UK, and in Northern cities and regions particularly, is a sharp wake-up call that fundamental reform is needed.

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26

Reprogramming national economies and the reshoring of manufacturing

John R. Bryson, Vida Vanchan and Rachel Mulhall

There is no question that manufacturing matters and continues to matter. Nevertheless, it is important to appreciate that manufacturing is, for the majority of countries, no longer simply a national concern. Rather, manufacturing has become part of complex global value chains or production networks. Many journalists and politicians too often fetishise manufacturing by considering it as the most important part of a national economy. On 24 July 2018, for example, Jeremy Corbyn, Leader of the Labour Party, gave a speech to the EEF technology hub to launch the party's new 'Built it in Britain' campaign. He argued that:

> It must be our job in government to reprogramme our economy so that it stops working for the few and begins working for the many. That is why we will build things here again that for too long have been built abroad because we have failed to invest (Corbyn, 2018).

This new campaign slogan, an echo of Donald Trump's 'Make America Great Again' strategy, appears to be a paean to reviving manufacturing labour. It also resonates with the speech given by David Cameron, then Prime Minister of the UK, to the World Economic Forum in Davos in January 2014. In this speech, Cameron noted that:

> In recent years there has been a practice of offshoring where companies move production facilities to low cost countries. We've all seen it. We all know it's true. And it will continue. But there is now an opportunity for the reverse: there is now an opportunity for some of those jobs to come back. A recent survey of small and medium sized businesses found that more than 1 in 10 has brought back to Britain some production in the past year. More than double the proportion sending production in the opposite direction. From food processing to fashion, from cars to computer-makers. It's not just one sector; it's across all sectors of the economy (Cameron, 2014).

This raises an interesting question: is the apparent reshoring (or repatriation) of manufacturing jobs to countries like the UK and the United States the start of a process of economic 'reprogramming' (Vanchan, *et al*., 2018)? This is the key issue explored in this chapter, which focuses both on identifying the drivers behind this process, and the implications for industrial strategy.

Reprogramming national economies

Both Corbyn and Trump place considerable emphasis on reprogramming national economies towards manufacturing work. The ambition to nurture manufacturing reflects a strategy that is based on reverse engineering national and global economies. This process of reverse engineering would alter trade flows and challenge the ongoing development of a global division of labour that lies behind the operation and development of global value chains. There are three points to consider here.

First, the deindustrialisation of developed market economies reflects a longer-term process of comparative advantage. This process has been facilitated by innovations in logistics, predominantly containerisation. It has led to an increasingly interconnected global economy in which labour, raw materials, components and service inputs – the factors of production, produced in many different places – are combined together as part of co-ordinated value chains.

Second, the ongoing shift towards service employment is seen by some to be problematic and something that should be resisted. This is a fallacy. Manufacturing goes hand-in-hand with the production of services. The reorientation of manufacturing towards advanced or hi-tech industries involves a redefinition of the role of services within production (Daniels and Bryson, 2002), and manufacturing in countries like the UK and United States has in practice become a process involving a complex blend of manufacturing and service tasks (Bryson *et al*., 2013).

Third, in 1967, in his economic theory of services, William Baumol distinguished between progressive and non-progressive services. Progressive services are similar to manufacturing work in that the application of technology can lead to an improvement in the rate of output per capita. No such substitution of technology for labour is possible for non-progressive services. Ongoing productivity improvements in manufacturing have continued to reduce employment, often defined as deindustrialisation, but at the same time have led to an increase in output (Bryson *et al*., 2013). For Baumol, within a national economy there will be a steady transfer of employment from the progressive to the non-progressive parts, which reflects differential productivity (Bauman, 1967; Baumol, 2001; Baumol *et al*., 1989).

The implication of Baumol's thesis for manufacturing reshoring is that the UK only deindustrialised in relation to employment, rather than in terms of manufacturing output. This is a key point. In political terms, the debate over reshoring is all about bringing jobs back, but in many cases these jobs have already been lost as they have been automated and replaced by technological innovation. For manufacturing in developed market economies what matters is output rather than jobs. In any case, developments in artificial intelligence and robotics will continue to increase manufacturing productivity and to transform manufacturing labour.

The drivers of reshoring

Detailed research on the reshoring process is still on-going, but eight drivers behind this process can be identified (see Bryson et al., 2013; Mulhall and Bryson, 2013; 2014; Vanchan *et al*., 2018):

1. Firms are reshoring production because cost savings were not as great as anticipated, and many of the labour cost saving are now being eroded by escalating shipping costs, combined with the substitution of labour by technology. Labour increasingly accounts for a small proportion of a product's manufacturing costs.
2. Speed and closeness to market are becoming significant drivers of firm success. The implication is that offshore manufacturing will be undertaken closer to market or that firms will have production capabilities in lower-cost locations combined with production capability closer to market (Bryson and Ronayne, 2014).
3. Concerns with the quality of products supplied by producers located in low-cost locations are influencing the location of production.
4. Concerns related to the theft of intellectual property (Bryson and Rusten, 2011), including product and process innovations, are also influencing these decisions.
5. The economic downturn that commenced in 2008 reduced the order sizes for some components. Firms began to seek alternative local suppliers willing to supply smaller batches.
6. Companies are beginning to appreciate the benefits of co-locating design and development with production managers and assembly workers. This enables a close

dialogue to occur between design, development and manufacturing (Bryson and Rusten, 2011).
7. During the twentieth century, labour differentials between national and regional labour markets played an important role in the evolving global geography of manufacturing. Energy differentials will play a much more important role during the current century, and may displace labour costs as an important local/national driver behind the evolving global geography of manufacturing (Mulhall and Bryson, 2013; 2014).
8. Alterations in trade policy, and particularly American imposed tariffs, for example on imports of steel, are having an impact too.

Policy implications

Many labour-intensive products will continue to be manufactured in low labour cost locations. Developments in machine tools may reduce the labour content required to produce some labour-intensive products, opening the possibility of the return of more manufacturing to high labour cost locations. Some high-value products that are inexpensive to ship, for example mobile phones, laptops and tablet computers, may continue to be produced abroad. But ongoing innovations in manufacturing processes and technologies will always provide an opportunity to return manufacturing to developed market economies. The recent development in the onshoring of manufacturing highlights that it is possible to compete on quality, delivery speed, customisation and even price with producers located in lower-cost locations.

In policy terms, there are eight important implications for the development of an industrial strategy:

1. A focus on the availability and cost of energy. The key issue is availability combined with cost, as advanced manufacturing is more energy-intensive. These specific factors are partly behind the reshoring of manufacturing to the United States.
2. A focus on the availability of highly skilled manufacturing workers including highly trained engineers and computer programmers.
3. The development of a national and regional tax system that is supportive of manufacturing.
4. A spatial planning system that is responsive to the needs of manufacturing firms in a locality.
5. Manufacturing requires access to raw materials and to markets. This means that connectivity, based on access to an appropriate blend of national and international infrastructure (road, rail, air, ports, etc.), is critical.
6. A focus on developing a national innovation ecosystem intended to support innovations in production, including product and process innovations.
7. An industrial policy must simultaneously be a service strategy; manufacturing goes hand-in-hand with inputs provided by business and financial services. Siloed policies must be avoided.
8. The importance of investing in new technology, including artificial intelligence and robotics. This investment will enhance productivity but will also create employment opportunities elsewhere in the economy.

Any attempt to reprogramme an economy towards manufacturing employment is based on a set of flawed premises. The key issue for any industrial strategy is that it must be based on understanding the complex plexus that supports national economic activity. It is important to differentiate between policy that creates a long-term supportive set of wider framework conditions that encourages entrepreneurship and economic activity, and policy that is intended to address an immediate political objective or problem. There are three critical elements of these wider framework conditions: the availability of skilled labour, appropriate levels of connectivity (including digital), and a relatively stable policy environment. These three types of policy interventions must be developed and applied both regionally and nationally.

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27

City-led industrial strategy

Christian Spence

Theresa May's arrival in Number 10 in July 2016 heralded a call for a – if not quite new – heavily revised economic model for the UK. She spoke of acknowledging a 'burning injustice' and that her government 'will do everything [it] can to give you more control over your lives […making] Britain a country that works not for a privileged few, but for every one of us' (May, 2016b). There may have been little progress on those aims since, but her speech two days earlier spoke more clearly to the detail. Here she noted her desire to see 'a proper industrial strategy to get the whole economy firing […] to help not one or even two of our great regional cities but every single one of them' (May, 2016a).

To hear the promotion of an industrial strategy fall from the lips of a Conservative MP is rare, and the phrase to British minds often recollects poorly performing, nationalised behemoth industries supported, and eventually scrapped or sold, by the government of the day. Certainly, the UK provided numerous examples of this, particularly during the 1970s and 1980s, but other developed countries have seen more merit in the role of a guiding hand of the state in supporting economic objectives.

Responding to this call, Policy@Manchester at the University of Manchester and the Sheffield Political Economy Research Institute (SPERI) at the University of Sheffield formed the Industrial Strategy Commission as an independent, authoritative inquiry into the development of a new, long-term industrial strategy for the UK. It summarised the role of an industrial strategy as that which 'encompasses the strategic co-ordination of all economic interactions between the state and the private sector' (Industrial Strategy Commission, 2017).

This definition sees a clearer role for the state in both supporting and challenging unfettered free markets, the rising power of capital, and the problematic issues of social cohesion and economic inclusion that are the side effects of the sweeping powers of globalisation. It has more in common with the post-war *dirigisme* policies of de Gaulle and Pompidou and the *trente glorieuses* in France, and Erhard's *soziale Marktwirtschaft* in Germany and its *Wirtschaftswunder* (economic miracle), than many of the iterations of policy in the UK during the same period.

This chapter discusses where the local dimension, and particularly cities, fits into this new approach. The importance of cities in recent economic growth across the world is well-documented. In the UK, they now account for over half of the country's GDP and of its people; they are the primary generators of employment and of growing, younger, and higher-skilled populations. However, they are also the home to some of the country's poorest and most disadvantaged communities, and where those with the greatest and least opportunities rub-up against each other. A city's success can, of itself, both cause and exacerbate these issues, where local unskilled communities face ever-greater competition for the jobs being created, both from educated residents and from those migrating from other parts of the UK and overseas. Despite these successes, UK cities hold a unique record amongst developed nations: only in the UK do cities, these agglomerative economic powerhouses, perform less well than the national average. Partially this is accounted for by extremely high productivity in some sectors of the London economy that drives the national average higher but, even in

direct comparisons between UK and European cities, this divide is notably stark (Bessis, 2016).

Challenges to urban growth

The health of a city (and its wider city-region) is predicated on a number of key issues. Economic theory suggests that, through agglomeration, cities increase in productivity as a function of their scale and industrial mix, though this is challenged by many smaller UK cities being more productive than major conurbations (Centre for Cities, 2018). There have been suggestions that UK cities are undersized and are not of sufficient scale to benefit from agglomeration theory (Overman and Rice, 2008), but evidence from other countries (as well as within the UK) suggests this is not necessarily the case (Centre for Cities, 2017). Access to appropriately skilled labour is important, too, but the UK is placed low in international league tables, despite its high rate of access to higher education institutions (OECD, 2017), and also performs poorly on vocational education as well as more generally in basic-level literacy and numeracy. Increased rates of degree-qualified persons in the UK's cities are driven by the importation of qualified people from other areas, within and without the UK and a higher volume and retention of graduates. However, the UK's ability to retrain or upskill the existing workforce is poor, whether within employment or after unemployment, redundancy or career-breaks for caring or other responsibilities.

Cities also thrive on infrastructure, whether transport (public and private), housing or high-speed broadband. The UK scores poorly on quality of infrastructure (WEF, 2017) and, whilst more recent government policy is seeking to invest more in this area, this is often focused on *grand projets*, connecting cities to each other rather than improving access, connectivity and inclusion within city regions themselves. Housing volumes are increasing in cities, but political challenges such as greenbelt release, governance challenges such as local authorities' inability to borrow to construct homes, and economic challenges such as rectifying a long-run shortage in homes (particularly of the right type in the right area) and a rapidly-rising population have all worked to compound the problem.

The inequality challenge

Cities also face challenges in terms of divides, with extreme differences in performance within city regions emerging over the past decades. This is a pattern seen internationally with the rise of globalisation: whilst aggregate economic performance across the globe increases, disparities within countries become more marked. This force acts within countries, too: whilst UK GDP has continued to grow, the experience across local areas has varied widely, with parts of the country and its population more able to respond to, and benefit from, the changes in the nature of the economy. If all of this supports Theresa May's view that the economy is not working for everyone, how should cities respond?

The government's recent call for local industrial strategies from individual areas may cause some challenges for their authorities. Should their policy support central government's key challenges, or should they concentrate instead on local issues? Should a city's industrial strategy focused on improving its own lot, or on how best to support 'UK plc'? With concerns about inequality high in the public's mind, should an industrial strategy within a city-region seek merely to improve average, aggregate outcomes and then redistribute the benefits or, instead, should it seek to better balance opportunities across districts, communities and people, even if that means lower average outcomes overall?

These are not new questions, but the current political and economic environment requires different solutions. The answer will heavily determine the steps that should follow within the strategy itself, and the make-up of the city-region itself is likely to influence it. Polycentric city regions, such as West Yorkshire, may find that there is a dual problem: they must balance the

challenges of inequality not only between an urban core and its outlying areas, but also between multiple urban cores. This problem, however, may not be unique to polycentric city regions: the new political challenges of directly elected mayors such as Andy Burnham in Greater Manchester are highlighting more clearly the difference in outcomes across metropolitan areas. His election in 2017 brought a focus on the future of outlying towns within Greater Manchester to the fore, a phenomenon supported by changing political allegiances across different populations, perhaps most clearly seen in the aftermath of the EU referendum in 2016. Whilst the narrative of 'the left-behinds' is not new, their finding of both a political voice and a willingness to use their vote to make it heard is a more recent development.

Can the centre do all the work?

Urban industrial strategy will have to find a way to respond to these issues. Economic development in recent years has often been focused on property-led regeneration of prime urban cores. This has included rapid growth in commercial (both office and retail) developments with a large increase in the number of apartments in, or close to, the city centres themselves. Improving outcomes for people in poorer and often outlying areas has often relied on the designing of transport strategies that move people to the jobs, riding the strong wave of business expansion in, or relocation to, these urban centres. But more recently this model is facing challenges from both newly elected mayors and from the people themselves.

Concerns over the failure and death of local high streets, and sense that local communities are being destroyed, as smaller, outlying towns become dormitory villages for commuters in the city centre, or areas instead of high unemployment or unstable employment opportunities, have resonated politically. As the heart of the UK's cities have grown, many smaller areas within the conurbation have seen their local economies weaken. The better-skilled parts of their populations commute into the city centre for work, often taking their disposable income with them and spending it there after work rather than taking it home. The reinvigoration of city centres as destinations themselves has made them retail and leisure hotspots, attracting spend from people from across the city-region into the core and depriving smaller areas of the benefits, as well as placing greater pressure on public transport systems as greater numbers of people use them throughout the week.

It is not clear that this trend is easily stopped, but politicians are under increasing pressure to provide solutions. Companies will, in their own best interests, locate where the easiest access to markets and talents can be achieved. The continuation of existing policies such as expanding city centres, improving public realm and cultural opportunities, and retaining increased numbers of graduates from universities will support those companies' objectives, increase economic output and make a city region's often key metrics of GVA and employment look stronger. However, more of the same may not be the way to improve outcomes overall and drive a more inclusive growth-led model for regeneration and economic development. Whilst much has been written about inclusive growth there remains confusion over precisely what it means, but recent research concluded that it is "a long-overdue recognition that urban economic development has tended to focus on growth, with little consideration of who benefits" (Lee, 2018).

Responding to the challenge

The challenge, then, for cities looking to develop their own industrial strategy, is to balance these two, perhaps competing, tensions. Extending opportunity to all is harder, and may have short-term dis-benefits to Whitehall-watched KPIs, even though the longer-run opportunities may be larger with better outcomes, particularly around harder to measure issues such as social cohesion. Each city faces similar challenges in these areas, though the nature of them, and the required policies to provide solutions, will be very different. A key strength, therefore,

of individual local industrial and economic strategies will be their ability to set a decisively locally focused path, but this is not necessarily easy.

The UK's centralised nature, both politically and economically, and particularly in the way that local areas remain reliant on Westminster for much of their core as well as investment funding, means there remains a high risk of 'Whitehall capture' in local industrial policy making. The government has set out its ambitions for an industrial strategy and it remains to be seen how much latitude local areas will have to deviate from its core objectives to support their own development. But, if local industrial strategies are to be meaningful, both to the people in those areas and to a government seeking tangible improvements to tout before the next election, individual areas must have the freedom to tackle the key issues within their own geographies. This is likely a greater challenge in the short-term for the first wave of directly elected combined authority mayors who will be seeking their re-election in 2020, and will face for the first time challengers who are able to wield their policy successes and failures against them during the campaign.

Cities, therefore, need to find a way to balance the political needs of Whitehall with those of their own town halls. The government's grand challenges set out areas where the UK has the potential to lead the world, and its foundations of productivity speak to the critical areas that must be improved to support the UK's economic growth (HM Government, 2017). These are necessary, but they are not sufficient. Cities are, above all else, centres of people, of culture, of community, and of identity. An industrial strategy that cannot speak directly and locally to all of these issues risks quickly being shown to be irrelevant.

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Section 7: Corporate governance

28

Investment, industrial strategy and corporate governance

Ciaran Driver

The supply and coordination of investment in physical capital, organisation, infrastructure, skills, and innovation is part of industrial strategy. For convenience I will call all these activities 'investment' as they tend to be conceptually similar, and are often related at the macroeconomic level if only because a deficiency in one (such as skills) may impact on another. There is no exact consensus on how these decisions should be taken in a mixed economy. The relative advantage of market and planning will depend of the conditions of the time. For example, when there is a great deal of technological or demand uncertainty, or where public interest is involved, greater weight may be put on pooling information and coordinating individual investment decisions.

The potential blunders that our governments make have to be balanced against the narrow vision of the market, which is better at reacting to existing demand than imagining new needs. This is why major innovations such as the internet, transport, electronics and novel pharmaceutical advances have often benefited at the outset from major programmes of public research and standard setting. In today's world, innovations produced by the major corporations are increasingly incremental, even where advanced original science is employed. Adaptation to new opportunities by private corporations are insufficiently incentivised because, for transformative systems, many of the costs and benefits of innovation accrue to other parties as spillovers (externalities). This chapter explores this issue, and considers how UK industrial strategy can induce an investment-led economic model through corporate governance reform.

Coordinating investment

A recent All-Party Parliamentary Group report concluded that 'the UK currently lacks a coordinated and coherent approach to identifying its potential vulnerabilities, and developing long-term strategies to mitigate them' (Manufacturing Commission, 2015: 10). This is not surprising – economies that are primarily market-oriented often lack the political will to consider alternatives. Criticising this, Richard Nelson of Columbia University argued for a loosening of the boundaries between public and private. In his view, 'a wide range of human activities that employ a large share of the economy's resources diverge from what is considered standard economic activity' (Nelson 2002: 242) and that the role of non-market governance structures has been 'repressed in much of the current discussion of economic organization (2002: 212). This suggests a dilemma at the heart of economic development of advanced nations where the market form is ill-adapted to solving some problems and, due to insufficient belief in public provision, these concerns become orphaned. The result is that value lies unlocked not just for these activities themselves but for market activities that might feed into them.

In the terminology of business strategy, there is scope for a 'shaping' approach, in which industrial planning is more pro-active than re-active. Well-positioned firms occasionally get the chance, under fluid technology and demand, to reorganise a whole industry on proactive lines, as HP did with printing, or Fedex with delivery, or the modern network firms with search,

transport and accommodation. But sometimes change takes place over such a long time and large scale that it cannot be easily pioneered by even the largest firm – and sometimes it could be undesirable and undemocratic for that to occur. In these circumstances, public or private-public partnerships may be useful, and the opportunities stemming from such undertakings can then stretch back over a long supply chain through services, products, capital goods, design and R&D. Coordination and planning of investment has already occurred in the case of renewable energy, but could usefully be employed in helping the emergence of new industries and innovative solutions that will feed into supply chains for social needs such as housing, care and health and education.[1]

Under-investment in the UK

Weak market signals can delay the adaptation of the industrial structure, but there are also other forces constraining private firms. Low investment has been a perennial issue for the UK, which invests less than comparator countries. This has often been discussed as if it were a temporary problem. The idea that corporations consistently under-invest because of some *systematic* failure of policy or governance disappeared with the rise of liberal market views many decades ago. A former Deputy Governor of the Bank of England remarked towards the end of the Thatcher administration that any required resurgence in investment would arise automatically since there was no obvious market failure involved (see Driver and Temple, 2014: 50). Of course, this did not happen then, and we are still waiting for such a resurgence.

Even modern-day Keynesians have tended to see no long-run problem with the market level of investment (no supply constraint), focusing instead on a possible demand deficiency. There may be an occasional worry about the adequacy of finance for investment particularly for small and new firms but this is a footnote pointing to an anomaly rather than a systematic failure. Such insouciance is at one level surprising. The record of investment in the UK has been consistently poor both absolutely and in relation to comparative economies, and especially so in the current context. Five years after the onset of the financial crisis, the Bank estimated that each employee was operating with five percent less capital than would have been the case had the economy been on its pre-crisis path (see Driver and Temple, 2013). The second five years since the crisis has been even worse for investment; recent survey evidence from the Bank shows one third of firms saying that they invest less than appropriate, compared with only 2 per cent that were overinvesting (Salaheen *et al.*, 2017).

Of course, the UK economy has suffered exceptional difficulties in the last decade due to the exposed position of its international banks and the self-imposed burden of uncertainty induced by Brexit. But it would be wrong to think of the pattern of low investment as something that only began with the financial crisis. Low investment both relative and absolute has characterised the UK economy for half a century, to the extent that is has come to be accepted as a national norm. Nor is under-investment confined to fixed capital: OECD data show that business financed R&D as a percentage of GDP has been much lower in the last two decades than before then.

Despite the flinty disregard of some economists and policy-makers for this reluctance to invest, there have been periodic outbreaks of doubt and unease. Reviewing trends in the UK economy, a different Deputy Governor of the Bank asked publicly about the ‘puzzle’ of low investment (Gieve, 2006). How was it possible for the UK to have the lowest whole-economy investment spend since the 1960s, given the historically high ratio of financial surplus to GDP and unprecedented low borrowing costs? Such expressions of concern have multiplied in recent years, but if opinion is changing it is only because chickens have truly come home to roost. Near-zero productivity growth for a decade has so alarmed policy circles that even orthodox commentators have ended up calling for more investment, even if there is little idea of how to bring this about or why the problem has occurred.

Corporate culture, corporate governance, and investment

The proclivity of corporations to invest capital depends on the corporate culture that it adopts. This varies across firms but is influenced by institutional features – regulation, takeover codes, company law and codes of conduct that concern the duty of directors and the rights of different types of investor. This complex of institutions is known collectively as 'corporate governance', and it affects the balance of power between the various parties or 'stakeholders' involved with a company's activities such as investors, managers and workers. When a firm's corporate governance is attuned mainly to the interests of investors it tends to invest less capital (Bauer *et al*., 2008). Some interpret this as a reason for celebrating a form of governance that gives priority to investors as it amounts to a strict monitoring of the investment spend. But of course this argument only works if investors are seen as reliable, far-sighted and neutral judges of collective economic opportunities. This is the position of the influential economist and commentator Lawrence Summers, typified by his defence of current arrangements for corporate governance in companies like Amazon which, according to Summers (2018), trade at huge multiples to current profits because of credible long-term plans. But this argument is weak. Technology companies are trading on the basis of their monopoly power, which allows them to plan ahead.

While the economics profession by and large denied any supply side problem of investment – and ignored adverse effects stemming from corporate governance – other business-oriented commentators were more prescient. Pioneering voices such as Will Hutton (1996) in the UK, Margaret Blair (1995) and William Lazonick (2018) in the United States focused their attention on the institutions that initiate and authorise investment decisions in the modern economy. They argued that the system of stock market capitalism had changed in the last decades of the twentieth century. Before that, shareholder power was diffuse and rarely seen as a constraint on managers' plans for investment and innovation. From around the 1980s onwards, under pressure from globalisation and footloose finance, managers came to accept that they needed to be responsive to shareholder concerns. Under a new framework of 'shareholder primacy', serious power was gradually transferred into hands of shareholder representatives and shareholder primacy became a distinct mode of governance.

The new system was trumpeted as one that could direct the allocation of capital to where it was most needed – taking it from firms with excess cash and investing it in new enterprise. In the heady years of globalisation it was even argued that country growth rates depended on how developed their financial systems were, especially stock markets. Such a view has been knocked sideways, by crises of speculation in emerging markets, by the dot.com crash at the beginning of the century, and later by the huge mis-allocation of finance that characterised the years leading up to the financial crash. Macroeconomists have at last begun to recognise that financialisation has costs as well as benefits. Furthermore, serious quantitative work has now identified shareholder primacy-based corporate governance as a clear cause of under-investment, alongside more traditional ones of lower competition (Gutiérrez and Philippon, 2017).

Shareholder primacy, investment and stakeholder solutions

The Shareholder Primacy system of corporate governance prevailing in the UK and other stock-market oriented economies assumes by default that the interests of shareholders are normally coincident with the general good. This system has evolved as a muddled response to the problem that company managers may have interests distinct from owners, and may engage in self-serving activity. But why should shareholder interests be dominant anyway? Elsewhere I have laid out at length the tortuous logic that is supposed to justify this, but here I will just say there is *no* good reason (see Driver and Thompson, 2018). A different system of *stakeholder capitalism* where power is shared with workers and other interested parties works perfectly well in some parts of the global economy and there are examples of non-shareholder

enterprise in all economies. Shareholder primacy as a governance system is neither rational nor reasonable. Shareholders have their own legitimate interests, like all other stakeholders, but these should not be equated with the 'common good'. The system is not reasonable because the steps taken to align manager and owner interests are often counterproductive with all sorts of unanticipated side effects on the general economy. One example is the system of rewarding chief executives with extraordinary incentive pay linked to the current or near-term value of the company's shares. Systematic distrust of such managers, exacerbated by the governance system itself, leads shareholders to prefer signals of performance in the form of early and constant pay-outs of cash, which simultaneously enrich senior managers but make it difficult for firms to invest and grow.

The incentive for managers to under-invest is now one of the most discussed topics in the financial press. Not only do many business executives worry about pressure from owners to return cash, but leading financial executives castigate their own industry about the same thing. At the same time, normally sober academics, central bankers, consultancy companies and politicians have been convinced of the message. The City firm Ernst and Young says that investors prefer 'cash cows to capex' (see Atkins, 2015) while Credit Suisse (2015) has identified 'a noisy campaign by activist investors' for a shift in capital allocation away from investment and towards buybacks and dividends.

What is it exactly these critics think is the nub of the problem, and how do they propose resolving it? These are important questions because, while it is sometimes good to be at least half-right, the cure can often be as bad as the disease. The orthodox critique is that shareholder capitalism's shortcomings stem from poorly-designed incentives that allow managers to undermine a well-functioning system of shareholder primacy. At least the first half is correct. Managerial pay is out of control. And we have to respect the informed view of direct participants in the financial markets, such as Andrew Smithers (2013), who argues that current incentives encourage managers to pull money out of productive uses to engage in financial games. It is worth asking, however, whether there is *any* system of high-powered financial incentives that could not be gamed in some way by informed executives. Again, there are some orthodox commentators who agree with this, and seek other solutions to counter the pressure for low investment. Some argue that shareholder power would become functional if it were more concentrated; others that shareholders themselves are long-termist, but are let down by the layers of complex and costly intermediates between them and firms; still others want to confer more voting power on long-horizon shareholders, to create new classes of committed shareholders, or to put conditions on activist manipulation. Each of these positions has some merit. But each also seeks to tweak the version of shareholder capitalism that emerged forty years ago, rather than renewing it fundamentally.

There is something in modern financialised capitalism that constrains investment to be lower than warranted. One route to fundamental reform is to dilute the power of shareholders in favour of other stakeholders (see Driver and Thompson, 2018). In the US, Senator Elizabeth Warren has introduced a Bill into Congress to enforce a 40 per cent stakeholder representation on company boards – something that has been attacked by Harvard Professor Mark Roe (2018) as if it were a fatal disease: 'The Act's effects are easily predictable: capital would be trapped in large companies and mis-invested. Smaller companies would be deprived of funds, and wealth would be transferred from public investors to corporate insiders.' Yet there is no consistent body of evidence supporting a negative net outcome for stakeholding governance. To the contrary, informed opinion and empirical research in contexts such as Northern Europe generally finds that profitability is maintained under such systems while they tend to be less unequal and with higher skill levels that the UK model (see Driver and Thompson, 2018). The more relevant question concerns how easy it is to incorporate aspects of these systems in an historically different context. But some counterweight to shareholder power is now urgently required.

Conclusion

Investment is an important part of industrial strategy, since markets are less good at anticipating need than in responding to existing demand, given the coordination of effort and the sharing of costs and benefits that are involved. This feature of markets, which is particularly important at time of fundamental technical or organisational change, explains to some extent the current low investment rate by private industry. A second powerful influence is the prevailing system of corporate governance. Shareholder primacy is inherently biased against re-investment, and puts persistent pressure on firms to return cash to investors. It is unlikely that this corporate governance effect is remediable except by drastic reform of the balance of power within corporations.

Notes

1. The need for addressing links between market and non-market issues is evident in the wish list for government action that accompanied the recent submission by the CBI for the 2017 Spring Budget. Of the thirteen key recommendations, four concerned education, skills, and employee well-being, with a further three concerning inputs from infrastructure, energy and research. But the need for a rethink of public-private interaction and boundaries is not commonplace. As noted by the *Financial Times* columnist Martin Wolf (2018), '[t]he financial crisis was a devastating failure of the free market that followed a period of rising inequality within many countries. Yet, contrary to what happened in the 1970s, policymakers have barely questioned the relative roles of government and markets'.
2. See Gieve, 2006. It may be asked whether this paradox is such a puzzle, given the prevailing culture of ideas. The macroeconomics that UK students learned from textbooks – and presumably that which their professors believed – claimed that low capital investment was irrelevant to the country's problems. Among the reasons given for this was that jobs could not be created by investment but only by labour market reform. Indeed some even suggested that investment could be positively harmful in that the costly installation of fixed capital guarantees an increase in workers bargaining power against the owners who have sunk this capital (see Driver and Temple, 2014, especially chapters 2 and 4). Other economists downplayed any investment problem by claiming that intangible capital compensated for lower fixed investment. But included in intangibles is rent-seeking, advertising and fictitious goodwill that is never depreciated.

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Why an industrial strategy needs trade unions

Kate Bell

Workers have had little opportunity to shape the changes to Britain's economic structure over the past thirty years, whether that's been the shift away from manufacturing to a service-based economy, the impact of technological change on the organisation of work, or the effects of globalisation and the rise of the financial sector.

The UK's *laissez-faire* approach to industrial transition in recent decades lies behind some of our greatest economic challenges. The UK has the highest regional disparity of any European country (TUC, 2018), severe challenges in raising our productivity, and appears trapped in a low-road equilibrium of insecure low wage jobs. And it's hard not to see these challenges as linked to widespread political discontent.

Over the next thirty years, we will again face industrial transition, on a similar scale. The UK needs to take advantage of new digital technologies to raise its productivity, and to innovate rapidly to meet the challenges of climate change. These transitions bring huge opportunities to improve the working lives of people in the UK. But this chapter argues that those opportunities will only be realised if we enable working people to shape them.

The costs of previous industrial transitions have fallen on workers

While governments have until recently shied away from the term 'industrial strategy', the structure of the British economy has changed significantly over the last thirty years, encouraged in part by political action. The impact of globalisation and technological change have seen a significant decline in the proportion of people working in manufacturing jobs: from 15 per cent to 7 per cent since 1998 (ONS, 2018). While many see this decline as inevitable, UK manufacturing employment has declined more sharply than any other advanced economy except Switzerland. Our decline has been twice as fast as that of Italy and Spain, and about a third again as fast as that of the United States and France (IMF, 2018).

These jobs have been replaced – often by jobs in low-value service sectors. The hospitality sector for example now employs half a million more people than thirty years ago. The UK is currently experiencing its highest level of employment since the 1970s.

But we know that this job churn has often come at heavy cost for the workers in industries and businesses that were lost. The Industrial Communities Alliance (2018) estimates that that male wages in former industrial areas remain 10 per cent below the UK median. Recent research by João Pessoa (2016) at the LSE showed that while increased exposure to Chinese markets has lowered the price of consumer goods in the UK, workers in industries in competition with China have suffered from longer spells of unemployment and lower pay, with the lowest paid workers suffering most. And the OECD (2018a) recently summed up the impact on 'displaced workers' in periods of industrial change, describing a situation all too familiar to many workers in the UK:

> In certain countries earnings can fall by up to 50% on the year of dismissal and remain up to 10% below pre-displacement years even four years after being laid-off. However, income losses can continue after displaced workers are re-employed, because wages

in post-displacement jobs are often lower than those from the lost jobs. The risks of long-term joblessness and large earnings losses after re-employment are particularly significant for older and long-tenure workers in blue-collar jobs.

The costs of failing to manage industrial transition have not fallen only on workers in declining industries; workers across the economy have suffered too. Without action to ensure that the jobs that replaced heavy industry were secure and well-paid, we have seen the growth of new and innovative ways for employers to push risk onto workers. There are now just short of a million people on zero hours contracts, and 2.5 million self-employed people who earn less than the national living wage. Perhaps most significantly, the UK is still in the midst of a prolonged pay squeeze which means that wages are yet to reach the levels seen before the financial crisis.

Future industrial change

The coming decades promise to bring changes in the nature of work and of business that rival those we have seen over the last thirty years. The UK has a huge opportunity to use digital technology, from industrial robotics to artificial intelligence, to boost our flagging productivity. And the necessity of meeting our climate change targets means that we will need to continue to rethink how energy is provided and used.

These trends are often viewed as threats rather than opportunities for workers. Predictions abound about the potential for robots or artificial intelligence to take over human work. In March 2018 the OECD estimated that around 14 per cent of jobs in OECD countries are highly automatable, and just over 30 per cent subject to substantial change in how they are carried out (OECD, 2018c). They estimate that those in more routine jobs, young people and those with lower level educational qualifications are likely to be most at risk.

However, the fact that some jobs may be automated does not mean that jobs will disappear. As Jason Furman and Robert Seamans (2018) set out in a recent paper, there are a number of ways in which new technology could potentially impact the number and nature of jobs. Technology could displace jobs entirely, leading to a reduction in the amount of overall paid work in the economy. But technology could also lead to a change in the tasks performed by workers, rather than a reduction in the number of jobs. The OECD highlights US research on the introduction of automatic telling machines in banks, which performed more routine tasks previously handled by human bank tellers, but freed up their time for more productive tasks, meaning employment in the sector rose.

And as in the past, technology may lead to changes in industrial make up, but not a reduction in the total number of jobs – as we have seen in the shift within the UK from manufacturing to a service-based economy. Improvements in our ability to deliver manufacturing could – and should – lead to an expansion in work. The '*made smarter'* review of industrial digitalisation, for example, estimated that over ten years, industrial digitalisation could boost UK manufacturing by £455 billion, creating a net gain of 175,000 jobs (HM Government, 2017b).

Moving towards meeting our climate change commitments presents similar challenges. There are now over 400,000 jobs in the low carbon energy sector (ONS, 2015), and potential for investment to deliver more. But workers in energy intensive industries are rightly concerned about what the transition will mean for their own jobs and prospects; the existence of a new job on a windfarm in Cumbria is of little comfort to a worker displaced from his job on a gas plant in Chippenham. The 'leave it to the market' attitude towards industrial change in the UK has meant that workers are more likely here than in many other European countries to perceive these changes as a threat.

The role of trade unions in managing transition

The existence of a near-consensus in UK politics that some form of industrial strategy is now necessary to address the challenges faced by the UK economy, not least Brexit, offers the opportunity for workers to have a role in shaping this next phase of industrial transition. Encouragingly, the government's own industrial strategy white paper states that its vision includes delivering 'good jobs and greater earning power for all' and 'prosperous communities across the UK' (HM Government, 2017a).

But the ambition appears to stop there, and workers themselves remain conspicuously absent from much discussion of industrial strategy. The 'people' chapter of the government's industrial strategy white paper concentrates almost entirely on skills, without pausing to think about how workers who have acquired those skills will have the opportunity to put them to use. The sector deals that the government has announced have been variable, at best, when it comes to union engagement.

The nuclear sector deal is hugely positive about the role of unions, stating that:

> The trades unions and their membership have a productive relationship at UK nuclear sites, contributing to a high productivity environment. Unions will have a vital role to play in the future of the sector and their strong base of members within the nuclear workforce places them in an ideal position to help shape workforce priorities and development. High levels of engagement between unions and industry, both at the centre and at each site, help underpin the relationship and the workforce contribution to productivity, innovation and the maximisation of socio-economic benefits (HM Government, 2018).

But the message seems to have failed to get through to other sectors. The construction deal has no mention of unions or workplace representation, and workers are likewise assumed to have nothing to contribute to the sector deal on artificial intelligence, or the creative industries.

This absence is particularly conspicuous at a time when international institutions are increasingly recognising the importance of trade unions and collective bargaining in delivering better jobs. While the OECD has traditionally encouraged labour market flexibility, and pushed through the decentralisation of collective bargaining systems from sector to enterprise level, its new 'employment outlook', published in summer 2018, recognises the key role of strong co-ordinated collective bargaining systems in delivering better jobs. In a ringing endorsement for the role of sector-level bargaining systems, it concludes, based on country-level data on labour market outcomes for 35 OECD countries, that 'co-ordinated systems are shown to be associated with higher employment, lower unemployment, a better integration of vulnerable groups and less wage inequality than fully decentralised systems' (OECD, 2018a).

And while the language is cautious, this finding translates its way into the OECD's policy advice for governments seeking to deal with a rapidly changing world of work. Its 'jobs strategy' for 2018 puts the focus clearly on job quality:

> [P]olicies to support flexibility in product and labour markets are needed for growth, they are not sufficient to simultaneously deliver good outcomes in terms of job quantity, job quality and inclusiveness. … new evidence …shows that countries with policies and institutions that promote job quality, job quantity and greater inclusiveness perform better than countries where the focus of policy is predominantly on enhancing (or preserving) market flexibility (OECD, 2018b).

The OECD is not the only international institution to have recognised the role of trade unions in delivering better job outcomes. A 2015 research paper for the International Monetary Fund found that, in an echo of what trade unionists had been saying for years, 'the evidence strongly

indicates that de-unionization is associated with rising top earners' income shares and less redistribution, while eroding minimum wages are related to increases in overall income inequality' (Jaurmotte and Osorio, 2015).

The role of unions in providing support to workers in industries undergoing change is also increasingly being recognised. Swedish Job Security Councils, delivered through collective agreements between employers and workers across a sector, have one of the best records of getting displaced workers back into jobs, with a 90 per cent success rate within a year. In the Netherlands, collective agreements agree financing for 'O&O' funds, which provide learning opportunities to workers to help them find new jobs in the future. And even in the UK, the government has recognised the role of unions in delivering learning, with a commitment to pilot a National Retraining Partnership delivered in partnership between the government, the Trades Union Congress and the Confederation of British Industry.

But the role of trade unions in industrial strategy should not only be seen as ensuring that the gains from growth, and the downsides of industrial transition, are distributed fairly. In a finding that should be intuitive, research is increasingly showing that the role of unions in enabling workers to have a voice at work, and securing better working conditions, can be key to delivering the productivity gains that have been so elusive in the UK. The recently published 'skills and employment' survey for 2017, for example, found that one in five workers had identified changes to their working practices which would make them 'a great deal more productive'. These channels were most likely to be put in place where 'their views and those of their colleagues were heard' – but the proportion of workplaces enabling workers to have a say has fallen over the decade (Felstead *et al.*, 2018). Similarly, a recent survey of nearly 7,500 workers found that while 87 per cent agreed with the statement 'I am keen to embrace technology and maximise its benefits', and 73 per cent agreed that technology would improve productivity. Less than one in four (24 per cent) said that their employer gave them a say in how technology effects their work (The Smith Institute, 2016). Firms' failure to put in place structures to ensure that the ideas and skills of their workers can be heard is holding back productivity.

Moving forward

The recognition of the need for government to adopt a strategy to deal with industrial change, and the challenges posed by new technology, should represent an opportunity to rethink how policy is made in the UK. Putting workers at the heart of the decisions that affect them can help to deliver better quality jobs, better managed change, and higher productivity.

Government should start at the top, with a clear role for unions on the Industrial Strategy Council it still (apparently) intends to establish. And this body should be given a clear remit to look at how to manage the challenges and opportunities of digitalisation. It should require sector deals to include trade union representation, as a first step towards setting up the kind of sectoral institutions for setting pay that are common in most of our successful European neighbours. And government should ensure that unions have a key role in every workplace, strengthening the ability for unions to gain access and recognition, and expanding the National Retraining Partnership into a genuinely national scheme.

An industrial strategy can help to deliver better jobs across the UK. But only if it listens to the people who will be most affected by the strategic choices we make.

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Crowding out investment, disgorging the social settlement: financialisation and the search for sinecures in a failed free market experiment

Adam Leaver

After ten years of disappointing growth and flat productivity following the 2008 crisis (see Summers, 2014; McGratten and Prescott, 2012; Barnett *et al*., 2014, Harari, 2016) it is tempting to conclude that the free market experiment which began under the Thatcher government of 1979 is now exhausted. That experiment was built upon a series of visionary promises about what the market could deliver and a critique of the state as an economic actor – as a mis-allocator of resources, a drag on competitiveness and distorter of price signals. Drawing on the sentiment, if not the detail, of the influential Bacon and Eltis (1978) thesis, it was argued that the non-market sector 'crowded out' private sector investment and enterprise. The non-market sector, as a competitor for resources, had extended too far, leaving 'too few producers' to pay the taxes required to support it without driving up inflation and the Public Sector Borrowing Requirement. The solution offered was de-regulation and privatisation to release entrepreneurial spirits and build an enterprise culture that would benefit 'the public' in its multiple identities: as producers, consumers and taxpayers.

On the other side of the Atlantic, a rather different discourse began to emerge within the business and management schools of US universities – one less concerned with the macro-economic causes of slowdown, and more with the micro-economic incentive problems of the public limited corporation. Concern about lagging US competitiveness increased the popularity of agency theory explanations for underperformance and decline. Authors like Michael Jensen told a very simple yet seductive story about the costs associated with the separation of ownership and control, that is, that the problem with public limited corporations (PLCs) was their propensity to reinvest rather than disgorge the corporate 'free cash flow' (operating cashflow in excess of that required to finance positive return investments). Jensen argued that funds were diverted to finance unnecessary investment or unsuccessful acquisitions, when they could and should have been returned to shareholders. This reticence to make shareholder distributions reflected a tendency on the part of management to either satisfice and take the easy option or aggrandise by using someone else's money to build larger, less efficient combines (see Jensen, 1989, also Jensen and Meckling, 1976).

Although there are differences in emphasis and object between the Bacon and Eltis thesis and Jensen's agency theory arguments, underlying both is a similar logic: by removing the shackles from the entrepreneur, profitability crises can be avoided because they are always caused by blockages, obstacles or distortions in markets that err inexorably towards efficiency if left untethered. The image of the entrepreneur was central to both arguments and remains the centrepiece of free market discourse. And yet, as we approach ten years of flatlining productivity and disappointing economic performance, we are entitled to ask: where are those entrepreneurial impulses that deregulation and privatisation promised to liberate? This chapter explores this argument in order to contribute broadly to the debate on the prospects of the UK's post-crisis industrial strategy agenda, and the health of the country's economy more generally.

Explaining post-crash underperformance

One answer offered by the right is that the Thatcher revolution was never truly complete; it was betrayed by the timidity and acquiescence of moderates within their own party, or by Blairite modernisers without. But that is hardly plausible in a world where the private sector has gradually encroached on previously sheltered activities, even after discounting the large privatisations of the 1980s and early 90s. The UK state's commercial relationships with external providers now amounts to approximately £250bn or 12-13 per cent of GDP – a greater value than the entire UK financial services industry, even by its most generous measure (National Audit Office 2017: 7).

The answer on the left is that the secular profitability crisis is in part a result of the absence of profitable investment opportunities. This is often linked to a technological argument about the lack of transformative technologies like the railways; or that the transformations do not translate into rising middle-class earnings, which have been hollowed out by new technological developments. But such over-determinism leads to political defeatism – decline is inevitable.

Rarely, if ever, has a third argument been made: that the present sclerosis is a product of elite conservatism in a context where money making for that stratum has become too easy. The loosening of credit markets, the growing complexity of financial innovation, the law and accounting expertise that increases corporate discretion, have removed constraints on elites, creating sinecures rather than entrepreneurialism. Satisficing in the board room, short-termism in capital markets and a reliance on law and accounting intermediaries to avoid tax and window-dress mediocre performance are its outcomes. A missing piece which explains part of the productivity puzzle may, therefore, be the ease by which elites are able to generate wealth through financial channels, creating slackness elsewhere.

Constraint-led efficiency

The idea that imposing constraint may create efficiency-enhancing outcomes should not be lost on the right. Jensen, for example, argued that the key to boosting efficiency was to curtail the excesses of management by imposing constraints on their discretion. For Jensen, managerial performance could be improved by using the discipline of the capital market. Leveraged buyouts were suggested as a way to sharpen managerial wits because mandatory interest payments and an obligation to repay higher levels of debt would incentivise managers to divest underperforming assets and to select only those investment projects with some potential for high returns. Debt – according to Jensen – made managers get up in the morning. This, combined with different governance and remuneration systems, would better align manager and owner interests and improve competitiveness.

But the theoretical elegance of Jensen's arguments hold little relevance to the *realeconomik* of market practice: the use of limited liability partnerships (LLPs), the chains of holding companies and subsidiaries, the inter-company loans and payments, the special dividend payouts, the use of secrecy jurisdictions to minimise tax and public scrutiny etc. Far from imposing discipline on management, debt and other financial instruments have opened up all kinds of opportunities for discretionary strategies, liberating CEOs, private equity general partners, manager-owners and other elites from the sort of difficult operational decisions we would normally associate with their role and pay grade. What is the point, after all, in taking risks on future investments that might raise productivity and improve returns, if similar or greater returns can be made by letting someone else rearrange the company's tax affairs? It is not even a particularly difficult enterprise; common patterns of jurisdictional arbitrage and tax avoidance suggest this is now a mundane, routinised process (Seabrooke and Wigan, 2016).

This is ultimately the problem: the greatest travesty of financialisation is not that it corrals management to yield to a disciplinary capital market; but rather that it featherbeds mediocrity in the boardroom; it gives cover to the often-ordinary talents of the privileged, *sedating the creative impulses of socially useful entrepreneurialism*. If money-making becomes too easy, capital will flow to those areas at the expense of others. This is a rather different 'crowding out' story to the one told by Bacon and Eltis: it is now too easy for firms and individuals to strip cash out of bloated assets and shift the proceeds to tax havens. This now distorts the overall allocation of capital within the national economy. At a time when many are wondering why productivity has flat-lined and GDP growth is so low – it is not inconceivable that part of the story is that we have made it just too easy for capital to realise the kind of returns it will tolerate for minimal effort by improving the ease with which funds can be stripped out of firms and moved offshore.

Jensen was wrong about debt: it does not disgorge the free cash flow; rather, it disgorges the domestic social settlement by evicting the claims of labour and the state. But he was right that when managers have too much discretion, it becomes too easy to free-ride on bought-in law and accounting advice, which keeps owners happy for minimal effort while doing little for anyone else.

The search for sinecures in sheltered activities

The search for sinecures is particularly pronounced in sheltered - or what has been termed 'foundational' - activities (Bowman *et al.*, 2014). These activities were once considered a site of huge technical and social innovation and a motor for growth. The post-1945 settlement created a healthy, better-educated and motivated workforce whose activity wrought benefits that were widely distributed, creating a virtuous circle for 30 years. It put a check on egregious extraction and rentier-like behaviour, which encouraged managers to invest more creatively in search of profitable opportunities.

But after nearly 40 years of privatisation and deregulation, foundational activities have become a site where the objectives of risk avoidance and maximising financial extraction have proliferated (Bowman *et al.*, 2015). In many situations these firms operate with an implicit state guarantee because of their essential qualities which insulates management. Under little pressure from the absentee landlords of the capital markets, managers have responded by hollowing out company balance sheets to pay out increasing levels of dividends, whilst the growth of contract volumes keep things going (Leaver 2018). This is all possible as long as cashflows are predictable and volume increases are easy to find. The corporate culture that emerges, which values risk-free profit and scale over higher rates of return, is hardly entrepreneurial. Yet it is one underwritten by the state, who for the last 40 years have equated private sector involvement with entrepreneurial flair and free market efficiencies, rather than a means of creating sheltered sinecures.

Conclusion: disciplining financialised 'crowding out' pressures

If capital markets cannot impose the disciplinary constraint required to restore our economic fortunes, perhaps new disciplinary agents should be sought? One option would be a more decentred economy, one where labour organisation and community pressure could put a floor under competition and prevent management from using the other easy levers of casualisation and intensification to generate returns. More robust union rights could act as a bulwark against sleepy managers – to get them up in the morning. Increased workplace democracy, including a seat on the board, would add dissenting voices in the boardroom to aid the repatriation of capital from the offshore world, kicking in domestic positive externalities.

Theresa May abandoned plans for workers on boards soon after becoming Prime Minister, following a hostile reaction from the business lobby. Yet this proposal, and the entire corporate

governance reform agenda, needs to be conceived of as a central part of a future industrial strategy. Unless and until industrial policy-makers turn their attention to rentier extraction and other financialised corporate practices that underpin the UK's economic malaise, any new industrial strategy is likely to sink. As good as intentions might be about a revivified industrial sector, the capacity to attract capital to alternative economic sites critically depends on the disciplining of easy-money returns through financial means or avenues which crowd out socially-worthwhile, productive investment.

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Ownership and industrial strategy

Mathew Lawrence

Purposeful co-ordination of economic activity is at the core of any successful industrial strategy. In the UK, our disorganised economy - and the poor outcomes it generates - makes this task of purpose-driven co-ordination all the more urgent. As the UK continues to iterate and evolve a progressive modern industrial strategy, it is therefore vital we add a new weapon to our policy arsenal: the promotion of inclusive models of ownership to strengthen economic co-ordination within firms and sectors, improve the nation's productive capacity, and broaden who has a stake and say in the economy.

Progressive industrial strategy

The aim of industrial strategy, as IPPR's Commission on Economic Justice argues, should be to drive structural change of the economy (Jacobs *et al.*, 2017). In the UK, this means addressing the lack of co-ordination that has resulted from our liberal market economy. Our 'disorganised economy' has led to patterns of investment and production over the last 30 years that have left the country with deep and longstanding weaknesses, from weak productivity and investment performance, to high levels of inequality and stagnant living standards for many. Addressing this should be the goal of the UK's industrial strategy.

We argue that five 'missions' should therefore sit at the core of a progressive industrial strategy: raising productivity economy wide, particularly in the many firms, sectors and regions which currently lag behind those in other developed economies and the UK's frontier firms; increasing the diversity and level of UK exports, while increasing the level of import substitution; increasing the rate of R&D, diversifying the range of companies at the technological frontier; stimulating economic growth and productivity improvement throughout the UK's nations and regions, rebalancing the economy away from London and the South East; and reducing the UK economy's environmental impact, particularly through its almost full decarbonisation by around 2050.

Achieving these goals will require a level of ambition and action far beyond correcting 'market failures'. Instead, it will require a fundamental reordering of the structure of the economy, including the volume and direction of private and public sector investment. This is co-ordination on a grand scale with a grand purpose.

The scale ambition means the traditional tools of industrial strategy are not enough. Traditionally, industrial strategy has focused on the state co-ordinating 'supply side' economic politics, especially as it relates to the productive capacity of the economy, and the conditions that influence investment and production, in an effort to overcome disorganisation. Industrial policy must consequently encompass a broad range of policy options: infrastructure investment, skills development, R&D spending, land use planning, competition policy, business taxation, regional economic development and export promotion have all been part of the mix.

These remain important and needed tools in reshaping the UK's economy. Nonetheless, new and complementary mechanisms for co-ordinating economic activity are also required. New

models of ownership - which reshape control and income rights derived from ownership of capital - should be at the heart of a truly ambitious industrial strategy.

Owning the future: why ownership matters

Who owns and controls the productive wealth of nations, communities and businesses fundamentally shapes how an economy operates and in whose interests. It patterns power and reward within society, shapes the purpose and nature of enterprise, and effects our engagement with nature and natural resources. Critically, ownership provides the architecture upon which types of economic activity are built, with the type of ownership incentivising differing forms of co-ordination and time horizons within the firm (for a more detailed discussion, see Lawrence and Mason, 2017; also McDaniel and Berry, 2017).

Today a single form of ownership dominates in the UK: from businesses, land and finance, to data, intellectual property and natural resources, our enterprises and assets are overwhelmingly privately owned and controlled - often in the form of the giant publicly-traded corporation. Control and income rights are exclusive, granted to private owners. There are raw strengths in this model, yet in aggregate, concentrated private ownership and weak governance sits at the heart of our economic failings, failings which a progressive industrial strategy should seek to address.

There are two problems in particular it generates, which stand counter to the objectives of a progressive industrial strategy.

First, private and concentrated ownership acts as a dynamic of divergence. Capital's share of national income has risen substantially over recent decades; however it is measured, labour's share of income as a result appears to have fallen substantially. If ownership of capital were broadly distributed, this would matter less. However, though the UK is a wealthy nation, that wealth is deeply unevenly held. The richest 10 per cent hold five times more wealth than the bottom half of the population combined and critically, the top 10 per cent own over 60 per cent of the nation's financial wealth, including stocks and shares, which grant control rights over economic activity. In other words, high and potentially rising returns to capital will see the owners of productive wealth pull away from the rest.

Critically, three powerful trends make it likely that capital's share of national income will continue to increase, widening inequality and weakening our capacity for co-ordination as productive wealth is increasingly concentrated. First, the value of land continues to rise faster than economic growth. Fixed in supply and owned by a declining proportion of the population, the value of land has increased more than fivefold since 1995 – and at £5 trillion now represents more than half of UK total net worth. Meanwhile, rising house prices have led to home ownership now being at its lowest rate for almost three decades, with landowners increasing their income from property.

Second, growing automation in the economy represents a substitution of capital for labour. If it becomes easier and cheaper to replace human work by increasingly capable robots and artificial intelligence, automation could accentuate existing trends in the capital and labour shares. IPPR analysis, for example, found that the total level of wages associated with jobs with the technical potential to be automated in the UK is £290 billion per annum. If automation leads to lower average wages or working hours, or loss of jobs in aggregate, a significant amount of national income could be transferred from labour to capital. Even if wages do not decline, if relative rewards to capital rise more quickly, the share of national income going to capital would increase. In other words, the distribution of ownership will shape the flow of reward in the machine age.

Third, the rise of highly profitable digital platform monopolies, with workforces that are small relative to value added, is also likely to put downward pressure on labour's share of income. So-called 'superstar firms' are able to use their aggregation and analysis of data to make supernormal profits, and to dominate not just current digital markets but future ones in artificial intelligence.

Technological and economic trends therefore risk creating a 'paradox of plenty': society would be far richer in aggregate, but for many individuals and communities, technological change could reinforce inequalities of power and reward as the benefits flow disproportionately to the owners of capital. We need to transform the distribution of ownership to avoid this future.

The second reason why ownership matters profoundly in terms of achieving the goals a progressive industrial strategy is committed to is that how an enterprise is owned - and in whose interest - powerfully structures the purpose and nature of economic activity performed. Different models of ownership produce differing distributions of power and control within a firm, creating different purposes and outcomes. While extraordinarily successful in some respects, the conventional company model has clear limitations, with a narrow focus on private, investor ownership, and it can be argued that it contributes to wider economic and social injustices in the contemporary UK political economy. From Carillion to Mike Ashley, from the financial crisis to the long-tail of low productivity, low wage businesses, the dominance of extractive and footloose forms of ownership underpin many of the deep failings of our economy, from stark inequalities of power and reward to flat lining investment and productivity.

At the same time, the lack of pluralism in how enterprise is owned side-lines the inclusive, innovative and committed forms of business we need. We desperately need better forms of enterprise, but that will require better, more committed forms of ownership. Businesses owned in ways that broadly distribute ownership and participation rights in the workplace can often be more productive, resilient and equitable. Expanding alternative models of ownership in the economy – and broadening ownership of capital – is therefore vital to building an economy where everyone has a stake and say.

Strategies for scaling inclusive ownership

The aim of ownership reform should therefore be two-fold: to give more people a share of capital, both as useable wealth and for its income returns; and to spread economic power and control in the economy, by expanding the decision rights of employees and the public in the management of companies. If achieved, it would broaden wealth and anchor productive capital more widely across the country, reduce inequality driven by unequal ownership, and help support better social and economic outcomes.

From worker ownership, municipal enterprise, and co-operatives, to land trusts, public banks, social wealth funds, public data banks and open intellectual property regimes, there is a wealth of inclusive and democratic ownership models that if scaled in the UK could give people and communities more wealth and power. IPPR's Commission on Economic Justice has argued for scaling four new forms of ownership (see Lawrence and Mason, 2017). Taken together, it would reshape how fundamental assets - business equity, land, and data - would be owned and used.

First, the UK should create a Citizens' Wealth Fund. Like other sovereign wealth funds around the world, this would own shares in companies, land and other assets on behalf of the public as a whole. It would thereby manage existing public assets and transform a part of national private and corporate wealth into shared public wealth. It would act as a long-term partner and investor in the creation of national wealth. The Fund could be capitalised by a combination of capital receipts from the sale of public assets, revenues from a 'scrip tax' on corporate stocks, and the hypothecation of wealth taxes. The Fund's investment mandate would be set by

Parliament but it would be managed by an independent board on behalf of the public. The Fund would act to spread wealth by paying out a universal citizen's dividend to all or particular groups of the population, and by investing in the provision of universal basic services

Second, we argue for the expansion of employee ownership trusts (EOTs). EOTs are a form of business model in which a majority of a company's ownership is vested in its workforce. Such trusts enable a considerable share of the returns to capital (company profits) to be distributed to labour, and for workers to exercise a much more significant role in the governance of the firm; they invert the capital-labour relationship found in conventional firms, instead putting capital at the service of labour. A series of steps could significantly grow the number of trusts, including stronger tax incentives for the transfer of business ownership and for external investment and measures to build individual capital stakes for employees. At the same time reform of pension auto-enrolment to increase minimum pension contributions would allow employers to credit company shares to their employees' pension accounts. This would boost pension savings rates, allow companies to use the working capital, and help transform the level of employee ownership in the UK. Indeed, IPPR estimated that these policies could double the current rate of growth of EOTs, seeing over 21,000 companies majority owned by their employees by 2030, with almost 3 million employee owners.

Third, steps should be taken to expand the number of co-operative and mutuals, forms of enterprise which have democratic ownership and governance structures baked in by design. The number of such firms would be significantly increased if the financial, legal and infrastructure barriers currently facing them were overcome. Drawing on experience in other European countries with larger co-operative sectors, reforms should include establishing a Co-operative Capital Development Fund, financed by a levy on the profits of co-operative firms; a specialist Co-operative and Mutual Development Bank to finance co-operative enterprises; and the introduction of the same capital gains and inheritance tax incentives for companies at the point of sale to co-operatives as recommended for sales to employee ownership trusts.

Fourth, we argue that land is an essential factor in all economic activity but, if it is not properly managed and regulated, it can play a destabilising role in the housing market and the wider economy. This is clearly the case in the UK's political economy. Our dysfunctional land market and soaring land values have helped drive growing wealth inequality, created the conditions for a broken housing market, and are a root cause of an unproductive and unstable economy. We therefore propose new measures to expand and better use publicly owned land, and set out steps to expand community ownership of land.

Finally, economic power in the contemporary economy increasingly resides in the control of digital data and ownership of the underlying digital infrastructure. Ensuring technological change expands opportunity and fosters open and inclusive innovation will require moving from conditions of enclosure where the platform giants dominate the commanding heights of the economy to a digital commonwealth, where control of data and the digital infrastructure are organised as an open, collective resource for the common good.

Conclusion

A strategy for transforming ownership of economic assets and institutions cannot on its own compensate for an ambitious, co-ordinating and purposeful industrial strategy. However, without a strategy to remake how our economy is owned and in whose interest, we will never create the structural changes needed based on more effective co-ordination, nor generate the better economic, social and environmental outcomes we are capable of. It is time we owned the future.

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Section 8: The politics of UK industrial policy

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Still 'picking winners': the political history of UK industrial strategy

James Silverwood and Richard Woodward

Beginning in the seventeenth century, UK governments have sought to 'pick winners', making them one of the pioneers of industrial strategy. Unlike most other countries, whose industrial strategies tended to promote civilian manufacturing, UK industrial strategy has focused predominately on financial services and defence manufacturing. Broadly speaking the UK's industrial strategy has dovetailed with three periods of statecraft concerned with the rise and fall of the British empire. This chapter briefly elucidates the dominant forms of industrial strategy in each era.

Industrial strategy in the age of empire, 1650-1914

Simon Lee (2017) locates the genesis of state support for financial services and arms manufacturers in the English financial revolution of the seventeenth century, itself the result of a series of military defeats against the emerging naval and commercial power of the Netherlands. Defeats in the three Anglo-Dutch wars (1652-1654, 1665-1667, 1672-1674) culminated in the coup d'état of the 1688 Glorious Revolution as English parliamentarians conspired in the successful invasion of England by William III with a Dutch fleet and army. This would prove a pyrrhic victory for the Netherlands. Just as they appeared on the cusp of becoming the foremost global power, William III introduced a number of economic reforms that would underpin UK hegemony for the next 250 years.

The key advance for industrial strategy was the creation of the Bank of England in 1694. The Bank, the issuer of the world's first government bonds, was charged with acting as a financial intermediary between citizens and the state for the purposes of rebuilding English military capacity, and later prosecuting war. In particular, in a forerunner of what David Edgerton (2006) terms the warfare state, governments used the innovation of public debt to channel public credit into military spending. In turn, investment into defence manufacturers prompted technological improvements needed to deliver the battlefield superiority upon which the British empire was constructed.

The financial revolution's legacy was a service orientated British economy. By the Victorian period service industries were the principal creator of economic growth with finance, distribution, transport and communication particularly important sectors of the UK economy. Indeed, between 1700 and 1914, C.H. Lee (1986) calculated that manufacturing only exceeded the contribution of services to GDP growth in the opening three decades of the nineteenth century, prompting him to question whether the British economy really underwent a nineteenth century industrial revolution. These developments were underpinned by government policies deliberately designed to augment the financial services sector. Under state patronage the City became the foremost global financial centre and expansion of the British empire facilitated the growth of a number of ancillary commercial services such as insurance. British manufacturing meanwhile was largely excluded from this highly integrated global financial network, financing its economic activity through profits, inherited wealth, and loans from friends and family. The result was inadequate capital investment in industrial

production. In turn this limited scientific modernisation, putting UK manufacturers at a competitive disadvantage with technologically superior American and German counterparts.

Industrial strategy in an age of economic crisis, 1918-1939

With the 'roaring 20s' largely bypassing the UK, its interwar economic performance was lamentable. Unemployment, poverty and deprivation were especially widespread across many communities, most notably in the 'outer Britain' of Northern England, Wales, Scotland and Northern Ireland, reliant upon uncompetitive 'staple' industries such as coal mining and steel (Miller, 1976). Many of these economic troubles stemmed from changes to the international economy accelerated by the First World War, to which the UK struggled to adapt. The conflict started a process of introspection among policy-makers, who sought to defend the UK's pre-eminent economic power from the challenge of the United States (Burk, 1979).

The response of industrial strategy was to extend state intervention in the economy in four directions. First, the UK invented what would later become known as regional policy (Pemberton, 2017). In the 1920s regional policy sought to enhance labour mobility, but in the 1930s its focus switched to increasing employment in 'special areas' through public works and public procurement. The second direction was state-led rationalisation of British industry predicated on the belief that enhanced competitiveness in world markets would arise from economies of scale. The 1921 Railways Act, for example, reduced the number of companies from 60 to just four (National Archives, 2018).

Third, the state broadened the 'winners' identified in its industrial strategy. Industries including chemical, electrics, and motor vehicles that were assisted through government-funded research and subsidised investment during the First World War continued to be supported by government in the interwar period (Pope, 1998). Parliamentary evidence by Sir John Simon (1939a, 1939b) (Chancellor of the Exchequer, 1937-1940) demonstrate the significant subsidies given by the Treasury to 'new' industries appearing as a result of the First World War, such as civil aviation, and 'staple' industry like agriculture. Other selective interventions were anchored in regional policy with government support assisting the establishment of new businesses across the 'special areas' after their introduction in 1934 in a diverse range of industries from aluminium manufacture to confectionary.

Fourth, the UK's industrial strategy took a protectionist turn. Import duties were first introduced in 1915 as a wartime expediency. During the 1920s, however, a series of laws were passed to extend the range of protection offered to British industry. Most notably, the 1921 Safeguarding Industries Act initiated a 33.3 per cent duty on 6500 imported goods thought to be of strategic consequence. Muddled motives lay behind this legislation, which did not constitute a coherent protectionist industrial strategy (Tomlinson, 1990). This would change with the introduction of the general tariff in April 1932 due to 'growing support for tariffs in labour, business and financial circles by 1930' (Garside, 1998: 47) and acknowledgment by the ruling Conservative Party and Treasury that a sheltered domestic market might restore industrial efficiency and maintain confidence in Sterling (Garside, 1998: 63-65). The general tariff was also imperial policy by other means, maintaining an economic rationale for empire in the maelstrom of global depression of the 1930s. The 1932 Ottawa Conference established a system of imperial preference, exempting imports into the UK from the empire from the general tariff whilst guaranteeing UK firms access to international markets.

Industrial strategy in the age of imperial decline, 1945-2018

By the mid-1960s the post-war renaissance of British manufacturing began to dissipate. Throughout the decade UK manufacturing output lagged behind international competitors and from 1966 manufacturing employment started to dwindle. Concurrently the UK's economic growth trailed many of its advanced industrial counterparts in Europe and North America.

Explanations for the UK's relative economic decline range from dysfunctional management and lack of investment to recalcitrant trade unions and short-termism in UK financial markets. By far the most important explanation of economic decline however was the dismemberment of the British Empire, which had long protected British companies from global competition (Skidelsky, 2013). Even into the 1960s many British firms were still reliant on captive domestic and imperial markets allowing them to postpone the investments needed to modernise production and management techniques.

To stave off economic decline governments put renewed emphasis on industrial strategy (Pemberton, 2017). Alongside the economic turmoil of the 1970s, a heated debate about industrial strategy was underway. Proponents of industrial strategy asserted that its failure to resurrect the British economy derived from a lack of coherence and a backward-looking focus that cosseted troubled sectors and incumbent companies, rather than building capacity in the industries of the future. The insurgent New Right however drew different conclusions. Its adherents argued that attempts by governments to pick winners were both expensive and futile. Worse, by keeping obsolete firms afloat, industrial strategy was crowding-out private investment and blunting entrepreneurial dynamism. After the election of Margaret Thatcher's Conservative government in 1979, the emphasis of industrial strategy shifted away from selective intervention towards 'functional' industrial policies designed to rejuvenate the national business environment through privatisation, deregulation, competition, and liberalisation of trade and finance.

UK's governments have nevertheless continued to 'pick winners'. Since 1979 Britain's industrial policy has been somewhat schizophrenic with habitual appeals to the virtues of free markets being accompanied by selective state intervention to support specific firms and sectors. Throughout the last four decades, governments have proved systematic and sustained support for defence manufacturers, the construction sector, the aerospace and automotive industries but the most lavish attention has been reserved for the financial services sector (Lee, 2010). As well as supporting the City of London with expensive infrastructure investment, the state has also equipped the City with an ever more elaborate, if ineffectual, regulatory apparatus. When the failings of this apparatus, which relied excessively on private risk management, were revealed by the financial crisis, the state rescued ailing companies with a taxpayer bailout worth at peak £1.162 trillion (National Audit Office, 2011). As of March 2017, the total support to UK banks remained at £58 billion, far in excess of the financial assistance offered to all other sectors in the name of industrial policy (National Audit Office, 2018).

Having hitherto made few public pronouncements on the economy, Theresa May's decision to make industrial policy one of the cornerstones of her campaign for leadership of the Conservative Party and Prime Minister came as a surprise to some. Although initially received with some scepticism (see Silverwood, 2017), once in office May moved with alacrity to meet her pledge to implement a 'proper industrial strategy to get the whole economy firing'. Changes to the machinery of government, including the creation of a new Department for Business, Energy and Industrial Strategy and a Cabinet Committee on Economy and Industrial Strategy chaired by the Prime Minister personally, injected momentum into the process. The final white paper, *Industrial Strategy: Building a Britain Fit for the Future* was published in November 2017. The new industrial strategy has been hailed as a 'significant departure' from the 'hands off approach to industrial policy' implemented by UK governments since 1979 (Stirling & Laybourn-Langton, 2017). However, whilst the industrial strategy of the May government doubtless has novel features, in reality it perpetuates the state's previous predilection for 'picking winners' in sectors – including life sciences, construction, automotive and creative industries – that bear an uncanny resemblance to those supported in the past (Woodward & Silverwood, 2018).

Conclusion

Industrial strategy has a long political history in England and the UK. Its development has occurred within three periods of statecraft associated with the British empire and the management of economic and imperial decline. Whilst these periods have seen innovation, a notable continuity has been the willingness of the state to 'pick winners' with the same sectors recurring throughout history. It is no surprise that Theresa May's government shows no sign of departing substantially from an approach whose lineage can be traced to the seventeenth century.

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33

The developmental state in England: the role of the Treasury in industrial policy

Simon Lee

Proponents of industrial policies designed to reverse the relative economic decline of the UK have tended to portray Her Majesty's Treasury, with its fiscal orthodoxy or 'Treasury view' of balanced budgets and tight control of public expenditure, as one of the principal political and institutional obstacles to the implementation of a technocratic, state-led industrial modernisation programme (see Newton and Porter, 1988; Pollard, 1982; Heseltine, 2017).

In comparisons of national economic policy and performance, the Treasury has been compared unfavourably to France's Commissariat Général du Plan (Newton and Porter, 1988) or Japan's Ministry of International Trade and Industry (Smith, 1984). According to this 'other country' model of political economy, the UK has failed to develop the appropriate societal principles and institutions of modern capitalism, that is, a developmental state (Marquand, 1988) or Listian national system of innovation (Freeman, 1987).

This chapter will challenge this view of the Treasury as an impediment to industrial policy in two ways. The first argument requires us to look again at the history of the state in England. The second argument requires us to acknowledge the scale of the Treasury's interventions since the financial crisis of 2007-08.

The Treasury's historical role in industrial development

In making the first argument, this section draws almost exclusively upon the insights of historians, since political scientists by comparison have made little attempt to understand the role of the state in England in general, let alone that of key institutions like the Treasury, prior to the formation of the United Kingdom.

The assumption that, because of its early industrialisation and status as the world's first industrial nation, England, and latterly the UK, was impeded from instituting a developmental state should be rejected (Lee, 2019). It should be recognised that by the end of the seventeenth century, and before the formation of the UK, England had indeed laid the foundations of its own developmental state.

At the heart of that very entrepreneurial state was the Treasury. As William Ashworth's insightful research into Customs and Excise and the broader state in the development of manufacturing has demonstrated, the Treasury played a key role in the evolution of the developmental state in England (Ashworth, 2017).

In Chalmers Johnson's (1982) Japanese developmental state model, a key element is the insulation of the state bureaucracy from the legislative and judicial branches of government, and political pressure from key interest groups. However, in the case of England's developmental state, as both Ashworth (2017) and Thomas Ertman (1999) have documented, Parliament was to play a key role in the construction of a new, non-proprietary fiscal-military state between 1660 and the 'Glorious Revolution' of 1688. This was built upon nationalisation

and the centralisation of Customs and Excise, and parliamentary control of the Treasury, the revenue boards, the Navy Board and the Admiralty.

England was able to develop a strategic approach towards the development of its trade and naval power, and its commercial and industrial productive powers, but not, as is often assumed, upon the basis of limited government, free trade and competitive markets. Law, legislation and illiberalism in trade, via protectionism, were key to the construction of an English variety of capitalism.

It is particularly important now to advance this idea of an English developmental state as a counterweight to the New Whig 'developmental market' interpretation of English history, whose proponents have included Margaret Thatcher, Sir Keith Joseph and, most recently, Eurosceptics such as Daniel Hannan.

These New Whigs have developed a political narrative in which the exceptionalism and superiority of the uncodified English constitution, the common law, limited government and commitment to free markets have been presented as the basis of a superior 'Anglosphere' civilization, and alternative political economy to the 'continentalization' afforded by the burgeoning 'super-state' of the European Union (Hannan, 2013).

However, as Sophus Reinert (2011) has documented, when later industrialising economies sought to emulate England during the eighteenth century, it was the institution-building and developmental role of the English state in nurturing national productive powers they sought to emulate, not the England of the New Whigs' developmental market model of political economy.

As such, John Cary's 1695 *Essay on The State of England* provided a blueprint for state-led industrial modernisation, including a fourteen-point agenda for nurturing manufacturing industry, more than a century before Alexander Hamilton's reports on the state of manufactures, and more than one hundred and forty years before the publication of Friedrich List's *Natural System of Political Economy* (1837) and *National System of Political Economy* (1841).

During the seventeenth century, and more than a century before England had led the world's first Industrial Revolution, during a period which could aptly be described as the English Enlightenment, England had experienced parallel revolutions in politics, public administration, science, finance, commerce and warfare, all of which had contributed to or were shaped by a process of state- and empire-building (Lee, 2019).

Most importantly, for the role of the Treasury and industrial policy, there had been a revolution in both the study and practice of political economy. England had become one of the most interventionist states of its age, shaped by a liberalism which in 1688-89, as Steve Pincus has noted, was not antagonistic to the state but 'revolutionary and interventionist rather than moderate and anti-statist' (Pincus, 2009: 8).

Rather than simply developing the market-conforming methods of intervention and administrative guidance characteristics of Johnson's Japanese developmental state, noted above, England's imperial grand strategy had been one of market creation and industry-building, made possible by the innovations in fiscal policy led by the Treasury and the Bank of England, following the latter's establishment in 1694.

The 'other country' model has failed to identify England's developmental state because it has assumed that developmental states always focus upon the nurturing of civilian industries. In England's case, the developmental state focused upon the military industries of the warfare state to build a global empire.

In this regard, David Edgerton's brilliant, path-breaking research has challenged the image of England as an anti-scientific, anti-technological, and anti-industrial nation, and instead detailed how England was a profoundly technological and militant nation (see Edgerton, 1991). Far from being an impediment to industrial modernisation, the Treasury made possible strategic investment in the latest armaments and the industries to supply them.

Treasury interventions after the financial crisis

This section advances the second argument, challenging our understanding of the role of the Treasury in industrial policy with reference to its various interventions since the financial crisis of 2007-08. From these, it should now be evident that the Treasury has been capable of major strategic policy choices at variance with the notion of the 'Treasury view', but fully compatible with its historical role as the pilot agency of the developmental state in England.

In its response to the 2007-08 financial crisis, the Treasury has shown itself willing to intervene strategically, and on a heroic scale. However, it has not acted to 'rebalance' the economy away from a growth model over-dependent upon the financial and commercial services of London and the South-East, or debt-based private consumption towards manufacturing, exports and private business investment. The Treasury's interventions, principally through its deficit reduction plan, along with those of the Bank of England, have actually strengthened and deepened, rather than rebalanced, the existing British model of political economy.

The Treasury has sanctioned a £1,162 billion bailout of the UK's failing banks, including taking several into the public sector. These interventions alone increased the UK's net public sector debt from £940.3 billion or 60.2 per cent of GDP, to £2316.9 billion or 148.4 per cent of GDP (Office for National Statistics, 2018: table PSA1). Furthermore, since the establishment of the Cameron-Clegg coalition government in May 2010, the Treasury has presided over a £760.9 billion increase in UK net public sector debt (excluding public sector banks) from £1,031.4 billion or 65.2 per cent of GDP, to £1,792.3 billion or 85.2 per cent of GDP at the end of June 2018 (Office for National Statistics, 2018: table PSA4).

As such, the Treasury has been prepared to sanction an average annual increase in net public debt of more than £94 billion during this period. If the debts of the public sector banks are included, by the end of June 2018, the UK's net public sector debt amounted to £2,059.7 billion or 97.9 per cent of GDP.

The Treasury's approach to fiscal consolidation during this period has also been highly selective. For example, the pursuit of austerity has not prevented the Treasury from sanctioning a £180 billion defence equipment plan for the next decade, including £84.7 billion to be spent on new equipment (Ministry of Defence, 2017). At the same time, the Treasury has planned the world's largest privatisation programme, greater in scale than that undertaken by the Thatcher governments during the 1980s, and amounting to the planned sale of more than £100 billion of public assets (National Audit Office, 2016).

The Treasury has also authorised the Bank of England to set up the Asset Purchase Facility, and to subsequently conduct a £445 billion programme of quantitative easing (QE), together with a series of further interventions designed to stimulate bank lending, culminating in the September 2016 introduction of the Term Funding Scheme loans, which alone has generated a total loan liability of £126.5 billion. In total, by the end of June 2018, the Treasury had sanctioned Bank of England activities which had added £191.7 billion to the United Kingdom's net public sector debt (Office for National Statistics, 2018: 13).

Conclusion

Far from being a fiscally conservative impediment to innovation, intervention and a modernising grand strategy, as the department responsible for the public finances, managing the government's financial assets, and the organisations that in turn manage those assets on a day-to-day basis on behalf of taxpayers, the Treasury has demonstrated its willingness to intervene repeatedly and strategically in the UK economy. It has continued to play its historic developmental state role, but not admittedly in support of the domestic civilian industries which proponents of an industrial strategy continue to argue should receive greater Treasury support (Industrial Strategy Commission, 2017; Heseltine, 2017).

As Richard Murphy has argued, there is huge potential for quantitative easing to fund an industrial strategy as part of a broader programme of national renewal which would see the creation of a national investment bank and the funding of a major infrastructure investment programme (Murphy, 2015). For its part, the Industrial Strategy Commission has recommended the creation of a new industrial strategy division within the Treasury, as part of a wider reorganisation, to ensure the implementation of policies consistent with the proposed industrial strategy.

Yet if such an industrial strategy has yet to be implemented, the responsibility lies not with the institutional or ideological obstructiveness of an orthodox 'Treasury view' and/or a policy commitment to expansionary fiscal consolidation. Responsibility lies instead with the failure of political imagination upon the part of the UK's political parties, and a failure of past governments to 'rebalance' the national economy as promised.

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34

Balancing a post-Brexit trade and industrial strategy

Matthew L. Bishop

The study and practice of political economy is beset by problematic binaries: state vs market; free trade vs protectionism; laissez-faire vs interventionism; public vs private, and so on. Thinking in such terms fails to capture the complex reality of how the world actually functions, and it limits our analysis of economic policy to oppositional tropes. However, a far bigger problem is that, in much of our public discourse, key economic concepts are deployed inaccurately by prominent actors, or they are conflated with each other. For example, many on the right and Blairite soft left wilfully confuse private control with supposedly 'free' markets: from the banking sector to privatised utilities, monopolistic and oligopolistic sectors are regularly described as being 'free' when they function with little meaningful competition. Similarly, on the more Corbynite left, a zero-sum choice is sometimes posited between state intervention and the private sector, or, in the 'Lexiter' view, between free trade and protectionism (something conservatives themselves also indulge in when perpetuating caricatured fears of leftist economic policy).

This is especially so when it comes to situating the domestic economy internationally. Champions of globalisation often defend private sector-led development and openness at all costs, which privileges particular forms of private power and reproduces skewed forms of capitalist development. In the contemporary UK, this is highly financialised and typified by a range of malign effects, from endemic under-investment to a failed housing market and 'insane' levels – to use John Lanchester's (2018) description – of essentially publicly underwritten finance-sector remuneration, as well as current account instability redolent of countries suffering the resource curse (see Blakeley, 2018). Proponents rarely recognise such market failures – not least because endemic rent-seeking enriches many of those with the greatest stake in a decaying system – and wrongly view public attempts to correct them as 'anti-capitalist' (Bishop, 2014).

Critics, by contrast, tend to see global integration as a negative-sum game, and thus greater protection of national markets and state intervention as inherently beneficial. Yet public control of the commanding heights does not, of itself, necessarily generate a vibrant and innovative economy. In both cases, ends are frequently confused with means. So, what are the ends? In this short chapter I explain why, if the fundamental objective of economic policy is industrial upgrading – what, in other contexts, is simply called 'development' (see Payne 2005) – then misinterpreted binaries are unhelpful, and even profoundly damaging to it. Central to any industrial strategy is a careful, and, as the name suggests, strategic engagement with globalisation, and trade policy is emblematic of this.

The UK's limited post-Brexit options

An interventionist political economy is not intrinsically anti-capitalist: nurturing markets into existence when they would otherwise never exist, making them work better, or even doing the job for them when they have palpably failed is a fundamental rationale of economic statecraft. When markets do not serve development objectives, moreover, intervention is required to ensure that they do. But intervention for its own sake does not, of itself, necessarily produce

beneficial development outcomes, nor does it constitute an industrial strategy. If such a strategy is fundamentally about embedding a capitalist economy within a wider regional and international context, a mixture of policy tools are necessarily required to manage that engagement.

This has been plainly revealed by Brexit. Most serious research on the subject has continually revised the UK's long-term growth prospects down (see Emmerson *et al.*, 2016; HM Treasury, 2016; Laurence, 2016). Uncertainty about the UK's trade agreements is a significant factor behind this. Depending on its ultimate form, Brexit is going to have substantial costs in terms of lost GDP – the three main Treasury scenarios imply between 3 and 8 per cent, and, at the time of writing in late 2018, economic output was already arguably 2.5 per cent lower than it otherwise would have been (CER 2018) – and somewhere between tens and hundreds of billions of extra borrowing.

There have always been two basic post-Brexit options facing the British government when it comes to trade: a Ukraine-style Association Agreement (AA) tied to a Deep and Comprehensive Free Trade Area (DCFTA) or single market membership via the European Economic Area (EEA) and European Free Trade Association (EFTA). The former would entail the most economic damage, as services liberalisation would be limited and sophisticated firms would find it difficult to participate in cross-border production networks as freely; the latter would resolve such issues, but would require an acceptance of the 'four freedoms' and render it considerably more difficult for the UK to pursue divergent trade agreements elsewhere. The tortuous way the government negotiated the withdrawal agreement, which was exemplified by a Chequers white paper that sought to chart a middle course between these two options, reflects the difficulty of reconciling them and their consequences (see Duff 2018a; 2018b).

What is most peculiar is that the government has not been pursuing its objectives on the basis of a dispassionate weighing up of costs and benefits: on any rational measure, remaining in the single market would represent by far the most optimal economic outcome short of ditching Brexit. This may be where we ultimately end up, but it may be well into the transition period before that becomes clear. However, if we step away from the day-to-day debate around post-Brexit trade models, a more interesting question actually emerges: why has the government taken such cavalier approach to the negotiations, and risked inordinate levels of economic damage? It is, of course, not unusual for governments to enact policies at great cost to the country: austerity, to give one obvious example, continues to wreak terrible destruction (Wren-Lewis, 2018).

But a key difference is that politicians, and much of the public, appeared to believe in the case for austerity (Stanley, 2014). It is difficult to say the same for Brexit: the government's own analysis has spelled out clearly the likely cost, and, as the negotiations have wound on, even Brexiters have, as Chris Grey (2018a) has put it, become faced with 'the irreconcilability of declaring that hard Brexit is the inviolable will of the people with the general political imperative of not following policies that do major damage to the country'. The obvious answer to the question, then, suggests a lack of understanding on the part of many Brexit proponents about what constitutes modern trade policy. I have described these elsewhere as 'free trade fallacies' (see Bishop, 2017a; 2017b).

Free trade fallacies

A key problem animating the Brexit debate in the UK is the conflation of the single market with a free trade 'deal' (an oft-repeated word that embodies a huge amount of residual macho posturing). This is evident in the most prosaic elements of what is a distinctly self-referential and parochial discussion, from questioning of the reasons why, for example, a small firm in the north (in the metropolitan imagination, they are always in the mythical lands beyond the M25) that never exports to Europe should be bound by excessive EU red tape, to the vapid,

and largely irrelevant, focus on tariffs for finished goods exports. Not only does this belie a complete lack of anything approaching a grasp of the technical issues, it also highlights some fundamental misunderstandings about trade itself. Put simply: for many British politicians, trade is still about staple goods going back and forth between sovereign countries.

This is a dangerous misreading of the world as a zero-sum game between nation states competing to export their main finished products, when, under globalisation, things are inordinately more complicated and potentially – though not necessarily (see Rodrik, 2017) – positive-sum. As the United Nations Conference on Trade and Development (UNCTAD) (2013) has noted, 80 per cent of all 'trade' takes place in global value chains (GVCs) controlled by multinational firms and inexplicably dense webs of public and private regulation. As Nicola Phillips (2013) has argued, economic activity is now so 'geographically dispersed' that the 'stages and functions of production are fragmented'. It is less about 'the international exchange of final goods', but rather the insertion of sectors of an economy into GVCs which are 'typically coordinated by lead transnational corporations, and feature hugely complex webs of affiliates, suppliers and contractors, dispersed across countries and regions, and with different types of relationships to lead firms'.

Consequently, contemporary 'trade negotiations' and any resultant FTAs actually have very little to do with 'freeing' trade in the classical sense of the word (i.e. reducing tariffs on exports of finished goods). So-called 'deep' trade agreements are far more concerned with 'behind the border' regulation and reach well into a state's regulatory capacity to influence patterns of domestic regulation on an array of issues relating to standards, licensing, environmental and labour rules, and so on; things most people would never consider to be about 'trade'. This is particularly so given that so much trade involves the exchange – often *within* firms or between them and their affiliates - of services, data, money (and even labour) that do not cross physical borders or transit through ports where tariffs could be levied. In this sense – and notwithstanding the debate about the dominant market power of the most influential firms – they are about creating a level playing field for companies operating within a much larger economic space. By far the most extensive and complete version of such an agreement is, of course, the European Single Market. Consequently, the choice facing the UK between it and an FTA is a stark one: the reason the government cannot reconcile elements of one and the other is because they are not truly positioned on a spectrum of options but are rather fundamentally different things with very different logics.

This is clear if we think about our small firm in Liverpool or Newcastle. It may well not export finished products *to* Europe, but it is engaging in commerce – whatever that may be – within the single market. It therefore has to be bound by single market regulation, however arduous, if it is functioning in that regulatory space. To give a few examples, its products must meet European environmental standards; it cannot get a competitive boost by social dumping (i.e. treating its workers worse than the minimum); it must ensure that people are safe when consuming those products; and it enjoys a whole range of competitive advantages and privileged access to all manner of European markets, such as the ability of its staff to travel and work freely, or the ability to purchase services from producers across the continent, specifically because of those high standards. If the UK leaves the single market and completes a simple trade deal, it necessarily follows that firms, regardless – again – of whether they export finished goods or not, will lose much of that access or receive it on worse terms.

For those that do engage in intermediate activities across the continent, this will be an unmitigated disaster. There is no way around this. The crux of the issue is not the ability of firms to export simple commodities – tariffs globally are at their lowest levels in human history – but rather the regulatory environment under which firms located in the UK operate. What is at stake is the country's capacity to attract and retain investment, particularly in high value-added sectors of the UK economy such as financial and legal services, as well as car manufacturing and, crucially, sales (far more value is extracted from the financial services

associated with motor vehicles now than the production process itself, which effectively runs as a loss leader). These are the sectors most tightly integrated into GVCs and by far the most complex. Because the agreements governing them are so carefully calibrated, they will require the most delicate, convoluted and tedious negotiations, and embody the most difficult trade-offs.

Another misunderstanding relates to the importance of regulation: in the Brexiter imagination, European 'red tape' is stifling trade and innovation. But what if it is the fiendishly complicated cornucopia of bilateral and multilateral agreements – what Jagdish Bhagwati (1995) called the 'spaghetti bowl' – that actually facilitates economic activity? This web of overlapping rules and regulations determines, in the most arcane ways, how and where goods or services can be produced before moving into different markets. The more trade we desire, the more these rules proliferate, because the fragmented and infinitely complex nature of modern production, distribution and consumption requires ever-more esoteric and finely grained forms of governance.

By contrast, nostalgic conservative narratives about 'trade' are still rooted in eighteenth century imagery of ships taking cotton or steel to the colonies and coming back laden with spices and fabrics. This unreconstructed worldview surely explains the hubristic post-imperial delusions of grandeur that typify the proclamations of many English politicians on the subject: i.e. the oft-cited notion that, as a supposedly 'great trading nation', the UK will succeed once freed from the overbearing yoke of EU regulation. This is all deeply misguided: the country's economic travails – for example, low investment, industrial stagnation, pronounced regional disparities (see Berry 2016) – are entirely domestically rooted. Comparatively few of the UK's industries are today operating at the innovation frontier, particularly in the higher value-added segments of the new growth sectors. These are the exact industries that rely on the most sophisticated regulation and widest GVC-embedded production networks. If the UK leaves the single market, the ability of its firms to participate – or the ability of the country to attract investment from foreign ones that do – necessarily diminishes.

Unanswered questions

This in turn begs a series of other questions for those that would have the UK operate a much looser FTA-based relationship with the EU, on the basis that the government can then negotiate other 'deals' around the world. This objective, arguably, is a chimera, and it assumes a degree of influence on the part of the UK that its power status simply does not match.

First, what are the UK's major exporters demanding from such deals that they do not have already, and why will they both increase our export capacity and offset the (massive) losses from both UK-EU goods trade, and, even more importantly, services activity that British firms undertake across European supply chains?

Second, what is there to be gained from an 'independent' trade policy given that market power, technical expertise and negotiating capacity are crucial for successful trade diplomacy, three things the EU has in abundance as a genuine trade superpower, and the UK does not?

Third, what is it, exactly, that the UK can negotiate alone that the EU cannot negotiate on the country's behalf? This issue is particularly acute when we factor in the previous point, and the fact that Brussels already has myriad agreements – or has begun to discuss them – with many mooted partners, and has the leverage and market power to extract much bigger concessions from them.

Fourth, where is the value in developing alternative rules – and the costly infrastructure to manage them – when Europe is already determining them at, or accepting them from the

global level, and the UK will ultimately either have to broadly adhere to them anyway, or have limited room for meaningful divergence?

Finally, why do Brexiters place so much faith in Free Trade Agreements (FTAs) when they do not actually increase trade by anywhere near as much as is often claimed (see Siles-Brugge, 2018), especially, as 'gravity' models have been shown conclusively (Anderson and van Wincoop, 2003) between partners thousands of miles away from each other? Were we to enter into an FTA with, say, the US or China, it would decimate the most sensitive sectors of our economy, such as agriculture.

These questions are especially pertinent in the UK's case – arguably more so than for any other European country – specifically because of the distinctiveness of its economy, and therefore the special difficulties posed by extricating it from the EU. As *The Economist* (2016) put it when discussing the May government's approach to Brexit: 'This is not some hermit state, but one of the most globalised and internationally interdependent economies on the planet. It rises and falls on its relations with the outside'. It also has distinct pathologies, such as a widening balance of payments deficit. Any British 'trade' strategy therefore has to be *far more* concerned with ensuring continued inflows of capital than, say, the German or French equivalents.

This is what renders the archaic view of international trade propounded by the Brexiters so frustrating. They are blithely gambling with the livelihoods of generations of people in a country that is considerably more exposed to the vagaries of the global economy than any of its European partners. Many reasons exist for this dependence, of which three are worth briefly assessing. Firstly, the global value chains (GVCs) in which the UK operates are overwhelmingly in services, which depend *even more* on the kinds of deep 'behind the border' regulation typified by the EU single market. Secondly, because the UK trades so many 'invisibles', these rely to a greater extent on human capital as an input than other forms of industrial production. It is thus easier for firms to move elsewhere because the plant, which essentially consists of offices, computers and clever people, is relatively straightforward to shift. Given the UK's decaying skills base and mooted constraints on immigration, such offshoring is only more likely. Thirdly, the UK has a substantially higher penetration of foreign capital than comparable economies (Springford and Tilford, 2014), with much infrastructure and plant, both public and private, owned by outside interests. This investment is also highly financialised, and its 'national' character is weaker than elsewhere, giving it less incentive to remain and the state fewer levers through which to induce it to do so.

In sum, one of the great fallacies of our time is that firms desperately wish to slash red tape and burdensome rules. Yet for most UK firms it is the advanced, extensive regulation provided by contemporary trade agreements that actually confers on them market power by raising the barriers to entry for weaker competitors. So, if a post-Brexit UK wishes to participate in the highest value-added segments of GVCs in the kinds of services it is currently adept at producing, then it will have to accept a significant degree of labour and capital mobility, as well as having its hands tied to some extent when it comes to permissible forms of regulation. Ultimately, then, the kind of bonfire of EU red tape that Brexiters have long fantasised about will, if it ever comes to pass, undermine, not facilitate, the free trade that they claim to stand for. Put simply: if you get rid of the regulation, you inherently rid yourself of the right and ability to participate.

Conclusion: towards a twenty-first century trade policy

I began this chapter by noting that many of the binary concepts which frame our understanding of issues are deeply problematic. Yet the choice between an FTA with Europe or continued membership of the single market really is a binary one (see Grey, 2018b). What is not such a choice is that between 'free trade' of some kind and a more interventionist, strategic approach

to domestic development. Put differently: it is perfectly consistent to argue, on the one hand, for a broadly liberal global economy in which global production networks proliferate and firms are increasingly undertaking intermediate activities around the globe, as it is this which facilitates trade in its widest sense; and, on the other, to argue that this cannot be left to private initiative alone. A liberal market-based order requires greater forms of activist state engagement in shaping the rules and regulations under which that activity takes place, clearing up market failures, balancing skewed forms of corporate power, and ensuring that markets indeed serve development objectives by incentivising firms to develop socially useful products, or underwriting the risks in major technologies that private actors would not take. This is a process that Henry Yeung (2016) has described as 'strategic coupling' and which has worked so successfully in much of Asia, and in which the word *strategic* does much heavy lifting.

It is fairly clear, then, that the UK finds itself at a difficult pass in constructing a post-Brexit trade policy that aligns with a serious industrial strategy. The country desperately needs to move on from the private sector-driven, low-investment, rentier-financialised development model that has served it so badly, particularly since the 2008 crisis (Hay, 2011). But Brexit, particularly if it does involve leaving the single market, only makes that even more difficult, partly in terms of the evident practical difficulties envisioned for many of the most sophisticated UK companies, but also because of the politicisation of the deeper challenge of rebooting the country's growth model, which has become subsumed by the contentious politics (and often outlandish claims) that has typified the Brexit process (see Rosamond, 2018).

In this sense, both the Brexiters, who, with their delusional 'Global Britain' rhetoric, advocate a mythical hyperliberalism that would actually diminish the UK's ability to participate in globalization, and the Lexiters, who, with their quasi-Trumpian view of trade (see Bishop, 2018a) would close the UK off unnecessarily from global flows of goods, capital and labour, are deeply misguided (see also Bishop, 2018b). This is especially so – and deeply ironic – because the EU potentially finds itself at something of a pass: ten years on from the crisis, a differently orientated UK could have been a key actor in reshaping the institution from within. If the Thatcher government was instrumental in developing the single market, it is not entirely fanciful to think that a putative Corbyn/McDonnell administration may have missed a huge historic opportunity to shift the EU once again in a more 'social' direction.

The key challenge facing any UK government going forward is how to combine industrial rebalancing with strong and widely-distributed growth. This necessarily involves an intelligent appraisal of the country's external relationships such that they facilitate ongoing trade and investment, as great a participation as possible in European and international markets, as well as the ability to profit from the EU's shaping of bilateral and global trade rules (on this basis, the UK negotiating its own FTAs with distant countries is a pointlessly expensive, and potentially quite damaging, chimera). But accepting the logic of globalisation in a broad sense does not mean that its character is inevitable: states like the UK can and should do more – within the limits of their relatively declining power – to make global trade rules work better for people, businesses and the environment, and, on that basis, to develop their complementary industrial strategies. It barely needs saying, though, for that to happen the UK has to be in the room and working in trusted partnership with other countries. Post-Brexit, it is far from clear that that will be the case.

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Conclusion: talk about industrial strategy!

Craig Berry

There are few, if any, areas of public policy or public spending that would be untouched by a meaningful, comprehensive industrial strategy, from national security and monetary policy (macroeconomic policy is usually considered separate to industrial policy, but clearly the former must be consistent with the strategic ambitions of the latter) to fixing potholes and cleaning services for government buildings.

More specifically, as well as determining which industries and economic activities are most important for the UK's economic prospects, an industrial strategy would have to encompass a coherent approach to the energy supply, competition policy, skills provision, higher education and research, corporate governance, and employment regulation – among many more issues. To summarise the many diverse, outstanding contributions to this volume would be impossible – the authors offers insights from many different perspectives, but certainly not a shared policy agenda. Instead, this concluding chapter draws upon some of these contributions to offer my thoughts on what the priorities for the development of UK industrial strategy should be.

The four main issues addressed here are:

- Supporting the low-value industries in which most people are employed
- The development of a gender-centred industrial policy agenda
- The importance of manufacturing industries to the UK's economic prospects
- Reforming financial institutions in support of sustainable industrial development

Low-value industries

Industrial strategies invariably focus on high-value industries – understandably so, especially in the UK case, where sluggish productivity growth and the trade deficit are major concerns. However, this volume has demonstrated the importance of ensuring that industrial policy focuses also on lower-value or low-wage industries. The chapter by John Forth, Dave Innes and Ana Rincon-Aznar demonstrates that productivity in the UK's low-wage industries is lower than in comparable countries, and therefore the aggregate productivity level (and earnings) could be boosted significantly by supporting these industries. The chapters by Özlem Onaran and Ed Pemberton make powerful cases for an egalitarian industrial policy to support lower-value industries, with higher incomes for those with a greater propensity to spend boosting consumer demand (Onaran puts the emphasis on employment regulation and corporate governance to drive higher wages, whereas Pemberton focuses on redistribution through fiscal measures).

The question of whether high-value or low-value industries should be the core focus of industrial strategy speaks directly to the issue of *what industrial strategy is for*. My view – generally shared by my colleagues on the Industrial Strategy Commission – is that the mastery of any particular industry, or of any particular technology, would be the wrong goal. Industrial strategy, like all public policy, should instead be seen as a means to enabling people to be healthy, resilient and prosperous. The argument that, in a capitalist economy, prosperity is the foundation of health and resilience, is a perfectly valid one. There is clearly no route out of the

UK's economic malaise that does not involve upgrading the economy's productive capacity in the high-value industries at the cutting edge of the next wave of technological development – and indeed there are major opportunities for the UK in areas such as green technology. But success in such activities would be futile, and democratically unacceptable, unless most people in most places are able to share in the benefits.

Moreover, the introductory chapter offered an account of a 'layered' economy in which the country's regions and industries can be seen as interdependent. As many chapters point out, a sectoral lens on industrial policy is increasingly unhelpful, creating blind spots around the disruptive nature of the fourth industrial revolution, the economic geography of industrial development in particular places, and the cross-sectoral nature of global value chains. Julie Froud, Sukhdev Johal and Karel Williams' chapter offers an account of 'the foundational economy' which overlaps significantly with this perspective, as well as presenting a new economic imaginary for the importance of low-value industries.

Three sets of institutions dominate the foundational economy:

- The state, locally and centrally – providing or procuring services, regulating quasi-monopolies, and overseeing the planning regulations which partially structure the foundational economy.
- Privatised utilities – private companies, supported by the finance sector, effectively dominated industries such as energy and rail, with profitability guaranteed by (pseudo)contractual relationships with the public sector.
- Supermarkets – large supermarket chains, which have been permitted to dominate every locality, benefit from near-compulsory household spending across a wide range of goods; most obviously, this enables them to control food production.

Crucially, for Froud *et al.*, 'these foundational activities are not only important in terms of employment but because they provide the infrastructure of everyday life which can enable households, businesses and other organisations to function'.

The implication is clear: without a functioning foundational economy, we do not have a functioning economy at all. And the insinuation is that foundational activities have been put under too great a strain, by austerity, deregulation, privatisation, the driving down of pay and employment standards, the failure to upgrade infrastructure, and corporate governance failures. Fixing the foundational has to be a central part of a meaningful industrial policy agenda.

Gender-centred industrial policy

Women are over-represented among many of the low-value industries relevant to the foundational economy and soft infrastructure, and so greater investment in or regulation of these areas is likely to benefit women disproportionately. It is vital, however, that enabling more women to contribute to the economy becomes a central principle of industrial policy, rather than simply a by-product. Clearly, addressing the under-utilisation of such a vast segment of the (potential) workforce would have a significant impact on the UK's economic performance, as well as directly improving the living standards of many women (see Coates, 2018).

Despite much effort by the New Labour government, the gender pay gap remains depressingly large. The median female employee has an hourly rate of pay around 80 per cent of the male hourly rate. The gap is narrowest towards the bottom of the income distribution – but women are more likely to be in low-paid self-employment, as well as to be on zero-hours contracts (Tinson *et al*., 2016). It is perhaps the fact, however, that the pay gap is widest at the top of the income distribution that underlines the wastefulness of the UK's gender-biased labour

market. The absence of women from the best-paid jobs – which contribute more to productivity, as conventionally understood – represents a human capital resource which is being significantly under-utilised. The May government has focused on increasing transparency about the gender pay gap at firm level.

Explicit discrimination is part of the explanation here, but so too are the implications of motherhood. The career breaks associated with starting a family can be incredibly disruptive for mothers' careers, and more than 90 per cent of single parents are women. There have of course been moves recently to increase financial support for childcare, and enable parental leave to be shared with fathers. Yet it is difficult to see initiatives on this scale having a transformative impact on women's career prospects. At the very least, we need a sea-change in childcare provision – significantly increasing quality and reducing cost. There is scope also to significantly strengthen maternity-related employment protections.

Regulating to improve the quality of childcare will have the additional impact of increasing earnings and job quality in an industry overwhelmingly populated by female employees. This is an agenda which should be pursued more generally. Improving the productivity of social care, for instance, will be vital in an ageing society; it will also create better quality jobs for women (De Henua *et al.*, 2016; see also Susan Himmelweit's contribution to this volume).

It would be impossible to police gender relations within every single company, but government can drive change through its procurement practices. It can also use the leverage of large-scale investments in R&D, and sector-specific investments, to encourage gender equality within strategically important industries. In essence, policies to address gender inequality have to be brought firmly into the industrial policy arena. The implications and opportunities for women should be considered in relation to every single industrial policy intervention – not as a bolt-on to interventions that will be taken forward anyway, but as an essential element of ensuring that interventions are optimally designed.

The importance of manufacturing

The emphasis placed on lower-value and low-wage industries in this volume should not be seen as a signal of indifference about the manufacturing sector. The very high-value economic activities encompassed by many manufacturing processes should be highly prized by and industrial strategy. We should also recognise that manufacturing in general, despite a degree of labour market hollowing out in this sector, is an important source of median-paying jobs (Berry, 2015a).

The most obvious benefit of a healthier manufacturing sector, especially in relation to the UK's current economic malaise, is that it would support efforts to close the UK trade deficit. The trade deficit is the most important cause of the UK's current account deficit – which the Industrial Strategy Commission deemed unsustainable. The recent focus of UK policy-makers on increasing *services* exports has, for the most part, failed to address this problem; indeed, there is now dispute over whether the UK has a surplus in services trade at all, given discrepancies in trade recorded by the UK, and that of its trading partners (Giles, 2018).

There is also a much broader argument about the value of manufacturing to the UK economy. Few industries outside the manufacturing sector have the scale, and particularly supply chain density, to make a material difference to aggregate levels of output, productivity and employment. The non-linear gains from technological innovation in manufacturing processes are rarely replicated in other sectors (although this does not mean such progress within manufacturing is guaranteed). Indeed, productivity gains in other industries generally result from the dissemination of manufacturing innovations – both technological and organisational – to the rest of the economy (Andreoni and Chang, 2016). It is also worth reminding ourselves of Baumol's cost disease (discussed by Ed Pemberton in this volume). Real productivity

increases in manufacturing might not actually be measured as productivity growth in monetary terms, if the cost of manufactured good falls as a result of greater abundance; at the same time, it will appear that productivity is increasing in very labour-intense service industries, only because real wealth gains resulting from manufacturing innovation increase the amount we are willing or able to pay for these services (Jones, 2016).

Of course, higher productivity in manufacturing is increasingly being achieved via automation: mechanising processes so that labour costs can be radically reduced. And this innovation is spreading quickly to the rest of the economy. Should we pursue an industrial strategy that might end up destroying jobs? The question is answered, or circumvented, in chapters by Tera Allas and John Bryson in this volume. The nature of work is changing, and what is required is a strategy that enables workers to increase their capability to undertake a new generation of high-skilled jobs (see also the chapter by Alison Fuller and Lorna Unwin). This should not be conceived as a defensive response to the threat of automation, but rather a progressive strategy for capturing the gains resulting from manufacturing innovation – which might include reducing the volume of work overall. It would go hand-in-hand with empowering workers through corporate governance reform.

As Lisa de Propris and David Bailey's chapter argues, to support Industry 4.0 – and maximise its benefits for the economy in general – we need to think across sectors and industries, and about how large-scale production processes can combine with highly localised and artisanal practices. Similarly, while much of what manufacturing companies or workers do is not actually manufacturing in an everyday sense of the term (even if it counts as manufacturing statistically), much of what many of us do in non-manufacturing jobs involves ingenuity in utilising resources, often outside formal job specifications as employers become more reliant on intangible inputs. We think of products requiring further assembly somewhere along the production chain as 'semi-manufactured', but we need to question whether any good (particularly in the case of innovative products) is ever fully manufactured until it is in the hands of the end-user (who might be a service-provider or a consumer – a distinction that is being blurred by ICT and social media) (Berry, 2015b). We are all makers now.

Financial institutions

We know that levels of both public and private investment are lower than in the UK than in most similar countries, and that the gap appears to be growing (Industrial Strategy Commission, 2017). This is, in part, a normal aspect of the move to a service-based, post-industrial economy, where dominant industries are less capital-intense. However, it is clear that if the UK is to develop or revive high-value industries, and indeed improve the productivity performance of services throughout the economy, higher levels of investment will be required.

Loren King's chapter on the finance sector, which bemoans its failure to supply sufficient productive capital, offers part of the solution here. It dovetails effectively with Laurie Macfarlane's chapter on the prospects of a state investment bank (see also Berry, 2018 for discussion of public and community banks at national and local levels). But we should be clear about the limitations of such proposals. A state investment bank, for instance, could be funded in myriad ways, but the various options would have implications for the size, stability and risk appetite of the institution (Mazzucato and Macfarlane, 2017). Ultimately, while the argument that the UK economy is being failed – and indeed jeopardised – by finance sector practices in some ways is a credible one, we must be careful not to assume that over-supplying capital to firms with limited scope or incentives to increase their productive capacity would be an effective remedy.

One set of financial institutions that has received relatively little attention in the debate around industrial strategy are those connected to pensions provision. The May government's 'patient capital' review (HM Treasury, 2017) actually discussed the importance of pension funds to

long-term investment, while noting that barriers are reinforced by the shift from defined benefit to defined contribution in pensions saving, but suggested only 'industry-led attitudinal change' as the solution. I believe there is scope for the structure and regulation of pension investments to be brought into a broad industrial policy agenda.

The UK is in the middle of a transition from collective defined benefit pensions provisions (in which associated funds briefly enjoyed considerable influence within capital markets, but are now focused on managing risks associated with scheme maturity) to individualised defined contribution saving (which is now near-compulsory for employees). The younger age profile of schemes delivering 'automatic enrolment' should enable longer-term, riskier investments, but the individualisation of risk, and recent dismantling of the annuities market, means the investment strategies are likely to become even more conservative. It would of course be correct to retort that pensions saving should be used primarily (or exclusively) to fund a decent retirement income – but we should be under no illusion that the current pensions system is likely to achieve this outcome for most workers in the process of being automatically enrolled in poor-quality workplace pensions schemes.

There is no suggestion here that pensions savings' should be entirely used to support the industrial policy agenda of the government of the day. But there are much more modest ways to achieve mutually beneficial outcomes for individual savers and the economy as a whole:

- A large-scale move towards 'collective' defined contribution saving (supported by the coalition government) would mitigate the inherent conservatism of defined contribution investment decisions while enabling individuals to share investment risks.
- The National Employment Savings Trust (NEST), a government-backed defined contribution provider, could adopt an investment mandate with more focus on investing in local areas or productive activities, as part of routine diversification within a very long-term investment fund.
- The government's 'pot follows member' approach to the transfer of accumulated funds when savers move jobs could be adapted to enable members to choose to invest dormant savings accounts in a collectivised fund – a reformed NEST could support the delivery of this model.
- Pensions tax relief arrangements could also be used – for instance, by relaxing restrictions on relief for very high earners – to incentivise long-term investment.
- Central government could offer 'infrastructure bonds' to enable pension schemes to invest safely in projects that support long-term economic development. Local authorities could also be empowered to offer similar products in order to attract pensions capital to their localities.

Many of the volume's chapters have focused also on corporate governance, articulating the view that the financialised model of corporate governance in the UK, based on shareholder value, actually undermines the operation of the most important financial institution in the capitalist economy: the company (see chapters by Kate Bell, Özlem Onaran, Ciaran Driver, William Lazonick, Matthew Lawrence and Adam Leaver). The inconvenient truth behind the UK's economic malaise is that large parts of its UK corporate sector are highly successful – because there are too many opportunities for 'money-making' (to use Adam Leaver's term) that do not involve productive activity.

And finally…

Industrial strategy is rightly concerned with enabling the kind of economy we want. However, implicit in the idea of industrial strategy is a notion of the kind of state that might pursue one. The state which does industrial strategy is not one which limits itself to merely correcting market failures. Instead, as Dani Rodrik (2009) argues, it must also pursue structural change

within the economy – correcting deep-lying malfunctions within the economy, and indeed bolstering the economy against the malfunctions yet to emerge.

The Industrial Strategy Commission's adoption of the term 'strategic economic management' in order to define a comprehensive and long-term industrial strategy was not an endorsement of a command-and-control state or centrally planned economy. Instead it echoed a concept actually rather familiar in most domestic contexts, albeit not the UK: the developmental state. The developmental state is not against markets – instead it builds markets by way of recognising that capitalist economies require steering by sovereign authorities if they are to lead to higher living standards. The developmental state is an inherently pro-capitalist ideal, since it accepts the elision of capitalism and development, but crucially recognises its own decisive and purposeful role within the capitalist economy (Bishop et al., 2018). It must also be a democratic – or democratising – state, since development and democracy have an affinity to (Hay and Payne, 2015).

Understanding the British state as a developmental state is not necessarily about transforming the institutions of governance – although this is necessary, to some extent – but rather the ideology of governance. We need state custodians, working in partnership with the private sector, with the capacity and confidence to steer the economy, because the alternative – capitalism left to its own devices – is unsustainable. In a recent book on the political economy of Northern England, I argued that Northern regions could in fact be considered to have undergone '*de*-development' in recent decades (Berry, 2018). The public sector has a very large role in many local economies in the North – but not a development role. Incidentally, this is partly why we also need a meaningful devolution of economic policy powers: the state must be developmental all the way down.

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An afterword

Andrew Gamble

Industrial strategy is making a comeback in the UK. There is renewed interest on both right and left. Many countries have industrial strategies embedded in their systems of government, but British attachment to industrial strategy has been much weaker. It comes and goes. After the 1970s many British politicians declared themselves against the idea of industrial planning and industrial strategy, deriding it as 'picking winners' which could never succeed, or as subsidising inefficiency at taxpayers' expense. The Thatcher government presided over a drastic restructuring of the UK economy which led to the disappearance of most heavy manufacturing, the emergence of new sectors such as pharmaceuticals and the strengthening of some existing ones, such as finance. The success of this reshaped economy was in doubt in the 1980s. But with the upswing in the world economy in the 1990s, made possible in particular by the phenomenal growth of China and India, the new financial model of growth was consolidated. It rested on highly flexible labour markets, high immigrant flows, lower taxes on wealth and on companies, and privatisation of state assets, as well as the integrated supply chains of the EU single market. A period of substantial economic success and prosperity ensued. This lasted until the financial crash in 2008.

It is now ten years since the financial crash. Some earlier financial crises, like Black Monday in 1987, appeared in retrospect short-lived events which had little impact on the wider economy. But 2008 was different. The reality of what happened and the enormity of what might have happened and was only narrowly averted is better understood now than it was then (Tooze 2018). There is widespread agreement now that 2008 was the deepest crisis to have befallen capitalism since 1929. Its effects, both political and economic, are still being felt. It has unleashed new political forces and has led to a questioning of many of the assumptions on which policy was formerly based. The long slow recovery which followed the financial crash has been associated with real wages either stagnant or falling, sluggish productivity, and the erosion of parts of the social wage through austerity programmes designed to contain rising public debt following the economic contraction in 2009 (Clark, 2014). The slowness of the recovery broke the pattern of the previous seventy years when recessions had been brief and recoveries strong. There has been no return to business as usual, and the limitations of the financial model of growth which were exposed. There are still many advocates of the various neoliberal doctrines which held sway since the 1980s, and neoliberalism has been remarkably resilient, but it is increasingly challenged. It has taken a while but finally new ideas are being canvassed and all the political parties are becoming more receptive to different ways of thinking about economic policy. Industrial strategy is one of them.

There has always been a puzzle as to why the British became so resistant to industrial strategy in the late twentieth century. They had been renowned during the nineteenth century for building an economy with manufacturing at its heart – the workshop of the world. The role of the state in enabling the growth of that manufacturing economy by removing obstacles in its way was considerable. The use of parliamentary legislation to permit compulsory purchase of land drove the expansion of the railways and the dredging of rivers like the Tyne which made possible great shipbuilding industries and commercial and manufacturing hubs. The close connection from the seventeenth century onwards between the development of British naval power, technological innovation and industrial development is now well-known. But it was

often ignored in the stories the British liked to tell about themselves, in which the state always played a very minor role, and economic development was spontaneous and unplanned. Even when that changed with the rise of collectivist economic doctrines on both right and left in the first half of the twentieth century the doctrines of free trade and the commercial and financial orientation of British policy still exercised great influence, and prevented the adoption of a more conscious industrial strategy along the lines of many developmental states elsewhere.

In the twentieth century, the UK did have some highly successful industrial strategies, most notably the development of the aerospace sector which was seen as key to the UK's defence capability (Edgerton, 2013). But attempts to reorganise industries like coal, shipbuilding, and steel were not successful in the long term, and the dense industrial districts of places like Sheffield and Birmingham were hollowed out. There were many factors involved, including the repeated failure to match the kind of education and training programmes for industrial and engineering skills which several of the UK's competitors, notably Germany, achieved. Another factor was the structure of economic governance in the UK. The key department, the Treasury, has always resisted becoming directly involved in planning the economy, and has managed to sabotage all attempts to create a rival source of authority. A third factor has been the very dominant role played by the City of London, which first emerged when sterling was the leading world currency, and the UK was on the gold standard and supreme in the provision of financial, insurance and shipping services for the world economy. Many argued that the inevitable loss of that supremacy as British power shrank and other nations overtook the UK should have produced a fundamental rethink of economic policy. But it did not. The old assumptions were often rocked, as in both world wars and after the suspension of the gold standard in 1931. But the priority given by the state to rebuilding the City of London rarely wavered, as Simon Lee points out in his chapter in this volume. There were attempts in the 1940s, and the 1960s and the 1970s, to rebalance British policy in favour of manufacturing, but success was always partial and most the institutions that were created were ripped up in the 1980s, and the priority of the financial model was reasserted.

Why should this time be different? One of the reasons is Brexit. Some of the strongest advocates of leaving the European Union argue that it is an opportunity to remake the UK as 'Global Britain' with an economy which is outward-looking, free trading and enterprising. This is an attempt to revive and reinforce the financial model. The Economists for Brexit group has acknowledged that, given the UK's comparative advantages as a global trader and the disadvantages to existing industry and supply chains of leaving the EU and trading on WTO rules, the result of Brexit could well be the disappearance of what remains of UK manufacturing and its supply chains. But they reason that the jobs will be made up by the expansion of financial services and other new service industries at which the British excel (Economists for Brexit, 2016*)*. To make this possible they advocate the dismantling of regulations, particularly environmental controls and labour market standards, the unilateral abolition of tariffs, and a move to a low tax (preferably flat tax) economy, with the inevitable consequences for public services. This is a consistent vision which reflects a set of ideas about economic policy which have often been dominant in the UK. But precisely the starkness of this vision and the costs associated with it has spurred alternative thinking as to how the UK might respond to Brexit.

This other perspective arises from recognition of the serious weaknesses of the UK economy which were exposed by the financial crash, and in particular the dependence on consumer debt and financial services, the low productivity and low pay of British workers, and high levels of inequality both between executives and their workers, and between male and female workers. The additional costs which most economists and international bodies expect to be incurred when Brexit happens make the UK's situation a precarious one, and this is without taking into account the fears that international cooperation is breaking down, and that the world may be heading into trade wars and a revival of regional blocs and protectionism. There are also persistent fears that there could be another financial collapse, and that if this occurred

there would be few policy levers left to resist it. For many observers the risk of a major world depression is rising.

Given this environment the new attention being given to industrial strategy is overdue, but as the contributors to this book make clear, this cannot be the old type of industrial strategy. If it is, it is unlikely be any more successful than earlier attempts. Many politicians on both right and left have been slow to grasp this. But the evidence compiled by the Industrial Strategy Commission, and in many of the chapters collected here, points in the direction of a very different kind of industrial strategy, one which is based on seeing industrial strategy not just in terms of high-value manufacturing but in relation to low-value industries too. Such an approach is much more comprehensive than industrial strategies of the past, and is based on understanding industrial strategy as a permanent and necessary feature of economic governance, not just a passing fashion which is picked up and then discarded. The industrial strategy of the future will need to have at its centre two key ideas of the new economic thinking: the idea of the foundational economy (Reeves 2018; Moran 2015) and the idea of the developmental state (Hay and Payne, 2015; Jacobs and Mazzucato, 2016). Appreciating the importance of the foundational economy for the way any economy functions is vital for spreading prosperity and opportunity to all citizens. Appreciating the role the state plays in creating the rules and capacities which makes an extended market order possible is the first step in identifying the developmental needs of an economy. State agencies are vital to the coordination of any economic order, even an extreme *laissez-faire* one, and are a major – if not the only – source of the public goods any economy requires to prosper and to work for all its citizens.

In the UK one of the ways in which this vision of industrial strategy might be achieved is through the emergence of a new, self-reliant civic municipalism. The experiment under way in Preston has rightly attracted a lot of attention (Chakrabortty, 2018). It is a model which has the potential of being widely adopted. Major public bodies in Preston used to spend a very small proportion of their budgets in the local area. By persuading some of them to procure more of the services and goods they need locally, the share of the procurement budget spent in the city has risen from 5 per cent to 18 per cent, injecting an extra £75 million into the local economy. Such policies sustain local employment and encourage the emergence of small businesses, cooperatives and not for profit organisations to tender in this new market.

The Preston model avoids the inefficiencies of top-down style planning and also preserves competition. As long as the UK is in the EU, or adopting the regulations of the single market, any bid by local firms for public tenders has to at least match any outside bid on price, quality and social value. The Preston model also encourages the formation of worker cooperatives, and the city council has, for instance, promoted the living wage in its supply chains and established a not-for-profit energy firm and a credit union (Eaton, 2018). Many local authorities in disadvantaged areas with larger budgets and a wider array of powers have taken similar initiatives. The potential for these local initiatives to transform the prospects of many towns and cities in declining or standstill areas of the economy through the creation of local developmental states is high. Such initiatives can help restore local pride and purpose, and increase democratic legitimacy. Their success depends on increasing the capacities of the workforce and improving the diversity of the local business base.

If the new municipalism was supported by national policies to reform corporate governance and to set up national and regional investment banks, the chances of embedding industrial strategy into economic governance at all levels will be enhanced. There will still be difficult trade-offs and policy dilemmas but an institutional structure will have been created which will be based on more robust foundations than previous industrial strategies. In the nineteenth century the tackling of the urban problems which came in the wake of the industrial revolution was begun by local councils taking control and raising the funds they needed from local taxpayers to introduce far-reaching programmes of public health, education, housing and

basic public services. The need today is to create a new institutional structure that can foster local initiatives and ensure democratic participation and consultation, at the same time creating a regulatory framework for dealing with the challenges of decarbonising the economy and responding to the impact of artificial intelligence on the kind and amount of work that people will do in the future.

Industrial strategy is sometimes conceived as a palliative, a way of preventing areas which have been left behind by globalisation falling behind any further. With the ravages which ten years of recession, slow recovery and austerity have brought, combined with the new costs of Brexit, such an approach can often seem like spitting in the wind. But although short-term problems and perils are all too obvious, from a longer perspective the opportunities offered by the digitalisation of the economy in providing a better and more rewarding life for everyone is tantalisingly close. What is needed are the institutions, policies and the political will to ensure that the benefits can be shared. This is not impossible but there is a lot of work to do.

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